

PIAAC Bibliography - 2008-2021

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2022|02

PIAAC Bibliography

2008 - 2021

Débora B. Maehler & Ingo Konradt

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2008 - 2021

Débora B. Maehler & Ingo Konradt

GESIS Papers

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1 Introduction to the PIAAC Bibliography

The present bibliography provides an overview of the literature for the Programme for the International Assessment of Adult Competencies (PIAAC). PIAAC assesses key cognitive (e.g., literacy and numeracy) and workplace skills of the adult population (OECD, 2019)¹ in over 40 countries. The bibliography is comprised of 878 publications and 77 data sets (and 14 technical documents). Since the first OECD data release in 2014, the number of publications has constantly increased. Table 1 shows the increase in publications in relation to realized PIAAC conferences and released datasets in the last years.

Table 1. PIAAC related events, datasets and publications (cumulative)

Year	Conferences	Available Datasets	Publications
2013	November 2013, OECD, Washington D.C.	1	33
2014	April 2014, GESIS, Mannheim Oktober 2014, Statistic Austria, Vienna Dezember 2014, AIR, Arlington	29*	81
2015	November 2015, OECD, Harleem Dezember 2015, AIR, Arlington	32	128
2016	November 2016, OECD, Madrid	44	189
2017	April 2017, GESIS, Mannheim November 2017, OECD, Singapore	64	237
2018	November 2018, OECD, Bratislava Dezember 2018, AIR, Washington D.C.	67	447
2019	---	76	631
2020	Januar 2020, OECD, Rom	76	793
2021	---	77	878

Notes. *Datasets are count according first publication time.

The PIAAC bibliography aims to collect scientific publications, including: (1) publications regarding the conceptual framework of the assessed skill domains in PIAAC, (2) the publications of research results based on PIAAC data, (3) the technical conception of the main study (as well as follow-up studies), and (4) published PIAAC data files.

1 Organisation for Economic Cooperation and Development (OECD) (2019). *Skills Matter: Additional Results from the Survey of Adult Skills*. Paris: OECD Economics Department. <https://doi.org/10.1787/1f029d8f-en>.

The bibliography focuses on worldwide contributions of articles, books, book chapters, working papers, technical reports, and data² published in English and German language. The literature review is compiled chronologically and comprises publications since the conceptualization of PIAAC in 2008. The abstracts of the publications were copied from the manuscripts.³ The literature research for the review is based on several steps:

- Search in the literature databases of the Education Resources Information Center (ERIC), Web of Sciences, and PsychINFO, using “PIAAC” as a search keyword;
- Search on the homepage of the Organisation for Economic Co-operation and Development (OECD) that initiated the PIAAC study;
- Search in Google (Scholar) and ResearchGate, using “PIAAC” as a search keyword;
- Publications by data users that were reported to the Research Data Center PIAAC (RDC PIAAC) at GESIS – Leibniz Institute for the Social Sciences.

Note that not all contributions could be collected worldwide, only those which were identified in the search procedure described above. Publications that have not been listed, can be sent to fdz-piaac@gesis.org and will be included in the next version of this bibliography. In this regard, it is essential that authors cite the data used (see examples for data citation in section 3).

PIAAC data has been used to answer research questions related to innumerable topics such as determinants of cognitive skills, lifelong learning, automation in the labor market, skills mismatch, skills and health, low literacy, digital competencies, relation of skills and personality, relation of skills and economic outcomes, cognitive skills across demographic groups (e.g., gender, migration, indigenous people), and methodological issues. Table 2 gives an overview of the available data from the first PIAAC cycle, used in the publications included in this bibliography.

Table 2. PIAAC datasets by country and year of assessment

Country	Year of assessment (1st Cycle)	Public Use File (PUF)	PIAAC Log Files	Extended PIAAC Data File Versions (e.g., SUF or RUF)	PIAAC Data Files on Non-Cognitive Skills
Australia	2011–2012	x			
Austria	2011–2012	x	x	x	
Belgium ¹	2011–2012	x	x		
Canada	2011–2012	x		x	
Chile	2014–2015	x			
Cyprus	2011–2012	x			
Czech Republic	2011–2012	x			
Denmark	2011–2012	x	x		
Ecuador	2017				
Estonia	2011–2012	x	x		
Finland	2011–2012	x	x		
France	2011–2012	x	x		x

2 We report the most recent version of the data files.

3 If no English abstract was available, abstracts were written by the editors; these cases are marked.

Country	Year of assessment (1st Cycle)	Public Use File (PUF)	PIAAC Log Files	Extended PIAAC Data File Versions (e.g., SUF or RUF)	PIAAC Data Files on Non-Cognitive Skills
Germany	2011–2012	x	x	x	x
Greece	2014–2015	x			
Hungary	2017				
Indonesia	2014–2015				
Ireland	2011–2012	x	x		
Israel	2014–2015	x			
Italy	2011–2012	x	x	x	
Japan	2011–2012	x			x
Kazakhstan	2017				
Korea	2011–2012	x	x		
Lithuania	2014–2015	x			
Mexico	2017				
Netherlands	2011–2012	x	x		
New Zealand	2014–2015	x		x	
Norway	2011–2012	x	x	x	
Peru	2017				x
Poland	2011–2012	x	x		
Russian Federation	2011–2012	x			
Singapore	2014–2015	x			
Slovak Republic	2011–2012	x	x		
Slovenia	2014–2015	x			
Spain	2011–2012	x	x		x
Sweden	2011–2012	x		x	
Turkey	2014–2015	x			
United Kingdom ²	2011–2012	x	x		x
United States	2011–2014; 2017	x	x	x	x

Notes. ¹Only Flanders. ² Only England and Northern Ireland. SUF = Scientific Use File; RUF = Restricted Use File.

2 Publications

2.1 Publications in 2008

Title:

Schleicher, A. (2008). PIAAC: A new strategy for assessing adult competencies. *International Review of Education*, 54(5), 627-650. doi: 10.1007/s11159-008-9105-0

Abstract:

At a time when governments face the challenges of maintaining competitiveness in a global economy, it is necessary to have high-quality comparative information regarding the fundamental skills of the adult population. Such information can help governments to evaluate policies and design more effective interventions. This article describes a strategy currently being developed by the OECD for assessing the literacy skills of adults, including familiarity with information and communication technologies and the ability to manage information, construct new knowledge and communicate with others. The work will enhance understanding of the effectiveness of education and training systems in developing basic cognitive skills and key generic work skills.

Available at (open access): <http://dx.doi.org/10.1007/s11159-008-9105-0>

2.2 Publications in 2009

Title:

Gal, I., Alatorre, S., Close, S., Evans, J., Johansen, L., Maguire, T., Manly, M., & Tout, D. (2009). *PIAAC numeracy: A conceptual framework*. OECD Education Working Paper No. 35. Paris: OECD Publishing. doi: 10.1787/220337421165

Abstract:

Governments and other stakeholders have become increasingly interested in assessing the skills of their adult populations in order to monitor how well prepared they are to meet the challenges of the new information world. The current paper provides an overview of the conceptual framework for the assessment of numeracy developed for the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). This builds on the numeracy framework developed for the Adult Literacy and Life Skills Survey (ALL). Numeracy is broadly defined and complemented with a definition of 'numerate behaviour'. Four facets of numerate behaviour are identified and described to guide the development of assessment tasks.

Available at (open access): <http://dx.doi.org/10.1787/220337421165>

Title:

Jones, S., Gabrielsen, E., Hagston, J., Linnakylä, P., Megherbi, H., Sabatini, J., Tröster, M., & Vidal-Abarca, E. (2009). *PIAAC literacy: A conceptual framework*. OECD Education Working Paper No. 34. Paris: OECD Publishing. doi: 10.1787/220348414075

Abstract:

Governments and other stakeholders are increasingly interested in assessing the skills of their adult populations in order to monitor how well prepared they are for the challenges of the modern knowledge-based society. The current paper provides an overview of the conceptual framework guiding the development of the assessment of literacy in the OECD's Programme for the

International Assessment of Adult Competencies (PIAAC). It builds upon earlier conceptions of literacy from the International Adult Literacy Survey (IALS) in the 1990s and the Adult Literacy and Life Skills Survey (ALL) in 2003 and 2006 to facilitate an appropriate assessment of the broad range of literacy skills required for the 21st century. The framework broadens the definition of literacy to make it relevant to the information age, in particular, by including the skills of reading in digital environments.

Available at (open access): <http://dx.doi.org/10.1787/220348414075>

Title:

Rouet, J.-F., Bétrancourt, M., Britt, M. A., Bromme, R., Graesser, A. C., Kulikowich, J. M., Leu, D. J., Ueno, N., & Oostendorp, H. (2009). *PIAAC problem solving in technology-rich environments: A conceptual framework*. OECD Education Working Paper No. 36. Paris: OECD Publishing. doi: 10.1787/220262483674

Abstract:

Governments and other stakeholders have become increasingly interested in assessing the skills of their adult populations for the purposes of monitoring how well prepared they are for the challenges of the new information world. The current paper provides an overview of the conceptual framework developed for the assessment of problem solving in technology-rich environments for the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). This covers the specific class of problems that people encounter when using information and communication technologies. These include problems where the existence of the problem is a consequence of the availability of new technologies, where the solution requires the use of computer-based applications or where the problem relates to the management or use of information technologies.

Available at (open access): <http://dx.doi.org/10.1787/220262483674>

Title:

Sabatini, J. P., & Bruce, K. M. (2009). *PIAAC reading components: A conceptual framework*. OECD Education Working Paper No. 33. Paris: OECD Publishing. doi: 10.1787/220367414132

Abstract:

Governments and other stakeholders have become increasingly interested in assessing the skills of their adult populations in order to examine how well prepared they are to meet the challenges of the modern knowledge-based society. The current paper provides a conceptual framework for the assessment of reading component skills in the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). The assessment of component skills is intended to provide a greater level of information about the skills of individuals with low levels of literacy proficiency than has been available from previous international assessments. The 'component skills' identified for the assessment are vocabulary knowledge, sentence processing and passage comprehension.

Available at (open access): <http://dx.doi.org/10.1787/220367414132>

2.3 Publications in 2010

Title:

Levy, F. (2010). *How technology changes demands for human skills*. OECD Education Working Paper No. 45. Paris: OECD Publishing. doi: 10.1787/5kmhds6czqzq-en

Abstract:

This paper places the competencies to be measured by the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) in the context of the technological developments which are reshaping the nature of the workplace and work in the 21st century. The largest technological force currently shaping work is the computer. Computers are faster and less expensive than people in performing some workplace tasks and much weaker than people in performing other tasks. On the basis of an understanding of the kinds of work computers do well, it is possible to describe the work that will remain for people in the future, the skills that work requires and the way that computers can assist people in performing that work. The paper argues that a technology-rich workplace requires foundational skills including numeracy and literacy (both to be tested in PIAAC), advanced problem-solving skills or Expert Thinking (similar to the construct of Problem Solving in Technology-Rich Environments to be tested in PIAAC) and advanced communication skills or Complex Communication (not being tested in PIAAC).

Available at (open access): <https://doi.org/10.1787/5kmhds6czqzq-en>

2.4 Publications in 2011

Title:

Desjardins, R., & Rubenson, K. (2011). *An analysis of skill mismatch using direct measures of skills*. OECD Education Working Papers No. 63. Paris: OECD Publishing. doi: 10.1787/5kg3nh9h52g5-en

Abstract:

The focus of this study is on the potential causes of skill mismatch, the extent of skill mismatch, the sociodemographic make-up of skill mismatch, and the consequences of skill mismatch in terms of earnings as well as employer sponsored adult education/training. A distinction is made between skill mismatch and education mismatch. The analysis is based on the 2003-2007 Adult Literacy and Lifeskills Survey (ALLS) – a dataset similar to the one that is forthcoming from the Programme for International Assessment of Adult Competencies (PIAAC) in 2013. These studies contain direct measures of key foundation skills as well as measures of the use of certain generic skills at work which allow for a direct measure of skill mismatch. The analysis points to the complex ways in which mismatch is generated and the need for an accurate and up to date measure of mismatch, one that reflects the possibilities for skill gain and skill loss over the lifespan, and reflects differences in the quality of qualifications. Two key findings stand out. First, including supply and demand characteristics in an earnings function reveals that labour demand characteristics are more important than labour supply characteristics in explaining earnings differentials. In other words, skills matter for earnings but only if they are required by the job. This has direct implications for understanding better the causes of mismatch on earnings. Second, the skill content of jobs seems to be an even stronger determinant of participation in employer supported adult education/training than educational attainment or literacy proficiency. The influence of demand characteristics thus tends to outweigh the influence of supply characteristics when employers make the decision to support adult education/training. Addressing mismatch thus requires a careful consideration of both the demand and supply sides of the labour market, so as to understand better the variety of factors which may have a negative impact on the effectiveness of skill formation, skill maintenance, and also skill us.

Available at (open access): <http://dx.doi.org/10.1787/5kg3nh9h52g5-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2011). *PIAAC conceptual framework of the background questionnaire main survey*. Paris: OECD Publishing. Retrieved October 27, 2017, from [http://www.oecd.org/skills/piaac/PIAAC\(2011_11\)MS_BQ_ConceptualFramework_1%20Dec%202011.pdf](http://www.oecd.org/skills/piaac/PIAAC(2011_11)MS_BQ_ConceptualFramework_1%20Dec%202011.pdf)

Abstract:

PIAAC conceptual framework of the background questionnaire main survey 2011/2012.

Available at (open access): [http://www.oecd.org/skills/piaac/PIAAC\(2011_11\)MS_BQ_ConceptualFramework_1%20Dec%202011.pdf](http://www.oecd.org/skills/piaac/PIAAC(2011_11)MS_BQ_ConceptualFramework_1%20Dec%202011.pdf)

Title:

Upsing, B., Gissler, G., Goldhammer, F., Rölke, H., & Ferrari, A. (2011). Localisation in international large-scale assessments of competencies: Challenges and solutions. Localisation focus. *The International Journal of Localisation*, 10(1), 44-57.

Abstract:

International comparative studies like the Programme for International Student Assessment (PISA) pose special challenges to the localisation of the test content. To allow for comparison between countries, the assessments have to be comparable with respect to measurement properties. Therefore, internationalisation and localisation are crucial steps to guarantee test equivalence across countries. The localisation of test items is different from the localisation of web-based contents or software as the test content has to be authentic within a country while the test's measurement properties have to be comparable across countries. Using the PIAAC study (Programme for the Assessment of Adult Competencies) as an example, this paper describes all stages of the localisation process for an international large-scale assessment. The process ranges from the development of source items to translation, adaptation of layout issues and meta-data adaptations. The paper concludes with a discussion of lessons learned and open questions.

Available at (open access): https://www.localisation.ie/sites/default/files/publications/Vol10_1UpsingGissleretAl.pdf

2.5 Publications in 2012

Title:

Clair, R. S. (2012). The limits of levels: Understanding the international adult literacy surveys (IALS). *International Review of Education*, 58(6), 759-776. doi: 10.1007/s11159-013-9330-z

Abstract:

The International Adult Literacy Survey (IALS), an initiative of the Organization for Economic Cooperation and Development (OECD), was carried out in the early to mid-1990s across more than 20 countries. It was followed in the early years of the 21st century by the Adult Literacy and Life Skills (ALL) survey and the Programme for the International Assessment of Adult Competencies (PIAAC, currently in data analysis). This article reviews the philosophical basis, theoretical underpinnings and data analysis of the original and subsequent IALS-based surveys. The purpose is to inform users of the survey data of what the surveys can, and cannot, provide. The author argues that the key use of these surveys is providing insights into population-level distribution of one form of literacy,

namely a particular kind of text consumption in a developed society. He also points out the challenges regarding the use of the survey series for making international comparisons, for documenting change over time and for representing broad models of literacy. The tendency to use the survey findings for these uses is considered by the author as a misuse of the data, which leaves the potential of the IALS surveys to provide insights into the effectiveness and equity of different educational systems largely untapped.

Available at (open access): <https://doi.org/10.1007/s11159-013-9330-z>

Title:

Desjardins, R., & Warnke, A. (2012). *Ageing and skills: A review and analysis of skill gain and skill loss over the lifespan and over time*. OECD Education Working Papers No. 72. Paris: OECD Publishing. doi: 10.1787/5k9csvgw87ckh-en

Abstract:

The relationship between ageing and skills is becoming an important policy issue, not least in the context of population ageing. Data from the Programme for the International Assessment of Adult Competencies (PIAAC) will potentially add considerably to the understanding of the relationship between ageing and foundation skills. In particular, the fact that data from the 1994-1998 International Adult Literacy Survey (IALS) and the 2003-2007 Adult Literacy and Lifeskills Survey (ALL) will be linked with PIAAC offers a unique opportunity to examine trends over time at the cohort level for a wide range of countries. Specifically, repeated measures will enable an analysis of whether there is skill gain and skill loss over the lifespan of cohorts and overtime between cohorts. This is especially important because age-skill profiles observed on the basis of a single cross-section are difficult to interpret. With this as a backdrop, this paper has sought to provide an overview of what is known about age-skill profiles and to conduct an analysis that demonstrates how trend data based on repeated cross-sectional observations of direct measures of skill at the cohort level can be used to estimate skill gain and skill loss over the lifespan and over time.

Available at (open access): <https://doi.org/10.1787/5k9csvgw87ckh-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2012). *Literacy, numeracy and problem solving in technology-rich environments: Framework for the OECD Survey of Adult Skills*. OECD Publishing Paris: OECD. doi: 10.1787/9789264128859-en

Abstract:

A basic level of literacy and numeracy is essential for full participation in modern societies. While very few people in most of the advanced countries could be regarded as illiterate or innumerate, recent studies have shown that there are, in fact, significant numbers of people with poor skills, and that low levels of skills are associated with lower wages and greater chances of unemployment and disengagement from the labour market. At the same time, technological changes, particularly the increasing presence of information and communication technologies in all areas of life, have led to a growing demand for higher-level cognitive skills that involve understanding, interpreting, analysing and communicating complex information. In this context, policy makers need the most comprehensive and up-to-date information if they want to ensure that the supply of skills in the labour force matches labour-market demand. The Programme for the International Assessment of Adult Competencies (PIAAC), an international assessment of adult skills managed by the OECD, will be central in providing that information. Implemented by 25 countries in Europe, the Americas and Asia, PIAAC is compiling one of the richest sources of data regarding the skills that adults use in their work, home and communities, and related information, including family background, education, employment,

income, civic participation and health. Results from the data, which are being collected from August 2011 to March 2012, will be Available at the end of 2013. This report maps the development of the Programme, from determining what should be measured, to defining the meaning of PIAAC's three core domains, "literacy", "numeracy" and "problem solving in technology-rich environments", to designing assessment tasks and determining how those tasks will be interpreted. It summarises the draft frameworks, developed by dedicated experts, for each of the assessment domains, and includes examples of the items and stimuli used to measure proficiency in the three domains. In essence, it provides an overview and a look at the underpinnings of PIAAC.

Available at (open access): <https://doi.org/10.1787/9789264128859-en>

2.6 Publications in 2013

Title:

Allen, J., Levels, M., & Velden, R. (2013). *Skill mismatch and use in developed countries: Evidence from the PIAAC study*. ROA Research Memorandum No. 2013/17. Maastricht: Maastricht University, Research Centre for Education and the Labour Market (ROA). Retrieved October 27, 2017, from <https://cris.maastrichtuniversity.nl/portal/files/1544094/content>

Abstract:

In this paper we develop and test a new set of measures of skill mismatches, based on data on skill levels and skill use in the domains of literacy and numeracy from the PIAAC project. The measures we develop represent the extent of skill use relative to ones own skill level. We test the measures by examining their relation to a number of labour market outcomes. We subsequently examine how mismatches are distributed across and within a large number of countries, and use our results to reflect on possible causes and consequences of mismatches. We find that, in general, higher skill utilization is always beneficial in terms of productivity and job satisfaction, and that overutilization of skills therefore points more towards a fuller use of the available human capital, rather than to a serious skill shortage. We find an asymmetry in returns between literacy and numeracy skills although numeracy skill level appears to pay higher dividends than literacy skill level, shifts in skill utilization within skill levels have greater consequences for literacy than for numeracy. The distribution of mismatches across and within countries is broadly consistent with the expectation that skills will be used more fully under competitive market conditions with few institutional or organizational barriers. Finally, skill mismatches are only quite weakly related to educational mismatches, reflecting the heterogeneity in skill supply and demand that cross-cuts the dividing lines set by formally defined qualification levels and job titles.

Available at (open access): <https://cris.maastrichtuniversity.nl/portal/files/1544094/content>

Title:

Central Statistics Office (2013). *PIAAC 2012. Survey results for Ireland from the OECD's Programme for the International Assessment of Adult Competences*. Dublin: Stationery Office. Retrieved October 27, 2017, from <http://www.oecd.org/skills/piaac/Ireland.pdf>

Abstract:

This report presents the results for Ireland of the OECD's Survey of Adult Skills, also known as the Programme for the International Assessment of Adult Competencies or PIAAC. The survey was carried out in Ireland between August 2011 and March 2012 by the Central Statistics Office on behalf of the Department of Education and Skills.

Available at (open access): <http://www.oecd.org/skills/piaac/Ireland.pdf>

Title:

Friebe, J., Gebrande, J., & Schmidt-Hertha, B. (2013). What research will show us and what we need to understand about Competencies in Later Life. *Adult Education and Development*, 80, 86-90.

Abstract:

The International PIAAC study has collected data on competencies of adults in three domains in 25 countries, in many of them for the first time ever. The article provides an overview of central terms, main aims and the methodological approach of this OECD study. It also discusses its potentials and limitations. One limitation is the focus on the labour force, excluding adults older than 65 years, a fast growing part of many populations in times of demographic change. To remedy this limitation, an extensional study in Germany was carried out with 1339 adults in the age group 66–80, using the PIAAC instruments and complementing them with additional qualitative inquiries.

Available at (open access): <http://www.die-bonn.de/id/11103>

Title:

Goodman, M., Finnegan, R., Mohadjer, L., Krenzke, T., & Hogan, J. (2013). *Literacy, numeracy, and problem solving in technology-rich environments among US adults: Results from the program for the international assessment of adult competencies 2012: first look*. [NCES 2014-008]. Washington, DC: National Center for Education Statistics. Retrieved October 27, 2017, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014008>

Abstract:

This report presents results of the Program for the International Assessment of Adult Competencies (PIAAC). Results are reported for a representative sample of adults in the United States age 16 to 65 and are compared to an international average of adults in countries/regions that participated in the PIAAC 2012 assessment. The report presents average score results for three separate scales: literacy, numeracy, and problem solving in technology-rich environments and percentages of adults performing at different proficiency levels for each scale. Literacy and numeracy results are reported at Below Level 1, Level 1, Level 2, Level 3, and Level 4/5; problem solving in technology-rich environments is reported at Below Level 1, Level 1, Level 2, and Level 3. The report includes results for groups of adults as defined by various demographic characteristics (e.g. gender, age, race/ethnicity, and level of educational attainment) and level of skill use in and outside of work. Overall results in literacy and numeracy are compared to results from previous international assessments.

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014008>

Title:

Klaukien, A., Ackermann, D., Helmschrott, S., Rammstedt, B., Solga, H., & Wößmann, L. (2013). Grundlegende Kompetenzen auf dem Arbeitsmarkt [Basic skills in the labour market]. In B. Rammstedt (Eds.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich. Ergebnisse von PIAAC 2012 [Adults basic skills in international comparison: Results of PIAAC 2012]* (pp. 127-166). Münster: Waxmann.

Abstract:

The Programme for the International Assessment of Adult Competencies, PIAAC, aims at producing high-quality data. This chapter summarizes the core features of the international and national design under which the study was conducted in order to reach this goal. The international PIAAC consortium elaborated a set of comprehensive standards and guidelines and by that provided a framework of best practices in survey methodology. Participating countries had to adhere to these standards and were supposed to implement them given their national circumstances. In the first sections

of this chapter the survey instruments, the survey design as well as scaling and the estimation of plausible values at the international level are briefly described. Subsequently, information is provided on sampling and data collection in Germany. A total of 5 465 individuals participated in PIAAC Germany, which corresponds to a response rate of 55% that exceeds the international minimum response rate of 50%. Survey weighting was implemented to minimize the total survey error and the potential for bias. Nonresponse bias analyses were conducted to further ensure quality assurance.

Available at: <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-360687>

Title:

Maehler, D. B., Massing, N., Helmschrott, S., Rammstedt, B., Staudinger, U. M., & Wolf, C. (2013). Grundlegende Kompetenzen in verschiedenen Bevölkerungsgruppen [Basic skills of different population groups]. In B. Rammstedt (Eds.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich. Ergebnisse von PIAAC 2012* [Adults basic skills in international comparison: Results of PIAAC 2012] (pp. 77-126). Münster: Waxmann.

Abstract:

This chapter of the German PIAAC report focuses on differences in literacy and numeracy between population subgroups across countries. Thereby skill differences related to birth cohorts, gender, educational attainment as well as migration background were analyzed. The results show that in all participating countries, the skills are for instance highly correlated with formal education. In most countries, there are considerable differences in proficiency between people with and without an immigrant background or between people from different birth cohorts. However, all of these differences decrease substantially when the influence of other factors – such as educational attainment in the case of birth cohorts – is taken into account.

Available at (open access): <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-360687>

Title:

Martin, S., Zabal, A., Helmschrott, S., Ackermann, D., Massing, N., Rammstedt, B., & Häder, S. (2013). Qualitätssicherung, Design und Datenqualität [Quality assurance, design and data quality]. In B. Rammstedt (Eds.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich - Ergebnisse von PIAAC 2012* (pp. 167-183). Münster: Waxmann.

Abstract:

The Programme for the International Assessment of Adult Competencies, PIAAC, aims at producing high-quality data. This chapter summarizes the core features of the international and national design under which the study was conducted in order to reach this goal. The international PIAAC consortium elaborated a set of comprehensive standards and guidelines and by that provided a framework of best practices in survey methodology. Participating countries had to adhere to these standards and were supposed to implement them given their national circumstances. In the first sections of this chapter the survey instruments, the survey design as well as scaling and the estimation of plausible values at the international level are briefly described. Subsequently, information is provided on sampling and data collection in Germany. A total of 5 465 individuals participated in PIAAC Germany, which corresponds to a response rate of 55% that exceeds the international minimum response rate of 50%. Survey weighting was implemented to minimize the total survey error and the potential for bias. Nonresponse bias analyses were conducted to further ensure quality assurance.

Available at (open access): <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-360687>

Title:

Massing, N., Ackermann, D., Martin, S., Zabal, A., & Rammstedt, B. (2013). Controlling interviewers' work in PIAAC - The Programme for the International Assessment of Adult Competencies. In P. Winker, N. Menold, & R. Porst (Eds.), *Interviewers' deviations in surveys. Impact, reasons, detection and prevention* (pp. 117-130). Frankfurt am Main: Peter Lang. doi: 10.3726/978-3-653-02596-5

Abstract:

PIAAC is an international comparative survey initiated by the OECD (Organization for Economic Cooperation and Development). Its goal is the assessment of adult skills and competencies to develop an empirically-based foundation for political interventions. PIAAC is a cross-sectional survey that is being conducted in 25 countries from all over the world. To ensure that the survey data is comparable across countries, the International Consortium of PIAAC has defined specific and extensive quality standards. Each participating country had to comply with these standards and adapt them to the national context as quality control mechanisms. In this chapter, the international quality standards related to interviewer control and their implementation in Germany will be presented. In addition, we will describe the interviewer trainings conducted in Germany and discuss the potential of such trainings in preventing interview falsification.

Available at: <http://dx.doi.org/10.3726/978-3-653-02596-5>

Title:

Organisation for Economic Cooperation and Development (OECD) (2013). *Time for the U.S. to reskill? What the Survey of Adult Skills says*. Paris: OECD Publishing. doi: 10.1787/9789264204904-en

Abstract:

The 'basic skills' of literacy and numeracy are among the most fundamental attributes of human beings and their civilization, lying at the root of our capacity to communicate and live and work together, to develop and share knowledge, science and culture. Their contribution to workforce skills have increasingly been recognized as critical to economic success, while evidence on gaps in adult basic skills and the link with economic and social outcomes has also been growing, both at national and international level (e.g. International Survey of Adult Skills of 1994-98 and Adult Literacy and Life Skills Survey of 2003-2007). Most tellingly, there has been a belated realization that despite universal basic education in advanced countries, some adults have slipped through the net, leaving them with very weak literacy and numeracy. All of these factors underline the importance of the OECD's new international Survey of Adult Skills. This report on skills in the US draws out the policy implications of the Survey for the US, while also making use of some additional data collected for the Survey on the US alone. The study does not directly evaluate relevant US policies and programs – such as schooling and adult education. Instead it identifies in the results of the Survey some key lessons about the strategic objectives and directions which should form a frame for policy development in the US, including policy on adult learning and schooling.

Available at (open access): <http://dx.doi.org/10.1787/9789264204904-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2013). *OECD skills outlook 2013: First results from the Survey of Adult Skills*. Paris: OECD Economics Department. doi: 10.1787/9789264204256-en

Abstract:

This first OECD Skills Outlook presents the initial results of the Survey of Adult Skills (PIAAC), which evaluates the skills of adults in 22 OECD member countries and two partner countries. The PIAAC

survey was designed to provide insights into the availability of some key skills and how they are used at work and at home through the direct assessment of key information processing skills: literacy, numeracy and problem-solving in technology-rich environments. The book examines the social and economic context, the supply of key information processing skills, who has these skills at what level, the supply of and demand for these skills in the labour market, the acquisition and maintenance of skills over a lifetime, and how proficiency in these skills translates into better economic and social outcomes.

Available at (open access): <http://dx.doi.org/10.1787/9789264204256-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2013). *The Survey of Adult Skills - Reader's companion*. Paris: OECD Publishing. doi: 10.1787/9789264204027-en

Abstract:

This reader's companion for the Survey of Adult Skills explains what the survey measures and the methodology behind the measurements, provides content of the background questionnaires, examines the relationship between this survey and other skills surveys, as well the issues of 'key competencies' and measurements of human capital.

Available at (open access): <http://dx.doi.org/10.1787/9789264204027-en>

Title:

Rammstedt, B. (2013). *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich: Ergebnisse von PIAAC 2012* [Adults basic skills in international comparison: Results of PIAAC 2012]. Münster: Waxmann.

Abstract:

PIAAC, the OECD Programme for the International Assessment of Adult Competencies, assesses how well prepared adults in the various countries are for the challenges of the knowledge society. To this end, key basic skills of the population in over 20 countries worldwide were measured and compared. The skills measured were literacy, numeracy, and problem solving in technology-rich environments. PIAAC furnishes information on the extent to which the adult populations differ in terms of these basic skills and on the factors that determine their acquisition and maintenance. In addition, it assesses the impact of these skills on social, and especially on economic, participation. This allows conclusions to be drawn about the quality of education systems and the extent to which the basic skills are used on the labor market. The results thus provide policy makers and educational practitioners with an empirically sound basis on which to identify need for change and develop appropriate support measures. This book presents and discusses in international comparison the proficiency scores that adults in Germany achieved in the three basic skills and the extent to which proficiency in these skills differs across educational groups and generations, for example. An examination of the associations between the basic skills and key labor market characteristics (e.g., participation in and the demands of the labor market) and between the basic skills and income rounds of the report. In Germany, PIAAC was commissioned by the Federal Ministry for Education and Research (BMBF) with the participation of the Federal Ministry of Labor and Social Affairs (BMAS). GESIS – Leibniz Institute for the Social Sciences was responsible for conducting the study. [Translated on behalf of editors]

Available at (open access): <http://nbn-resolving.de/urn:nbn:de:0168-ss0ar-360687>

Title:

Rammstedt, B. (2013). PIAAC 2012: Die wichtigsten Ergebnisse im Überblick [Overview of the main results]. In B. Rammstedt (Eds.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich – Ergebnisse von PIAAC 2012 [Adults basic skills in international comparison: Results of PIAAC 2012]* (pp. 11-20). Münster: Waxmann.

Abstract:

Overview of the main results of PIAAC in Germany. [Note from editors]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ss0ar-360687>

Title:

Rammstedt, B., Martin, S., Massing, N., Schleicher, A., Wiederhold, S., Wößmann, u., & Quennet-Thielen, C. (2013). Was lehrt uns PIAAC? Erste Befunde des "Erwachsenen-PISA" [What can we learn from PIAAC? Initial findings of "PISA for Adults"]. *ifo Schnelldienst*, 66(22), 3-25. Retrieved February 28, 2020, from <http://www.cesifo-group.de/de/w/TPwAK33T>

Abstract:

This contribution presents the initial results on the status and interpretation of adults' basic competences from the perspective of selected individuals who have played a leading role in the development and evaluation of PIAAC. [Note from editors]

Available at (open access): <http://www.cesifo-group.de/de/w/TPwAK33T>

Title:

Rammstedt, B., Ackermann, D., Helmschrott, S., Klaukien, A., Maehler, D. B., Martin, S., Massing, N., & Zabal, A. (2013). *PIAAC 2012: Overview of the main results*. Münster: Waxmann.

Abstract:

Overview of the main results of PIAAC in Germany. [Note from editors]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ss0ar-59173-6>

Title:

Rammstedt, B., & Maehler, D. B. (2013). Lehren ziehen: PIAAC – eine internationale Studie zur Untersuchung von Alltagsfertigkeiten Erwachsener [Lessons learned: PIAAC - an international study to investigate everyday adult skills]. *dis.kurs*, 20(4), 4-7.

Abstract:

The contribution "Lessons learned: PIAAC - an international study to investigate everyday adult skills" describes the literacy results of PIAAC for all participating countries and focuses on adult skills by education levels in Germany.

Available at: <https://www.dvv-vhs.de/service/magazin-diskurs/>

Title:

Rammstedt, B., & Zabal, A. (2013). Das Programme for the International Assessment of Adult Competencies (PIAAC). In B. Rammstedt (Eds.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich – Ergebnisse von PIAAC 2012 [Adults basic skills in international comparison: Results of PIAAC 2012]* (pp. 21-29). Münster: Waxmann.

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) is an initiative of the Organisation for Economic Co-operation and Development (OECD). This introductory chapter provides an overview of central features and innovative aspects of the first round of PIAAC in which 24 countries – including Germany – participated. It thus sets the stage for the reporting of the PIAAC results from a German national perspective in the subsequent chapters of the book. The key adult competences literacy, numeracy, and problem solving in technology-rich environments were measured using state of the art design and methodology, with exacting standards and guidelines to achieve comparability between countries and data sets with the highest possible quality. The organizational structure of PIAAC at an international and national level is also described.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-360687>

Title:

Schmidt-Hertha, B., & Friebe, J. (2013). Activities and barriers to education for elderly people. *Journal of Contemporary Educational Studies*, 64(1), 10-26.

Abstract:

Adult education at higher age can play an important role in the preservation of autonomy and in the encouragement of social participation in later life. Hence, from both an individual and societal perspective, it is important to promote the educational activities of the elderly. Active elderly people with positive perceptions of self and ageing maintain their mental and physical fitness levels, participate in community associations and politics, and engage in intergenerational dialogue. Data from a recent study clearly show the interrelationship of individual self-perception and the perception of ageing and point to the relevance of both concepts for learning and participating in educational activities. As people age, they participate less and less in further education. This is due not only to individual learning habits, but also to the lack of learning opportunities in different regions and residential areas. In districts that are primarily comprised of people with low standards of living and low education and/or migration backgrounds, there is a lack of sufficient educational structures, which hinders participation in adult education programs. Qualitative interviews with older adults in different districts show that social environment, social embeddedness, and individual perspectives of one's own learning abilities affect learning possibilities and learning readiness.

Available at (open access): <https://pdfs.semanticscholar.org/e98a/69bdafa9b6cebce13ba5bbe4622c7622d009.pdf>

Title:

Statistics Austria (2013). *Schlüsselkompetenzen von Erwachsenen. Erste Ergebnisse der PIAAC-Erhebung 2011/2012 [Key adult skills. First results of the PIAAC survey 2011/2012]*. Wien: Statistik Austria.

Abstract:

This publication shows how Austria's population is positioned in terms of proficiency in key skills compared to the other participating countries. A further focus is on the national distribution of the key skills by sociodemographic characteristics. In conclusion, the publication addresses the social and economic impact of these key skills that can be derived from the data. [Source: From the preface; translated on behalf of editors].

Available at (open access): http://www.oecd.org/skills/piaac/Austria_piaac-erhebung_2011_12.pdf

Title:

Statistics Canada (2013). *Skills in Canada: First results from the Programme for the International Assessment of Adult Competencies (PIAAC)*. Ottawa: Minister of Industry. Retrieved October 27, 2017, from <http://www.statcan.gc.ca/pub/89-555-x/89-555-x2013001-eng.pdf>

Abstract:

This report presents the first results of the Programme for the International Assessment of Adult Competencies (PIAAC), an initiative of OECD. PIAAC provides internationally comparable measures of three skills that are essential to processing information: literacy, numeracy, and problem solving in technology-rich environments (referred to as PS-TRE). The report provides information about the literacy, numeracy, and PS-TRE skills for the Canadian population aged 16 to 65. It provides results for Canada as a whole, as well as for all the provinces and territories. In addition, it looks at the relationships between skills proficiency and a range of socio-demographic characteristics (e.g. age, gender, level of education) across the entire Canadian population. It also reports on first results on the literacy, numeracy, and PS-TRE skills of Aboriginal populations, immigrants, and official-language minority communities.

Available at (open access): <http://www.statcan.gc.ca/pub/89-555-x/89-555-x2013001-eng.pdf>

Title:

Zabal, A., Martin, S., Klaukien, A., Rammstedt, B., Baumert, J., & Klieme, E. (2013). Grundlegende Kompetenzen der erwachsenen Bevölkerung in Deutschland im internationalen Vergleich [Adults basic skills in Germany and in international comparison]. In B. Rammstedt (Eds.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich – Ergebnisse von PIAAC 2012 [Adults basic skills in international comparison: Results of PIAAC 2012]* (pp. 31-76). Münster: Waxmann.

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) assesses three key competence domains: literacy, numeracy, and problem-solving in technology new environments. This chapter presents the main results for countries participating in the first round of PIAAC separately for each domain with a focus on the German results. First, the frameworks developed by international expert groups for each of the competence domains are introduced; these frameworks define the central constructs, the cognitive processes involved, and provide a rationale for the operationalizations. The measurement instruments are illustrated (including sample items), and an explanation and description of the resulting proficiency scales (a separate scale for each domain) is provided. This includes score-point ranges and descriptions of each proficiency level. Second, the distribution of the adult population (between 15 and 65 years of age) over the different proficiency levels and the country means and variation of proficiency scores are reported. Results for German adult population are compared to those of the other participating countries and the OECD average. To conclude, the relationship between PIAAC and previous international surveys of adult competences and PISA is addressed.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-360687>

2.7 Publications in 2014

Title:

Ackermann-Piek, D., & Massing, N. (2014). Interviewer behavior and interviewer characteristics in PIAAC Germany. *methods, data, analyses*, 8(2), 199-222. doi: 10.12758/mda.2014.008

Abstract:

Interviewers are the first in line when it comes to data collection. Therefore, it is important that they perform their tasks diligently, so that the data they collect are comparable and that errors are minimized. This paper analyzes how interviewers conducted interviews for the Programme for the International Assessment of Adult Competencies (PIAAC) and which kinds of mistakes they made. We approached these questions with audio interview recordings collected during the fieldwork of PIAAC in Germany (carried out in 2011/ 2012), as well as with an interviewer survey conducted with the German PIAAC interviewers. First, we introduce the data and the coding scheme used to evaluate interviewers' behavior with audio recordings. Subsequently, we describe the interviewers' actual behavior with regard to standardized interviewing techniques and investigate whether interviewer characteristics are associated with data quality. Our results demonstrate that interviewers do deviate from the expected behavior in all the aspects we examined. However, we identified only few associations with interviewers' background characteristics.

Available at (open access): <https://doi.org/10.12758/mda.2014.008>

Title:

Autorengruppe Bildungsberichterstattung (2014). *Bildung in Deutschland 2014. Ein indikatorengestützter Bericht mit einer Analyse zur Bildung von Menschen mit Behinderungen [Education in Germany 2014. An indicator-based report including an analysis of the situation of people with special educational needs and disabilities]*. Bielefeld: W. Bertelsmann Verlag. doi: 10.3278/6001820dw

Abstract:

Like its predecessors, the National Education Report 2014 documents the state of the education system across all its different areas, showing its development over the past years and stating the current challenges. The 2014 report has a focus on the education of people with disabilities and looks at the fundamentals, facts, and backgrounds of the current debate in society and education policy. Before examining the results produced with this in-depth analysis, the report summarizes the key findings concerning the overarching developments and constellations of the education system in terms of the following questions: What changes have taken place in the fundamental societal conditions for education in Germany? What developments can be observed regarding the sources provided for education (staff, materials, equipment, financial)? What trends are discernible in the area of education processes? What statements can be made regarding education results and outcomes? The data-based format of the national education report does not lend itself directly to deriving recommendations for action for political or educational measures. However, the findings can help to recognize where action is needed for certain groups and for certain areas of the education system. In the light of this, the key challenges identified by the authors are described at the end of this section.

Available at (open access): <http://dx.doi.org/10.3278/6001820dw>

Title:

Bonfanti, S., & Xenogiani, T. (2014). Migrants' skills: Use, mismatch and labour market outcomes – a first exploration of the International Survey of Adult Skills (PIAAC). In Organisation for Economic Cooperation and Development (OECD) (Eds.), *Matching economic migration with labour market needs* (pp. 249-312). Paris: OECD Publishing. doi: 10.1787/9789264216501-11-en

Abstract:

The purpose of this chapter is to explore the newly available Survey of Adult Skills (PIAAC) to provide a detailed picture of migrants' literacy and numeracy skills and how they compare with those of natives, and how they are utilised and valued in the labour market. The chapter provides a

description of the Survey of Adult Skills and the differences between migrants and natives in terms of their literacy and numeracy proficiency levels. A discussion follows on the extent to which language and foreign qualifications explain part of such differences. Moreover, the chapter analyses the labour market outcomes (employment, incidence of overqualification and wages) of migrants relative to natives and discusses how these differ across migrant groups as well as the role played by literacy proficiency and other relevant factors. The analysis of wages pays special attention to the returns to schooling, literacy and numeracy proficiency as well to professional experience, distinguishing between the experience acquired abroad and that acquired in the host country. The chapter concludes by summarising the main findings and their relevance for policy and makes proposals for future work.

Available at: <http://dx.doi.org/10.1787/9789264216501-11-en>

Title:

Brödel, R. (2014). PIAAC und die Grundbildungsarbeit - Entwicklung und Anerkennung professioneller Grundbildung [PIAAC and basic skills education – Development and recognition of professional basic skills education]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 30-32. doi: 10.3278/DIE1403W030

Abstract:

Based on the assumption that the findings of the PIAAC study may provide an impetus for the development of needs-based support opportunities, the author identifies where room for improvement exists in the area of basic skills education for adults. At the same time, he warns against substantively narrowing adult education in favor of skills- and outcome-oriented formats. [Translated on behalf of editors]

Available at (open access): <https://doi.org/10.3278/DIE1403W030>

Title:

Cabrales, A., Dolado, J., & Mora, R. (2014). *Dual labour markets and (lack of) on-the-job training: PIAAC evidence from Spain and other EU countries*. CEPR Discussion Paper No. DP10246. Retrieved January 25, 2018, from <https://ssrn.com/abstract=2526359>

Abstract:

Using the Spanish micro data from the Programme for the International Assessment of Adult Competencies (PIAAC), we first document how the excessive gap in employment protection between indefinite and temporary workers leads to large differentials in on-the-job training (OTJ) against the latter. Next, we find that that the lower specific training received by temporary workers is correlated with lower literacy and numeracy scores achieved in the PIAAC study. Finally, we provide further PIAAC cross-country evidence showing that OJT gaps are quite lower in those European labour markets where dualism is less entrenched than in those where it is more extended.

Available at: <https://ssrn.com/abstract=2526359>

Title:

Cingano, F. (2014). *Trends in income inequality and its impact on economic growth*. OECD Social, Employment and Migration Working Papers No. 163. Paris: OECD Publishing. doi: 10.1787/5jxrxjncw xv6j-en

Abstract:

In most OECD countries, the gap between rich and poor is at its highest level since 30 years. Today,

the richest 10 per cent of the population in the OECD area earn 9.5 times the income of the poorest 10 per cent; in the 1980s this ratio stood at 7:1 and has been rising continuously ever since. However, the rise in overall income inequality is not (only) about surging top income shares: often, incomes at the bottom grew much slower during the prosperous years and fell during downturns, putting relative (and in some countries, absolute) income poverty on the radar of policy concerns. This paper explores whether such developments may have an impact on economic performance. Drawing on harmonised data covering the OECD countries over the past 30 years, the econometric analysis suggests that income inequality has a negative and statistically significant impact on subsequent growth. In particular, what matters most is the gap between low income households and the rest of the population. In contrast, no evidence is found that those with high incomes pulling away from the rest of the population harms growth. The paper also evaluates the “human capital accumulation theory” finding evidence for human capital as a channel through which inequality may affect growth. Analysis based on micro data from the Adult Skills Survey (PIAAC) shows that increased income disparities depress skills development among individuals with poorer parental education background, both in terms of the quantity of education attained (e.g. years of schooling), and in terms of its quality (i.e. skill proficiency). Educational outcomes of individuals from richer backgrounds, however, are not affected by inequality. It follows that policies to reduce income inequalities should not only be pursued to improve social outcomes but also to sustain long-term growth. Redistribution policies via taxes and transfers are a key tool to ensure the benefits of growth are more broadly distributed and the results suggest they need not be expected to undermine growth. But it is also important to promote equality of opportunity in access to and quality of education. This implies a focus on families with children and youths – as this is when decisions about human capital accumulation are made – promoting employment for disadvantaged groups through active labour market policies, childcare supports and in-work benefits.

Available at (open access): <https://doi.org/10.1787/5jxrjncwv6j-en>

Title:

Dinis da Costa, P., Rodrigues, M., Vera-Toscano, E., & Weber, A. (2014). *Education, adult skills and social outcomes: Empirical evidence from the survey on adult skills (PIAAC 2013)*. Luxembourg: Publications Office of the European Union. doi: 10.2788/66192

Abstract:

It has widely been acknowledged that education is a major source of economic prosperity and social well-being. Education is not only an important factor in the productivity and innovative capacity of an economy, but is also a prerequisite for social and cultural changes in patterns of consumption and leisure behaviour to achieve a sustainable lifestyle. It puts people in a position to take well-informed decisions about the future, to assume responsibility for these decisions and to judge how their personal behaviour will affect future generations. Thus, we are then well aware that education gives access to knowledge that helps individuals and society to be more stable and resilient in times of change. These social returns can take the form of “market outcomes” such as productivity or earnings and “non-market outcomes” such as health, civic participation and more generally social capital. Deeper understanding of the contribution of education to the provision of these social outcomes is a desirable goal. While the educational system is the primary agent for the acquisition of such knowledge, learning may also take place in the family, the workplace and among our social acquaintances all through-out our live. Nowadays, constant changes taking place in society encourage individuals that besides grasping occupation-specific skills they must also stock some other various information processing skills to help them cope with this rapid changing environment, especially in the labor market. The Survey of Adult Skills (PIAAC) was designed to provide information on some these key skills in society. It directly measures proficiency in several information-processing skills –namely literacy, numeracy and problem solving in technology-rich environment.

Simultaneously, it provides insights on key social outcomes such as the level of trust in others, participation in associative, religious, political or charity activities (volunteering), political efficacy or the sense of influence on the political process, and self assessed health status. The main findings on the relationship between education in its different forms (years of attainment, skills and adult life-long learning) and the different social outcomes are presented in this report.

Available at (open access): <http://dx.doi.org/10.2788/66192>

Title:

Dobischat, R., & Schnurgatz, R. (2014). PIAAC und die berufliche Ausbildung - Befunde zur Ausbildungsreife junger Erwachsener [PIAAC and vocational education and training – Findings on the apprenticeship-entry maturity of young adults]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 47-49. doi: 10.3278/DIE1403W

Abstract:

Based on the PIAAC results, the authors attest to the international competitiveness of the German vocational education and training system and refute the allegation that trainees in Germany lack apprenticeship-entry maturity. At the same time, they criticize companies' recruitment practices, which, in their view, are characterized by increasing academization and the exclusion of certain applicant groups. [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Eckert, T. (2014). PIAAC kritisch hinterfragt – Eine Auseinandersetzung mit PIAAC's Zielen [Critically questioning PIAAC – An analysis of PIAAC's objectives]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 44-46. doi: <http://dx.doi.org/10.3278/DIE1403W>

Abstract:

This contribution critically analyzes PIAAC and its objectives. It examines the extent to which PIAAC points to unused skill potential and a need for improvement in the areas of skill acquisition and transfer. The theoretical and methodological foundations of the PIAAC study are also analyzed, revealing problems and deficits for which the author proposes solutions. [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Erpenbeck, J. (2014). Stichwort "Kompetenzen". *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 20-21. doi: 10.3278/DIE1403W020

Abstract:

Contribution deals with concept of competence. [Note from editors]

Available at (open access): <https://doi.org/10.3278/DIE1403W020>

Title:

Europäische Kommission. Generaldirektion Beschäftigung Soziales und Integration (2014). *EU employment and social situation*. Quarterly review Luxemburg: Europäische Kommission. Amt für Veröffentlichungen. doi: 10.2767/39939

Abstract:

Developing relevant skills, activating the existing skills supply and using skills effectively are crucial for making economies more productive and internationally competitive and for stimulating sustainable, inclusive economic growth. International competitiveness country rankings show that the most competitive countries tend to have a better educated and more skilled population/workforce than less competitive ones. This supplement will focus [i] on the impact of skills beyond those acquired through initial education on individual's outcomes in the labour market and [ii] on the impact of work history on person's level of skill. The latter will be extensively analysed in the forthcoming (2014) *Employment and Social Developments in Europe 2014*. Direct ways of measuring skills, like the OECD's Programme for the International Assessment of Adult Competencies (PIAAC), also known as the Survey of Adult Skills, complement the indirect ways of doing so based on educational attainment. PIAAC provides comparable and valuable information on skills which was not previously available. This information sheds some light on the differences in human capital availability across the EU and its main partners. Although an important one, education is not the only way of acquiring skills. They are also acquired by working and doing other activities throughout the course of one's life. This article gives an overview of the availability of human capital in the EU from the skills perspective by providing information about skills proficiency across various socio-demographic groups. Skills proficiency, beyond the skills acquired through initial education, is shown to be positively and independently associated with the individual's probability of participating in the labour market, being employed and having higher wages and better social outcomes. An individual who had 46 more score points than another in literacy proficiency, was on average 20% more likely to be active and 10% more likely to be employed and could expect on average a 7% increase in his hourly wage. Improving the skills proficiency of poorly skilled groups should allow them obtain some of those benefits.

Available at (open access): <https://doi.org/10.2767/39939>

Title:

Evans, J. (2014). New PIAAC results: Care is needed in reading reports of international surveys. *Adults Learning Mathematics*, 9(1), 37-52.

Abstract:

Results from the Survey of Adult Skills, also known as PIAAC (Programme for the International Assessment of Adult Competencies), were recently made available for 24 participating countries. PIAAC involves several developments in relation to the earlier international "adult skills" surveys (IALS in the 1990s and ALL in the 2000s), notably the use of computer administration of the survey. In this paper, I focus on understanding these studies, by considering conceptual issues, methodological validity of research design and execution, and presentation of results. I consider several of the sample items for numeracy published by OECD (2012). And I discuss illustrative results from Australia made available in February 2013, by the Australian Bureau of Statistics. The paper shows when and how to be sceptical when reading international survey reports. It also opens up questions concerning the relevance of the results, and the other types of research that may be needed, in different national and local contexts.

Available at (open access): <https://files.eric.ed.gov/fulltext/EJ1068201.pdf>

Title:

Flake, R., Malin, L., Middendorf, L., & Seyda, S. (2014). *Qualifizierung von An- und Ungelernten. Eine empirische Bestandsaufnahme der Lebenssituation und Potenziale*. [Qualification of semi-skilled and unskilled workers] IW-Analysen No. 100. Cologne: The German Economic Institute (IW).

Abstract:

This analysis investigates the situation of Germany's semi- and unskilled workers – particularly in the labour market. All indicators examined (gainful employment, income, further education, position in the company) show them to be worse off than those with a vocational or further training qualification or a university degree. When the semi- and unskilled succeed in entering the labour market – which the young do less often than older workers – the majority find themselves in a strongly segmented market which requires no vocational or company-specific skills, provides no opportunity for enhancing competences by training on the job and seldom offers the chance of further education. In the short term the key to improving the status of the semi- and unskilled is to give them a second chance to acquire additional skills. It makes sense, both from the employee's and employer's point of view, to do this in the form of modular certificates with the option of acquiring a full vocational qualification. In the long run, reforms to pre-school, primary and secondary education will, together with better career advice, reduce the numbers of those dropping out of school and vocational training.

Available at (open access): <https://www.econstor.eu/bitstream/10419/181861/1/iw-analysen-bd100.pdf>

Title:

Friebe, J., Knauber, C., Weiß, C., & Setzer, B. (2014). Alltagskompetenzen und Lernprozesse im höheren Lebensalter. Ergebnisse und Perspektiven der PIAAC-Erweiterungsstudie „Competencies in Later Life“ [Everyday competencies and learning processes in old age. Results and perspectives of the PIAAC extension study "Competencies in later life"]. *Zeitschrift für Gerontologie und Geriatrie*, 47(7), 563-569. doi: 10.1007/s00391-014-0804-9

Abstract:

This article deals with the study “Competencies in later life” (CiLL), a parallel study to the German program for the international assessment of adult competencies (PIAAC) survey which assesses the level and distribution of skills of the adult population in a representative study. Assuming the growing importance of learning and education in a society challenged by demographic changes, the first section of the paper outlines the qualitative research of learning activities of focus groups in the daily life of elderly people. The second section of the paper presents the survey design and exemplary findings of the quantitative CiLL study. Initial results show that basic skills of the elderly are highly influenced by personal and sociodemographic variables, particularly by educational background. The data available indicate that the participation of the elderly in adult education and the options available for competence development have to be increased.

Available at: <http://dx.doi.org/10.1007/s00391-014-0804-9>

Title:

Friebe, J., Schmidt-Hertha, B., & Tippelt, R. (2014). *Kompetenzen im höheren Lebensalter. Ergebnisse der Studie “Competencies in Later Life” (CiLL) [Competencies in old age. Results from “Competencies in Later Life”]*. Bielefeld: Bertelsmann. doi: 10.3278/85/0014w

Abstract:

The book present results from the "Competencies in Later Life" (CiLL) study. CiLL is a PIAAC supplement study that focus on the competences of 66- to 80-year-old adults in Germany. [Note from editors]

Available at (open access): <https://doi.org/10.3278/85/0014w>

Title:

Friebe, J., & Knauber, C. (2014). Kompetenz im höheren Lebensalter – Vorstellung erster Ergebnisse von CiLL [Competence in older age – Presentation of first results of CiLL]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 39-41. doi: 10.3278/DIE1403W

Abstract:

The contribution presents first results of "Competencies in Later Life" (CiLL), a German PIAAC supplement study. Using the same instruments and assessments that were applied in the PIAAC main study, CiLL measures proficiency in the domains of literacy, numeracy, and problem solving in technology-rich environments in persons aged between 66 and 80 years – an age group that was excluded from PIAAC. [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Gabler, S., Häder, S., & Kolb, J.-P. (2014). A simulation approach to estimate inclusion probabilities for PIAAC Germany. *methods, data, analyses*, 8(2), 267-280. doi: 10.12758/mda.2014.011

Abstract:

In PIAAC (Programme for the International Assessment of Adult Competencies) inclusion probabilities have to be known for every respondent at each sampling stage in all participating countries. However, in some cases it is not possible to calculate inclusion probabilities for a sample survey analytically - although the underlying design is probabilistic. In such cases, simulation studies can help to estimate inclusion probabilities and thus ensure that the necessary basis for the calculation of design weights is available. In this section, we present a Monte Carlo simulation using the German sample data. During the selection process for PIAAC Germany an error had occurred. Because of that, it was not possible to determine the inclusion probabilities analytically. Therefore a simulation study with 10,000 runs of the erroneous selection process was set up. As a result it was possible to compute the inclusion probabilities for the sample of PIAAC Germany.

Available at (open access): <https://doi.org/10.12758/mda.2014.011>

Title:

Gal, I., & Tout, D. (2014). *Comparison of PIAAC and PISA frameworks for numeracy and mathematical literacy*. Paris: OECD Publishing. doi: 10.1787/5jz3wl63cs6f-en

Abstract:

This paper describes key aspects of the frameworks for the assessment of adult numeracy and mathematical literacy in PIAAC and PISA, which are OECD two flagship programs for international comparative assessment of competencies. The paper examines commonalities and differences in how the constructs of adult numeracy and mathematical literacy were assessed in PIAAC and PISA, and sketches selected challenges associated with interpretation of results from these surveys.

Available at (open access): <http://dx.doi.org/10.1787/5jz3wl63cs6f-en>

Title:

Gebrande, J., & Setzer, J. (2014). Lesekompetenz [Literacy]. In J. Friebe, B. Schmidt-Hertha, & R. Tippelt (Eds.), *Kompetenzen im höheren Lebensalter. Ergebnisse der Studie "Competencies in Later Life" (CiLL)* (pp. 61-80). Bielefeld: Bertelsmann. doi: 10.3278/85/0014w

Abstract:

Contribution describes the literacy of older adults (more than 65 years), using data from the German follow-up study Competencies in Later Life (CiLL). [Note from editors]

Available at: <https://doi.org/10.3278/85/0014w>

Title:

Goglio, V., & Meroni, E. (2014). *Adult participation in lifelong learning: Technical briefing*. European Commission, Joint Research Centre, Institute for the Protection and Security of the Citizen Luxembourg: Publications Office of the European Union. doi: 10.2788/43117

Abstract:

This technical briefing deals with adult participation in lifelong learning. In particular, it focuses on the implications associated to the use of different statistical sources (LFS, AES/CVTS and PIAAC), characterized by different reference periods and different definitions of lifelong learning. The main objective of the technical briefing is to examine the impact of using a 12-month or 4-week reference period on access to and intensity of adult learning. But technical briefing also includes a review of the state of the art in the field of measurement of adult perception to lifelong learning, and some statistics about the variance according to different labour market status and age groups.

Available at (open access): <https://doi.org/10.2788/43117>

Title:

Goldhammer, F., Naumann, J., Stelter, A., Tóth, K., Rölke, H., & Klieme, E. (2014). The time on task effect in reading and problem solving is moderated by task difficulty and skill. *Journal of Educational Psychology*, 106(3), 608-626. doi: 10.1037/a0034716

Abstract:

Computer-based assessment can provide new insights into behavioral processes of task completion that cannot be uncovered by paper-based instruments. Time presents a major characteristic of the task completion process. Psychologically, time on task has 2 different interpretations, suggesting opposing associations with task outcome: Spending more time may be positively related to the outcome as the task is completed more carefully. However, the relation may be negative if working more fluently, and thus faster, reflects higher skill level. Using a dual processing theory framework, the present study argues that the validity of each assumption is dependent on the relative degree of controlled versus routine cognitive processing required by a task, as well as a person's acquired skill. A total of 1,020 persons ages 16 to 65 years participated in the German field test of the Programme for the International Assessment of Adult Competencies. Test takers completed computer-based reading and problem solving tasks. As revealed by linear mixed models, in problem solving, which required controlled processing, the time on task effect was positive and increased with task difficulty. In reading tasks, which required more routine processing, the time on task effect was negative and the more negative, the easier a task was. In problem solving, the positive time on task effect decreased with increasing skill level. In reading, the negative time on task effect increased with increasing skill level. These heterogeneous effects suggest that time on task has no uniform interpretation but is a function of task difficulty and individual skill.

Available at: <https://doi.org/10.1037/a0034716>

Title:

Hämäläinen, R., Cincinato, S., Malin, A., & De Wever, B. (2014). VET workers' problem-solving skills in technology-rich environments: European approach. *International Journal for Research in Vocational Education and Training*, 1(1), 57-80. doi: 10.13152/IJRVET.1.1.4

Abstract:

The European workplace is challenging VET adults' problem-solving skills in technology-rich environments (TREs). So far, no international large-scale assessment data has been available for VET. The PIAAC data comprise the most comprehensive source of information on adults' skills to date. The present study (N = 50 369) focuses on gaining insight into the problem-solving skills in TREs of adults with a VET background. When examining the similarities and differences in VET adults' problem-solving skills in TREs across 11 European countries, two main trends can be observed. First, our results show that only a minority of VET adults perform at a high level. Second, there seems to be substantial variation between countries with respect to the proportion of VET adults that can be identified as "at-risk" or "weak" performers. For the future, our findings indicate the variations that can be used as a starting point to identify beneficial VET approaches.

Available at (open access): <https://doi.org/10.13152/IJRVET.1.1.4>

Title:

Heisig, J. P., & Solga, H. (2014). Kompetenzen, Arbeitsmarkt- und Weiterbildungschancen von gering Qualifizierten in Deutschland. Befunde aus PIAAC [Skills, job market and training opportunities for low-skilled workers in Germany. Results from PIAAC]. In Projektträger im Deutschen Zentrum für Luft-/Raumfahrt (Eds.), *Kompetenzen von gering Qualifizierten. Befunde und Konzepte. Alphabetisierung und Grundbildung Erwachsener* (pp. 11-31). Bielefeld: W. Bertelsmann Verlag.

Abstract:

Based on the OECD study "Programme for the International Assessment of Adult Competencies - PIAAC" from 2011/12, we have access to current information about fundamental reading and basic arithmetic competences in individuals with low-level formal qualifications in Germany and in international comparison.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-52111-5>

Title:

Heisig, J. P., & Solga, H. (2014). *Skills inequalities in 21 countries - PIAAC results for prime-age adults*. WZB Discussion Paper No. 503. Berlin: Wissenschaftszentrum Berlin für Sozialforschung (WZB). Retrieved October 20, 2017, from <https://www.econstor.eu/handle/10419/105504?locale=de>

Abstract:

Only few previous studies have explored cross-national variation in the relationship between educational certificates and competences. In this paper, we investigate the certificate-competence relationship, operationalized as skills gaps by level of educational attainment. More importantly, we scrutinize how two aspects of educational stratification processes, vertical stratification and occupation-specificity, affects skills gaps. Using data on 25-54 year olds from the 2011/12 round of the Programme for the International Assessment of Adult Competencies (PIAAC), we find that more occupation-specific education systems produce smaller differences in basic general skills between adults with low and intermediate levels of education. Higher levels of vertical stratification, by contrast, result in larger low-intermediate skills gaps. None of the two stratification aspects can however explain variations in the skills gaps between intermediate and high educated adults. We conclude by discussing the implications of our findings for labor market research.

Available at (open access): <https://www.econstor.eu/handle/10419/105504?locale=de>

Title:

Helmschrott, S., & Martin, S. (2014). Nonresponse in PIAAC Germany. *methods, data, analyses*, 8(2), 243-266. doi: 10.12758/mda.2014.010

Abstract:

Nonresponse is of concern for the quality of survey data, because it may introduce bias into the collected sample. To date, only few studies deal with nonresponse in skills or educational surveys. This paper aims at contributing to this field by identifying the main factors that influenced participation in the first wave of PIAAC Germany, a survey assessing skills of the adult population, conducted in 2011/ 2012. Using bi- and multivariate analyses, we found that age, citizenship, the level of education, the type of house the sampled persons live in, and municipality size were the main factors influencing response to PIAAC Germany. Our findings suggest that, for the effective reduction of nonresponse in skills or education studies, researchers should target persons with a low level of education, foreigners, those living in larger housing units, and big-city dwellers by using appropriate measures at the different stages of the survey process.

Available at (open access): <https://doi.org/10.12758/mda.2014.010>

Title:

Klemm, U. (2014). PIAAC und die Erwachsenenbildung [PIAAC and adult education]. *Zeitschrift für internationale Bildungsforschung und Entwicklungspädagogik*, 37(2), 29-34.

Abstract:

The concise resume that could be drawn from the German PIAAC study would be: Every sixth German adult reads and calculates at a ten-year-old student's competence level and every tenth German adult cannot handle a "mouse". Or, according to PIAAC: the German educational system apparently doesn't offer all people the chance to achieve basic competences that exceed over an elementary level. Though these results are statistically valid and reliable, they reduce without further differentiation PIAACs overall intentions.

Available at (open access): http://www.pedocs.de/volltexte/2016/12082/pdf/ZEP_2_2014_Klemm_PIAAC_und_die_Erwachsenenbildung.pdf

Title:

Levels, M., Van der Velden, R., & Allen, J. (2014). Educational mismatches and skills: New empirical tests of old hypotheses. *Oxford Economic Papers*, 66(4), 959-982. doi: 10.1093/oep/gpu024

Abstract:

This article empirically explores how the often reported relationship between educational mismatches and wages can best be understood. Exploiting the newly published Programme for International Assessment of Adult Competencies (PIAAC) data, we are able to achieve a better estimation of the classical Duncan and Hoffman ORU model than previous papers by controlling for heterogeneity of observable skills. Our findings suggest that (i) a considerable part of the effect of educational mismatches can be attributed to skills heterogeneity, and (ii) that the extent to which skills explain educational mismatches varies by institutional contexts, particularly the extent to which collective wage bargaining is regulated. These observations suggest that skills matter for explaining wage effects of education and educational mismatches, but also that the extent to which this is the case depends on collective wage bargaining.

Available at (open access): <http://dx.doi.org/10.1093/oepp/gpu024>

Title:

Lunze, K., & Paasche-Orlow, M. K. (2014). Limited literacy and poor health: The role of social mobility in Germany and the United States. *Journal of health communication*, 19(sup2), 15-18. doi: 10.1080/10810730.2014.946115

Abstract:

The Organization for Economic Cooperation and Development (OECD) implemented the Program for the International Assessment of Adult Competencies (PIAAC) to provide policymakers with nationally representative profiles of knowledge, skills, and competencies. Results among participating countries indicate that the United States and Germany stand out as having the strongest relationship between literacy skills and self-reported health. Our analysis addresses factors that could mediate the particularly strong link between low literacy and poor health in these two countries and possible remedies for the problem. In particular, PIAAC results also reveal that the United States and Germany share the most entrenched multigenerational literacy problem among the countries in the PIAAC survey. In spite of the many social differences that currently distinguish Germany and the United States, these countries share the lowest level of social mobility for education. Promoting social mobility by making higher education more accessible for those whose parents did not have the chance to access it might thus not only promote literacy and social capital, but indirectly also promote public health. Given the PIAAC findings, the concept of social mobility and opportunities to dissolve the educational stratification merit more attention in public health research.

Available at: <http://dx.doi.org/10.1080/10810730.2014.946115>

Title:

Maehler, D., Massing, N., & Rammstedt, B. (2014). *Grundlegende Kompetenzen Erwachsener mit Migrationshintergrund im internationalen Vergleich: PIAAC 2012 [Basic skills of adults with a migration background in international comparison: PIAAC 2012]*. Münster: Waxmann.

Abstract:

The migration report on the Programme for the International Assessment of Adult Competencies (PIAAC) contrasts the basic skills of the adult population with and without a migration background in Germany and in international comparison. As in most of the other countries, persons with a migration background in Germany have, on average, lower basic skills than those without a migration background. These skill disparities can be explained, in particular, by differences in structural background characteristics such as education background and socioeconomic status.

Available at (open access): <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-396045>

Title:

Maehler, D. B., Massing, N., Helmschrott, S., Rammstedt, B., Staudinger, U. M., & Wolf, C. (2014). Erhebliche Kompetenzunterschiede im Erwachsenenalter nach Bildungsgruppen: Ergebnisse von PIAAC 2012. [High variation in skills of adults with different educational backgrounds]. *Social Indicators Information Service (ISI)*, 52, 1-5.

Abstract:

One of the key tasks of education systems is to impart basic skills, for example in reading, writing, and arithmetic, thereby preparing pupils for the future. The results of the PISA study, in particular, have shown that, in Germany, attendance at different school types is associated with clear proficiency differences in different skill domains. It is therefore expected that a strong association also

exists between formal education and basic skills in adulthood. Previous studies on adult skills have furnished empirical evidence in support of this assumption (Lehmann 1997; Wölfel et al. 2011). It can be assumed that formal education (and training) and skills mutually reinforce each other: On the one hand, school and vocational training impart basic skills; on the other hand, there is a high probability that persons who have deficits in basic skills will leave the education and training system earlier. In addition, an indirect effect of the education system is expected because attitudes, for example toward learning and reading, fostered within the education system increase the probability that people will undergo further education and training in later life, thereby maintaining and expanding their skills (OECD 2013).

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-396178>

Title:

Martin, S., Helmschrott, S., & Rammstedt, B. (2014). The use of respondent incentives in PIAAC: The field test experiment in Germany. *methods, data, analyses*, 8(2), 223-242. doi: 10.12758/mda.2014.009

Abstract:

In PIAAC, each participating country was required to attain a response rate of at least 50 percent, as long as evidence was provided that there was either no or only low nonresponse bias in the data. Achieving 50 percent is a challenge for face-to-face surveys in most Western countries and also in Germany. Previous research showed that the use of incentives is an effective tool to increase response rates in different kinds of surveys. However, incentives may have differential effects on certain socio-demographic groups, because the perceived benefits of an incentive are subjective. To assess the effects of incentives on response rate and nonresponse bias, an experiment with three incentive treatments (10 Euro-coin, 25 Euro and 50 Euro in cash) was implemented in the German PIAAC field test. Results show that response rates increased as the incentive increased. With regard to nonresponse bias, the results are less explicit. According to logistic regressions, the main factors for participation in the 50 Euro condition are age, citizenship, and municipality size and in the 25 Euro condition, only municipality size. Bivariate analyses put these results into perspective. For all treatment groups, a low potential for bias is visible, and there is no statistical evidence that response distributions of the realized sample across treatments are different.

Available at (open access): <https://doi.org/10.12758/mda.2014.009>

Title:

Motschilnig, R. (2014). Active citizenship and non-work related aspects of PIAAC. *Lifelong Learning in Europe*, 1.

Abstract:

This article focuses on the relation between active citizenship and literacy proficiency levels, one of the three skills groups measured in PIAAC. Unfortunately, importance of these non-work related benefits of (increased) literacy levels and therefore also of adult learning are often not recognized enough. [Source: from author's introduction]

Available at (open access): <https://www.elmmagazine.eu/articles/active-citizenship-and-non-work-related-aspects-of-piaac/>

Title:

Naumann, J., Goldhammer, F., Rölke, H., & Stelter, A. (2014). Erfolgreiches Problemlösen in technologereichen Umgebungen: Wechselwirkungen zwischen Interaktionsschritten und Aufgaben-

anforderungen [Successful problem solving in technology rich environments: Interactions between number of actions and task demands]. *Zeitschrift für Pädagogische Psychologie*, 28(4), 193-203. doi: 10.1024/1010-0652/a000134

Abstract:

Using Field Trial data from the Programme for the International Assessment of Adult Competencies (PIAAC) from the German (N = 661) and Canadian (N = 411) Field Trials, we show that success in technology-based problem solving is predicted by the number of actions taken during problem solving. The association was reversely U-shaped. The probability of succeeding on a problem-solving task was highest at an above-average number of actions. The association between actions taken and problem solving was further moderated by task characteristics. Especially in tasks involving long navigation sequences a strong positive association between the number of actions and task success was obtained. Against expectations, the association of actions and probability of task success was higher in well-defined than in ill-defined tasks. Results for the German and the Canadian samples ran parallel.

Available at (open access): <https://doi.org/10.1024/1010-0652/a000134>

Title:

Organisation for Economic Cooperation and Development (OECD) (2014). *Education at a glance 2014: OECD indicators*. Paris: OECD Publishing. doi: 10.1787/eag-2014-en

Abstract:

Education at a Glance: OECD Indicators is the authoritative source for accurate and relevant information on the state of education around the world. It provides data on the structure, finances, and performance of education systems in the OECD's 34 member countries, as well as a number of partner countries. In the 2014 edition, new material includes: - Data from the Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), on attainment, employment, intergenerational education mobility, earnings, and social outcomes related to skills proficiency. - New indicators on private institutions, on what it takes to become a teacher, and on the availability of, and participation in, professional development activities for teachers. - Data from the 2013 OECD Teaching and Learning International Survey (TALIS) in several indicators. - Analysis of the impact of the recent economic crisis on the interplay among educational attainment, employment, earnings and public finance. - More in-depth information related to upper secondary completion rates. - A detailed examination of the types and use of student loans. - For the first time, data from Colombia and Latvia.

Available at (open access): <http://dx.doi.org/10.1787/eag-2014-en>

Title:

Perry, A., & Rammstedt, B. (2014). Grundkompetenzen Erwachsener: Deutschland im internationalen Vergleich [Adult basic skills: Germany in international comparison]. *Spektrum Wissenschaft*, (2), 17-18.

Abstract:

Every three years, the PISA Test assesses pupils' skills and knowledge, thereby allowing educational success to be compared across countries. With the PIAAC study, results for adults are now available for the first time. One key finding up front: In PIAAC, too, Germany's performance was mediocre compared to other countries. Adult literacy skills in Germany are below the average of the participating OECD countries; numeracy skills are slightly above average. And finally, in the assessment of computer and Internet skills, performance in Germany corresponded to the international average. Japan and Finland are the highest-performing countries in reading and everyday mathematics;

Spain and Italy are at the bottom of the league. [Source: From author's introduction; translated on behalf of editors]

Available at (open access): <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-47126-3>

Title:

Perry, A., Wiederhold, S., & Ackermann-Piek, D. (2014). How can skill mismatch be measured? New approaches with PIAAC. *methods, data, analyses*, 8(2), 137-174. doi: 10.12758/mda.2014.006

Abstract:

Measuring skill mismatch is problematic, because objective data on an individual skill level are often not available. Recently published data from the Programme for the International Assessment of Adult Competencies (PIAAC) provide a unique opportunity for gauging the importance of skill mismatch in modern labor markets. This paper systematically compares existing measures of skill mismatch in terms of their implications for labor market outcomes. We also provide a new measure that addresses an important limitation of existing measures, namely, assigning a single competency score to individuals. We find that the importance of skill mismatch for individual earnings differs greatly, depending on the measure of mismatch used.

Available at (open access): <https://doi.org/10.12758/mda.2014.006>

Title:

Rammstedt, B., & Maehler, D. B. (2014). PIAAC and its methodological challenges. *methods, data, analyses*, 8(2), 125 -136. doi: 10.12758/mda.2014.005

Abstract:

This article gives an overview of the Programme for the International Assessment of Adult Competencies (PIAAC) and introduces the methodological challenges in implementing the survey - especially those encountered in Germany. Adherence to high methodological standards is a prerequisite to participation in PIAAC and to inclusion of the national data of the respective participating countries in the international dataset (OECD, 2010). Depending on the standard in question, and on national circumstances, compliance is a challenging undertaking. This Special Issue discusses methodological challenges at different levels, and steps taken to implement PIAAC standards in Germany. The aspects addressed include sample design, survey instruments, field work preparation, data collection, and estimation standards. In this introductory article, we outline the central elements of the PIAAC design and the methodological challenges of the survey, and we present the other six articles in this special issue.

Available at (open access): <https://doi.org/10.12758/mda.2014.005>

Title:

Rammstedt, B., & Maehler, D. B. (2014). PIAAC: Eine internationale Studie zur Untersuchung von Alltagsfertigkeiten Erwachsener [PIAAC: An international study to assess adult everyday skills]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 26-29. doi: 10.3278/DIE1403W

Abstract:

With the Programme for the International Assessment of Adult Competencies, the OECD assessed adult literacy, numeracy and problem-solving skills for the first time in 24 industrialized countries. Based on key findings of the study, the present paper shows how the German participants performed in international comparison, how the scores they achieved are distributed across

proficiency levels, and what associations exist with other factors, such as age and educational attainment.

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Scheunpflug, A., & Franz, J. (2014). Der Mehrwert einer Begleitstudie - Competencies in Later Life - CiLL [The added value of an accompanying study - Competencies in Later Life CiLL]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 42-43. doi: 10.3278/DIE1403W

Abstract:

In empirical education research, large-scale assessments are often flanked by accompanying studies. This is also the case with PIAAC, whose accompanying study is entitled Competencies in Later Life (CiLL). What can be expected of the accompanying studies of major, and sometimes international, surveys? This contribution explores the added value that the CiLL study provides for PIAAC. The authors begin by identifying the connection points between PIAAC and CiLL. Building on this, they demonstrate in what respect CiLL expands PIAAC and deepens the insights gained from that study. [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Schmidt-Hertha, B. (2014). PIAAC – Rezeption und Interpretation: PIAAC im Spiegel von Presse und Positionspapieren [PIAAC – Reception and interpretation: PIAAC as reflected in press reports and position papers]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 33-35. doi: 10.3278/DIE1403W

Abstract:

Public reporting following the publication of the results of large-scale assessments may differ in its perception and interpretation of the findings. Focusing on the perspectives of journalists, education policy makers and associations, this contribution provides an overview of the media response to the Programme for the International Assessment of Adult Competencies (PIAAC). [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Schmidt-Hertha, B., Friebe, J., & Gebrande, J. (2014). Competencies in later life. *European Lifelong Learning Magazine* (1). Retrieved February 28, 2020, from <https://www.elmmagazine.eu/articles/competencies-in-later-life/>

Abstract:

The article provides an overview on two studies on competencies in adulthood, PIAAC and CiLL. Limitations in the sample of PIAAC (16- to 65-year-old people) led to a further study called CiLL, which analyses the 66- to 80-year-old population in Germany. Study design and first results of the interviews and assessments are presented and potentials of competencies in later life are discussed with regard to six aspects. In conclusion, consequences for education policy and adult education practitioners are suggested.

Available at (open access): <https://www.elmmagazine.eu/articles/competencies-in-later-life/>

Title:

Schöll, I. (2014). Was aus PIAAC folgen muss – Plädoyer für ein Bundesamt zur Grundbildungssicherung [What must follow on from PIAAC – A plea for a federal agency for the assurance of basic skills education]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 36-38. doi: 10.3278/DIE1403W036

Abstract:

PIAAC shows that many adults in Germany lack basic skills. It thus depicts a problem situation whose solution requires new structures. Against this background, the author makes a plea for the establishment of a federal agency for the assurance of basic skills education in order to create a nationwide, federal-government-funded service for the provision of basic skills courses. [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W036>

Title:

Schrader, J., & Wanka, J. (2014). "Viele Menschen können ihr Potenzial nicht ausschöpfen" Im Gespräch mit Dr. Johanna Wanka, Bundeministerin für Bildung und Forschung" (Interview) ["Many people cannot realize their full potential." Interview with Dr. Johanna Wanka, Federal Minister of Education and Research]. *DIE - Zeitschrift für Erwachsenenbildung*, 21(3), 22-24. doi: 10.3278/DIE1403W

Abstract:

The central question addressed by the PIAAC special issue is the way in which the CiLL and PIAAC results have entered into adult education discourse on the part of practitioners, researchers, and policy makers. In Germany, PIAAC was funded by the Federal Ministry of Education and Research (BMBF) with the participation of the Federal Ministry of Labor and Social Affairs (BMAS). How have education policy makers received the PIAAC findings? Are education policy measures being launched? What education policy strategies does PIAAC give rise to? Editor Prof. Dr. Josef Schrader puts these and other questions to Federal Minister for Education and Research, Prof. Dr. Johanna Wanka. [Translated on behalf of editors]

Available at (open access): <http://dx.doi.org/10.3278/DIE1403W>

Title:

Solga, H. (2014). Education, economic inequality and the promises of the social investment state. *Socio-Economic Review*, 12(2), 269-297. doi: 10.1093/ser/mwu014

Abstract:

Since the mid-1990s, there has been a debate about the social investment state model in advanced societies. Such an orientation towards preventive investment in education rather than redistribution (or social spending) raises the question of whether, and if so, what kinds of relationships exist between educational and economic inequalities. Based on an international comparison of 20 advanced economies, the results of the analyses suggest that the role of education as an 'equalizer' should not be overestimated. Direct redistribution is much more likely than education to combat poverty in advanced societies. Yet increasing the mean literacy rate by reducing the proportion of low-literate adults is also positively associated with less economic inequality. Welfare states with 'double liability'—investing in children's education and in more equal family conditions—therefore perform best in terms of economic inequality.

Available at: <http://dx.doi.org/10.1093/ser/mwu014>

Title:

Statistics Austria (2014). Schlüsselkompetenzen von Erwachsenen (PIAAC). *Vertiefende Analysen der PIAAC-Erhebung 2011/12 [Adult key skills (PIAAC). In-depth analyses of the PIAAC Survey 2011/12]*. Wien: Statistik Austria.

Abstract:

In October 2013, following an initial broad-based examination of the Austrian results of the Programme for the International Assessment of Adult Competencies (PIAAC), researchers from various specialist disciplines collaborated with Statistik Austria's PIAAC Team to prepare in-depth analyses, which are now presented in this report. The contributions cover a wide range of priority topics – from the consideration and analysis of individual factors, such as sex and age, and their associations with the PIAAC key skills, to the impact of these skills on labor market participation or income. The impact of different learning activities (formal education, e.g. school and higher education; non-formal education, e.g. courses and seminars; informal learning, e.g. on-the-job learning) on skill acquisition is also examined. One specific focus of the report is on individuals with poor skills and on the living situation of these persons. The analyses focus mainly on the situation in Austria. In some of the contributions, the viewpoint is broadened to include countries that are of interest for comparison purposes, thereby incorporating an international perspective. [Source: From the preface; translated on behalf of editors]

Available at (open access):

https://www.bmb.gv.at/schulen/unterricht/ba/schulabbruch_schluessselkompetenzen.pdf?61edi7

Title:

Tsatsaroni, A., & Evans, J. (2014). Adult numeracy and the totally pedagogised society: PIAAC and other international surveys in the context of global educational policy on lifelong learning. *Educational Studies in Mathematics*, 87(2), 167-186. doi: 10.1007/s10649-013-9470-x

Abstract:

This paper aims to discuss the emergence, form and likely effects of international surveys of adults' skills by locating them in the global context of policies on education and Life Long Learning (LLL). It focuses on adults' numeracy and discusses its conceptualisation and assessment in the Project for the International Assessment of Adult Competencies (PIAAC), which is the most recent survey. Drawing on critical theoretical resources about new forms of governance in education and transformations in the pedagogic discourse, the paper further substantiates existing critiques of global policy trends, namely that they are motivated by human capital approaches to education and LLL. In particular, we show that the apparently commonsensical appeal of evaluative instruments like PISA and PIAAC is based on a competency model of knowledge, which embodies a narrow notion of competence. Relatedly, the notional curricula promoted by such surveys potentially articulate a more radical idea of LLL, captured by Bernstein's conception of trainability as the mode of socialisation into a Totally Pedagogised Society. The paper presents a dual approach to understanding international adult performance surveys in general—in that, besides deploying the theoretical resources already indicated, it also raises a number of methodological issues relevant to the valid interpretation of these studies' results. Ultimately, it argues for the importance of mobilising resources from critical educational perspectives to support the development of potentially powerful knowledge like numeracy and to prevent its being reduced to a narrow competency.

Available at (open access): <http://dx.doi.org/10.1007/s10649-013-9470-x>

Title:

Vera-Toscano, M., & Meroni, E. (2014). *Formal qualifications and individuals' skills. Evidence from the Survey of Adult Skills (PIAAC)*. European Commission, Joint Research Centre, Institute for the Protection and Security of the Citizen Luxembourg: Publications Office of the European Union. doi: 10.2788/984599

Abstract:

The role played by the educational system regarding the provision of adequate skills is indisputable. Cognitive skills, which are the key for successful participation in the labour market, in social and civic activities and in further education and training, are mainly developed through formal education attainment at young ages. As educational attainment increases, individuals are exposed to higher levels of training and should develop greater abilities and be more skillful at processing information. Thus, the aim of this technical briefing is to look into and compare the distribution of educational attainment and the level of skills by country, as a starting point to assess the efficiency of the different educational systems in providing the appropriate level of skills to citizens.

Available at (open access): <https://doi.org/10.2788/984599>

Title:

Zabal, A. (2014). The challenge of meeting international data collection standards within national constraints. *methods, data, analyses*, 8(2), 175-198. doi: 10.12758/mda.2014.007

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) is an international OECD study that compares key competencies of adults (16-65 years) in the participating countries. In order to obtain high quality data and to ensure equivalence of measurement across countries, the international PIAAC Consortium produced a very detailed and elaborate set of standards and guidelines for all aspects of the national implementations. In Germany, a comprehensive set of measures and procedures was put in place for the PIAAC fieldwork. Some of the international requirements for data collection were not meaningful within the national context and required certain adaptations. This article describes various key fieldwork measures in Germany and discusses how specific measures relate to central international data collection standards. Reflecting on this national experience, some of the possibilities and limitations of national compliance to international standards are discussed.

Available at (open access): <https://doi.org/10.12758/mda.2014.007>

2.8 Publications in 2015

Title:

Adalet McGowan, M., & Andrews, D. (2015). *Labour market mismatch and labour productivity: Evidence from PIAAC data*. OECD Economics Department Working Papers No. 1209. Paris: OECD Publishing. doi: 10.1787/5js1pzx1r2kb-en

Abstract:

This paper explores the link between skill and qualification mismatch and labour productivity using cross-country industry data for 19 OECD countries. Utilising mismatch indicators aggregated from micro-data sourced from the recent OECD Survey of Adult Skills (PIAAC), the main results suggest that higher skill and qualification mismatch is associated with lower labour productivity, with over-skilling and under-qualification accounting for most of these impacts. A novel result is that higher

skill mismatch is associated with lower labour productivity through a less efficient allocation of resources, presumably because when the share of over-skilled workers is higher, more productive firms find it more difficult to attract skilled labour and gain market shares at the expense of less productive firms. At the same time, a higher share of under-qualified workers is associated with both lower allocative efficiency and within-firm productivity – i.e. a lower ratio of high productivity to low productivity firms. While differences in managerial quality can potentially account for the relationship between mismatch and within-firm productivity, the paper offers some preliminary insights into the policy factors that might explain the link between skill mismatch and resource allocation.

Available at (open access): <http://dx.doi.org/10.1787/5js1pzx1r2kb-en>

Title:

Adalet McGowan, M., & Andrews, D. (2015). *Skill mismatch and public policy in OECD countries*. OECD Economics Department Working Papers No. 1210. Paris: OECD Publishing. doi: 10.1787/5js1pzw9lnwk-en

Abstract:

This paper explores the relationship between skill mismatch and public policies using micro data for 22 OECD countries from the recent OECD Survey of Adult Skills (PIAAC). Results suggest that differences in skill mismatch across countries are related to differences in public policies. After controlling for individual and job characteristics, well-designed product and labour markets and bankruptcy laws that do not overly penalise business failure are associated with lower skill mismatch. Given the negative relationship between skill mismatch and labour productivity, reducing skill mismatch emerges as a new channel through which well-designed framework policies can boost labour productivity. Skill mismatch is also lower in countries with housing policies that do not impede residential mobility (e.g. transaction costs on buying property and stringent planning regulations). Greater flexibility in wage negotiations and higher participation in lifelong learning as well higher managerial quality are also associated with a better matching of skills to jobs.

Available at (open access): <http://dx.doi.org/10.1787/5js1pzw9lnwk-en>

Title:

Borgonovi, F., & Burns, T. (2015). *The educational roots of trust*. OECD Education Working Papers No. 119. Paris: OECD Publishing. doi: 10.1787/5js1kv85dfvd-en

Abstract:

Trust is important for social and economic well-being, for enhancing social cohesion and strengthening resilience, and for maintaining security and order in our societies. Trust is the foundation upon which social capital is built and it also is intimately related to human capital. This work examines the association between education and levels of interpersonal trust, using data from the OECD's Survey of Adult Skills (PIAAC). Our analysis demonstrated that education strengthens the cognitive and analytical capacities needed to develop, maintain, and (perhaps) restore trust in both close relationships as well as in anonymous others. It does so both directly, through building and reinforcing literacy and numeracy in individuals, and indirectly, through facilitating habits and reinforcing behaviours such as reading and writing at home and at work. Education and trust are thus fundamentally intertwined and dependent on each other. While all countries across the OECD have been striving to improve their education systems in terms of student achievement levels, this analysis suggests that there are also concrete elements that could be usefully addressed in order to reinforce and strengthen trust.

Available at (open access): <http://dx.doi.org/10.1787/5js1kv85dfvd-en>

Title:

Brunello, G., & Rocco, L. (2015). *The effects of vocational education on adult skills and wages: What can we learn from PIAAC?* OECD Social, Employment and Migration Working Papers No. 168. Paris: OECD Publishing. doi: 10.1787/5jrxfmjvw9bt-en

Abstract:

In this report we investigate the effects of vocational education and training (VET) on adult skills and labour market outcomes by using the PIAAC survey. Data comparability across countries, the breadth of countries involved, and the almost unique presence of information on assessed skills, training, earnings and employment makes this survey especially valuable to study the different facets of VET as compared to more academic education.

Available at (open access): <http://dx.doi.org/10.1787/5jrxfmjvw9bt-en>

Title:

Bussi, M., & Pareliussen, J. (2015). *Skills and labour market performance in Sweden*. OECD Economics Department Working Papers No. 1233. Paris: OECD Publishing. doi: 10.1787/5js0cqvnzx9v-en

Abstract:

Both educational attainment and skills, as measured in the OECD Survey of Adult Skills (PIAAC), are high in Sweden. They are not perfect substitutes, but both are to some degree necessary for successfully integrating in the Swedish labour market. This paper describes the distribution of proficiency in literacy in the population and explores its determinants, and uncovers a strong relationship between literacy and the likelihood of being employed. The relationship between proficiency in literacy and the likelihood of participating in adult education is also explored. Lower employment prospects for immigrants are well explained by lower literacy proficiency, lower education and less favourable socio-economic backgrounds. This Working Paper relates to the 2015 OECD Economic Survey of Sweden

www.oecd.org/eco/surveys/economic-survey-sweden.htm.

Available at (open access): <http://dx.doi.org/10.1787/5js0cqvnzx9v-en>

Title:

Cort, P., & Larson, A. (2015). The non-shock of PIAAC-tracing the discursive effects of PIAAC in Denmark. *European Educational Research Journal*, 14(6), 531-548. doi: 10.1177/1474904115611677

Abstract:

The results of the first PIAAC survey were published in October 2013. In the case of Denmark, the survey showed that Denmark is below the OECD average when it comes to reading skills, above average with regards to numeracy and on average with regards to IT skills. In this paper we analyse how the PIAAC results were covered by the media and how different stakeholders within the field of adult literacy took PIAAC as an opportunity to try to influence how the problem of adult literacy in Denmark should be represented. The analysis is based on Bacchi's What's the problem represented to be? approach to policy analysis (2009) and Kingdon (1984), and Zahariadis' (2003) multiple streams theory. The analysis shows that PIAAC did not provoke the same kind of national 'shock' as PISA and that adult literacy is low on the political agenda compared to basic schooling.

Available at: <https://doi.org/10.1177/1474904115611677>

Title:

Cortina, K. S. (2015). PIAAC und PISA: Pädagogisch paradoxe Parallelen [PIAAC and PISA: Pedagogically paradoxical parallels]. *Zeitschrift für Pädagogik*, 61(2), 223-242.

Abstract:

The "Programme for the International Assessment of Adult Competencies" (PIAAC) is another important empirical study to investigate developments in the educational system of Germany beyond the 15-year olds that PISA is focused on. From a biographical viewpoint of competencies, this article combines PIAAC and PISA results to address the question how the ranking of Germany across the age groups changes across different age groups with respect to mathematics and reading literacy. The cross-sectional analyses did not provide any evidence of a positive effect of the comprehensive German professional training system. In addition, the trend towards lesser impact of parental educational background in Germany, found over five waves of PISA, could not be replicated for the 16- to 24-year-old adults in PIAAC. In light of Germany's economic success, the consistency of Germany's position close to the international average for all age groups from age 16 to 65 in both literacy domains raises questions about the relevance of these competencies for educational development beyond their value as indicators for the efficacy of the school system.

Available at (open access): https://www.pedocs.de/volltexte/2018/15323/pdf/ZfPaed_2015_2_Cortina_PIAAC_und_PISA.pdf

Title:

Cummins, P., Kunkel, S., & Walker, R. (2015). *Adult education and training programs for older adults in the U.S.: National results and cross-national comparisons using PIAAC data*. Washington DC: American Institutes for Research. Retrieved October 20, 2017, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/54da7607e4b081084af3c485/1423603207175/Cummins_Kunkel_Walker_PIAAC.pdf?_cldee=cm9zZS1hbm5lLnBvbHZlcmVAbmN2ZXluZWR1LmF1

Abstract:

Continuous learning over the life course is necessary to effectively compete in a knowledge-based global economy. Shifts in the age structure of the US labor force combined with increased labor force participation among older adults add to the importance of gaining a better understanding of how adult education and training (AET) influences labor market outcomes for middle-aged and older workers. This study used data from the Programme for the International Assessment of Adult Competencies (PIAAC) and the Survey of Consumer Finances (SCF) to examine the relationship in the US between participation in AET programs and employment, labor force participation, income, and net worth for adults aged 45 to 65. Participation in an AET program in the 12 months preceding the survey significantly improved the log odds of both employment and labor force participation and significantly improved the log odds of moving up one income quintile. Lower income groups and the unemployed were less likely to participate in AET than higher income groups and the employed. [The authors] also compared outcomes of AET participation in the US with those in Germany, Japan, Sweden, and the UK and examined policies for lifelong learning in those countries.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/54da7607e4b081084af3c485/1423603207175/Cummins_Kunkel_Walker_PIAAC.pdf?_cldee=cm9zZS1hbm5lLnBvbHZlcmVAbmN2ZXluZWR1LmF1

Title:

Dämmrich, J., Kosyakova, Y., & Blossfeld, H. P. (2015). Gender and job-related non-formal training: A comparison of 20 countries. *International Journal of Comparative Sociology*, 56(6), 433-459. doi: 10.1177/0020715215626769

Abstract:

This article analyses gender differences in the participation in various types of job-related non-formal training in 20 societies and examines the relationship of these gender differences with country-specific institutional settings such as employment protection, family policies and the gender culture. Using data from the Programme for the International Assessment of Adult Competencies (PIAAC) and applying two-step multilevel regression analyses, two main findings are obtained: First, gendered participation clearly differs among training types, with women being less likely to participate in employer-financed training but more likely to participate in non-employer-sponsored training. These gender differences in training participation are crucial because they are likely to shape men's and women's career development in different ways, that is, by providing better future career prospects with the current employer for men and with a new employer for women. Second, country-specific settings can reduce gender differences in training participation: in countries with family policies supporting females' employment (e.g. good coverage of formal childcare and short parental leave), we found a lower training disadvantage of women in employer-financed training. In turn, gender differences in non-employer-sponsored training seem to be lower in countries with less rigid employment protection.

Available at: <http://dx.doi.org/10.1177/0020715215626769>

Title:

Desjardins, R. (2015). *Participation in adult education opportunities: Evidence from PIAAC and policy trends in selected countries*. Background paper for the Education for All Global Monitoring Report Paris: UNESCO. Retrieved October 20, 2017, from <http://unesdoc.unesco.org/images/0023/002323/232396e.pdf>

Abstract:

This paper examines cross-country patterns of participation in adult education opportunities using comparative data made available by the OECD Survey of Adult Skills. Patterns are considered in relation to some of the mechanisms that drive unequal chances to participate, and some of the policy issues that surround the provision, governance and financing of different types of adult learning, as well as recent policy developments relevant to adult education in selected countries.

Available at (open access): <http://unesdoc.unesco.org/images/0023/002323/232396e.pdf>

Title:

Desjardins, R., & Ederer, P. (2015). Socio-demographic and practice-oriented factors related to proficiency in problem solving: A lifelong learning perspective. *International Journal of Lifelong Education*, 34(4), 468-486. doi: 10.1080/02601370.2015.1060027

Abstract:

This article explores the relative importance of different socio-demographic and practice-oriented factors that are related to proficiency in problem solving in technology-rich environments (PSTRES) and by extension may be related to complex problem solving (CPS). The empirical analysis focuses on the proficiency measurements of PSTRE made available by the Programme for the International Assessment of Adult Competencies, which is relevant for gaining insight on some of the factors related to CPS. The purpose was to examine the relationship between the broad information

processing experience that individuals gather in different contexts over the lifespan, and the chances to develop problem-solving skills that adults receive in different socio-demographic profiles. Results reveal that socio-demographic factors such as age, education and immigration status as well as practice-oriented factors such as ICT use and reading practice at and outside work are strongly related to proficiency.

Available at: <http://dx.doi.org/10.1080/02601370.2015.1060027>

Title:

Fridberg, T., Rosdahl, A., Halapuu, V., Valk, A., Malin, A., Hämäläinen, R., Anderssen, A. F., Bjørkeng, B., Størset, H., et al. (2015). *Adult skills in the Nordic Region: Key information-processing skills among adults in the Nordic Region*. Odense: Rosendahls-Schultz Grafisk. doi: 10.6027/TN2015-535

Abstract:

Denmark, Estonia, Finland, Norway, and Sweden participated in the first round of the International Survey of Adults' Skills. The survey is a product of the Programme for the International Assessment of Adult Competencies (PIAAC) led by the Organisation for Economic Co-operation and Development (OECD). The survey assessed the proficiency in literacy, numeracy, and problem-solving in technology-rich environments of adults aged 16–65. This publication is the product of the Nordic PIAAC Network, consisting of members from all five countries. It concentrates on the comparative results from four Nordic countries and Estonia, forming a Nordic region with many common features. It supplements the series of national and international PIAAC reports by comparing the results from five countries, as well as comparing an aggregate of these countries to other country aggregates. The results published in this book draw on a unique Nordic database, which the Nordic PIAAC Network has produced. The database consists of PIAAC assessment data and background information, supplemented by social, educational, and labour market register data from the five countries.

Available at (open access): <https://doi.org/10.6027/TN2015-535>

Title:

Gebrande, J., & Friebe, J. (2015). Grundkompetenzen, Bildungsverhalten und Lernen im höheren Lebensalter. Ergebnisse der Studie "Competencies in Later Life" (CiLL) [Basic competencies, educational behavior, and learning in later life – Results of the study "Competencies in Later Life" (CiLL)]. *Zeitschrift für Pädagogik*, 61(2), 192-204.

Abstract:

On the basis of the study Competencies in Later Life (CiLL), the authors present cornerstones of competencies in later life. First results of the surveys and determinations of competencies are differentiated according to individual sections of the population. Of particular interest is the question of in how far continuing education plays a role in promoting basic and everyday competencies. It is shown that educationally active older people have higher competencies in dealing with age-specific tasks than people who do not participate in further education. Furthermore, older active people make use of further education in the context of social participation and civic involvement.

Available at (open access): https://www.pedocs.de/volltexte/2018/15321/pdf/ZfPaed_2015_2_Gebrande_Friebe_Grundkompetenzen.pdf

Title:

Green, A., Green, F., & Pensiero, N. (2015). Cross-country variation in adult skills inequality: Why are skill levels and opportunities so unequal in anglophone countries? *Comparative Education Review*, 59(4), 595-618. doi: 10.1086/683101

Abstract:

This article examines cross-country variations in adult skills inequality and asks why skills in Anglophone countries are so unequal. Drawing on the Organization for Economic Cooperation and Development's recent Survey of Adult Skills and other surveys, it investigates the differences across countries and country groups in inequality in both skills opportunities and outcomes and uses pseudo-cohort analysis to establish trends over time and during the life course. The analysis shows that adults' skills in Anglophone countries, and particularly in the United States and England, tend to be more unequal than in other countries on a wide range of measures. This cannot be explained by intercohort differences, skills distributions among adult migrants, or levels and distributions of adult learning, but inequality in education levels provides a strong predictor of skills inequality among adults. Whereas research suggests that early selection drives skills inequality in compulsory schooling, certain forms of tracking, such as bifurcation into academic or apprenticeship/vocational education in upper secondary education, can have a mitigating effect.

Available at (open access): <http://dx.doi.org/10.1086/683101>

Title:

Grotlüschen, A., Heinemann, A., & Nienkemper, B. (2015). Stärken zweier Leitstudien für die Weiterbildung PIAAC und leo. - Level-One Studie im Vergleich [Strengths of two lead studies for further education. A comparison between PIAAC and the leo. - Level-One Study]. In A. Grotlüschen & D. Zimmer (Eds.), *Literalitäts- und Grundlagenforschung* (pp. 79-88). Münster: Waxmann. doi: 10.3278/REP1403W029

Abstract:

The current PIAAC results confirm in international comparison the worrying data of the national leo. Level-One Study conducted in 2011, which found that 14.5 percent of the population of working age were functional illiterates. With their results, both studies have a strong impact on current education policy discussions on the subject of basic skills education. In order to identify the strengths of both studies for the area of further education and training, the contribution contrasts in a brief overview the research design of the two studies. The data on further education and training collected by the respective studies are then compared. And finally, the complementarity rather than the comparability of the studies is highlighted. [Translated on behalf of editors]

Available at (open access): <https://doi.org/10.3278/REP1403W029>

Title:

Hämäläinen, R., De Wever, B., Malin, A., & Cincinnato, S. (2015). Education and working life: VET adults' problem-solving skills in technology-rich environments. *Computers & Education*, 88, 38-47. doi: 10.1016/j.compedu.2015.04.013

Abstract:

The rapidly-advancing technological landscape in the European workplace is challenging adults' problem-solving skills. Workers with vocational education and training need flexible abilities to solve problems in technology-rich work settings. This study builds on Finnish PIAAC data to understand adults' (N = 4503) skills for solving problems in technology-rich environments. The results indicate the critical issue that more than two thirds of adults with vocational education and training

have weak skills or lack the skills in solving problems in technology-rich environments and that more than one fifth of these adults are at risk. Furthermore, this study indicates that the likelihood of having fragile problem-solving skills is six times higher for adults with vocational education and training than for adults with at least upper secondary qualification. Since the need for problem-solving in technology-rich environments is likely to increase in the future, this study also identifies the indicators for problem-solving skills differences. The models predicting problem-solving skills on the basis of theoretical assumptions as well as empirical support are presented. Our results indicate that adults' lower performance does not seem to be associated with the vocational education and training educational system itself, but is mostly due to age, education in years, occupation, and gender, as well as work-related and everyday life factors. In practice, the models help to develop new approaches to enable novel problem-solving skills in technology-rich environments based on the current European workplace needs.

Available at: <http://dx.doi.org/10.1016/j.compedu.2015.04.013>

Title:

Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2015). Returns to skills around the world: Evidence from PIAAC. *European Economic Review*, 73(103-130). doi: 10.1016/j.euroecorev.2014.10.006

Abstract:

Existing estimates of the labor-market returns to human capital give a distorted picture of the role of skills across different economies. International comparisons of earnings analyses rely almost exclusively on school attainment measures of human capital, and evidence incorporating direct measures of cognitive skills is mostly restricted to early-career workers in the United States. Analysis of the new PIAAC survey of adult skills over the full lifecycle in 23 countries shows that the focus on early-career earnings leads to underestimating the lifetime returns to skills by about one quarter. On average, a one-standard-deviation increase in numeracy skills is associated with an 18 percent wage increase among prime-age workers. But this masks considerable heterogeneity across countries. Eight countries, including all Nordic countries, have returns between 12 and 15 percent, while six are above 21 percent with the largest return being 28 percent in the United States. Estimates are remarkably robust to different earnings and skill measures, additional controls, and various sub-groups. Instrumental-variable models that use skill variation stemming from school attainment, parental education, or compulsory-schooling laws provide even higher estimates. Intriguingly, returns to skills are systematically lower in countries with higher union density, stricter employment protection, and larger public-sector shares.

Available at (open access): <https://doi.org/10.1016/j.euroecorev.2014.10.006>

Title:

He, Q., & Davier, M. (2015). Identifying feature sequences from process data in problem-solving items with N-Grams. In M. L. Ark, D. Bolt, W. Wang, J. Douglas, & S. Chow (Eds.), *Quantitative Psychology Research* (pp. 173-190). Cham: Springer International Publishing. doi: 10.1007/978-3-319-19977-1_13

Abstract:

This article draws on process data from a computer-based large-scale program, the Programme for International Assessment of Adult Competencies (PIAAC), to address how sequences of actions recorded in problem-solving tasks are related to task performance and how feature sequences are identified for different groups. The purpose of this study is twofold: first, to explore and detect action sequence patterns of features that are associated with success or failure on a problem-solving

item, and second, to mutually validate the results derived from two feature selection models. Motivated by the methodologies of natural language processing and text mining, we utilized n-gram model and two feature selection methods, chi-square statistic (CHI), and weighted log likelihood ratio test (WLLR), in analyzing the process data at a variety of aggregate levels. It was found that action sequence patterns significantly differed by performance groups and were consistent across countries. The two feature selection approaches resulted in a high agreement of feature identification.

Available at: https://doi.org/10.1007/978-3-319-19977-1_13

Title:

Heisig, J. P., & Solga, H. (2015). Secondary education systems and the general skills of less- and intermediate-educated adults - a comparison of 18 countries. *Sociology of Education*, 88(3), 202-225. doi: 10.1177/0038040715588603

Abstract:

We investigate the impact of external differentiation and vocational orientation of (lower and upper) secondary education on country variation in the mean numeracy skills of, and skills gaps between, adults with low and intermediate formal qualifications. We use data on 30- to 44-year-olds in 18 countries from the 2011–12 round of the Program for the International Assessment of Adult Competencies. We find that higher levels of external differentiation (tracking) amplify skills gaps between less- and intermediate-educated adults. This is mainly due to lower mean skills achievement of less-educated adults. By contrast, greater emphasis on vocational skills in upper-secondary education is positively related to numeracy skills for both less- and intermediate-educated adults. Gains are larger for the less educated, so the gap in numeracy skills tends to fall with the degree of vocational orientation. We discuss implications of our findings for research on educational and labor market inequalities.

Available at (open access): <http://journals.sagepub.com/doi/abs/10.1177/0038040715588603>

Title:

Heisz, A., Notten, G., & Situ, J. (2015). The role of skills in understanding low income in Canada. In T. I. Garner & K. S. Short (Eds.), *Research on Economic Inequality* (pp. 153-184). Bingley: Emerald Group Publishing Limited. doi: 10.1108/S1049-258520150000023005

Abstract:

This research explores how skill proficiencies are distributed between low-income and not-in low-income groups using the results of a highly complex survey of the information-processing skills of Canadians between the ages of 16 and 65. We find that having measures of skills enhances our understanding of the correlates of low income. Skills have an independent effect, even when controlling for other known correlates of low income, and their inclusion reduces the independent effect of education and immigrant status. This result is relevant for public policy development as the knowledge of the skills profile of the low-income population can inform the design of efficient and effective programmes.

Available at: <https://doi.org/10.1108/S1049-258520150000023005>

Title:

Jerrim, J. (2015). The link between family background and later lifetime income: How does the UK compare with other countries? *Fiscal Studies*, n/a-n/a. doi: 10.1111/1475-5890.12081

Abstract:

The link between family background and labour market outcomes is an issue of great academic, social and political concern. It is frequently claimed that such intergenerational associations are stronger in Britain than other countries. But is this really true? I investigate this issue by estimating the link between parental education and later lifetime income, using three cross-nationally comparable datasets covering more than 30 countries. My results suggest that the UK is broadly in the middle of the cross-country rankings, with intergenerational associations notably stronger than in Scandinavia but weaker than in Eastern Europe. Overall, I find limited support for claims that family background is a greater barrier to economic success in Britain than other parts of the developed world. This article is protected by copyright. All rights reserved.

Available at (open access): <http://dx.doi.org/10.1111/1475-5890.12081>

Title:

Jerrim, J. (2015). *Emigrants from Great Britain: What do we know about their lives?* DoQSS Workings Papers No. 15-02. London: University College London (UCL). Retrieved October 20, 2017, from <http://repec.ioe.ac.uk/REPEc/pdf/qsswp1502.pdf>

Abstract:

Each year more than 300,000 individuals leave Great Britain to start a new life overseas. Indeed, recent estimates suggest that up to 4.7 million British nationals now live abroad. Yet, in contrast to the substantial literature on the economic and social welfare of immigrants into Great Britain, comparatively little is known about the lives of emigrants from this country. This report provides, to the author's knowledge, the first quantitative study of this important issue. Labour market and social outcomes are compared between emigrants and individuals who choose to remain in Great Britain. I find a number of significant differences between these groups, along with notable variation by country of destination. This continues to hold true for certain outcomes even when differences in observable characteristics are taken into account.

Available at (open access): <http://repec.ioe.ac.uk/REPEc/pdf/qsswp1502.pdf>

Title:

Jerrim, J., & Macmillan, L. (2015). Income inequality, intergenerational mobility, and the Great Gatsby Curve: Is education the key? *Social Forces*, 94(2), 505-533. doi: 10.1093/sf/sov075

Abstract:

It is widely believed that countries with greater levels of income inequality also have lower levels of intergenerational mobility. This relationship, known as the Great Gatsby Curve (GGC), has been prominently cited by high-ranking public policymakers, bestselling authors, and Nobel Prize-winning academics. Yet, relatively little cross-national work has empirically examined the mechanisms thought to underpin the GGC—particularly with regard to the role of educational attainment. This paper uses the cross-nationally comparable Programme for International Assessment of Adult Competencies (PIAAC) data set to shed new light on this issue. We find that income inequality is associated with several key components of the intergenerational transmission process—including access to higher education, the financial returns on education, and the residual effect of parental education upon labor-market earnings. Thus, consistent with theoretical models, we find that educational attainment is an important driver of the relationship between intergenerational mobility and income inequality. We hence conclude that unequal access to financial resources plays a central role in the intergenerational transmission of advantage.

Available at (open access): <http://dx.doi.org/10.1093/sf/sov075>

Title:

Jovicic, S. (2015). *Wage inequality, skill inequality, and employment: Evidence from PIAAC*. Schumpeter Discussion Papers No. 2015-007. Wuppertal: University of Wuppertal. Retrieved April 04, 2020, from <https://www.econstor.eu/bitstream/10419/121427/1/835247996.pdf>

Abstract:

This paper investigates how much of the difference in wage distributions is related to differences in skill distributions and whether a compressed wage distribution is associated with high unemployment across core OECD countries. Some countries that have more compressed (dispersed) wage structures simultaneously have more compressed (dispersed) skill structures as well, and according to many economists, variations in skill inequality can explain variations in wage inequality across different countries. Firstly, this paper examines the relationship between skill compression and wage compression; secondly, wage compression is linked to labor market outcomes in terms of employment. Compressed wage structure (usually caused by labor market institutions) is often seen as a cause for high unemployment in the low-skill sector. Does the wage compression hypothesis hold? Based on the PIAAC survey of adult skills for seventeen OECD countries, this paper seeks to shed light on these two important topics.

Available at (open access): <https://www.econstor.eu/bitstream/10419/121427/1/835247996.pdf>

Title:

Koettl, J., Sharma, S., Kupets, O., Mattoo, A., Ozden, C., & Vigo, J. M. (2015). The effects of aging on productivity: diverse, not alarming. In M. Bussolo, J. Koettl, & E. Sinnott (Eds.), *Golden Aging: Prospects for Healthy, Active, and Prosperous Aging in Europe and Central Asia* (pp. 167-212). Washington D.C.: World Bank. doi: 10.1596/978-1-4648-0353-6

Abstract:

Explores how the age structure of the workforce affects aggregate productivity, and asserts that the impacts of aging on the dynamic channels of mobility, innovation, and entrepreneurship are more worrying than the effect of worker age alone on a firm's productivity. Though higher age is associated with deterioration in some skills, aging does not necessarily lead to a drop-off in skills; some seemingly inevitable effects of aging could reflect issues specific to an older cohort of workers rather than the process of aging that will at some point affect younger cohorts, and the medical literature suggests that future cohorts will do better as they age. The old may be better than the young at certain things, but worse at others, and grasping the comparative advantage potential of aging will prove beneficial. In Europe and Central Asia (ECA) and the Baltics, as in other developing regions, the rise in average educational levels in successive cohorts provides an important cohort effect.

Available at (open access): <https://doi.org/10.1596/978-1-4648-0353-6>

Title:

Le Mouel, M., & Squicciarini, M. (2015). *Cross-Country estimates of employment and investment in organisational capital: A task-based methodology using PIAAC data*. OECD Science, Technology and Industry Working Papers No. 8. Paris: OECD Publishing. doi: 10.1787/5jrs3smfgcjb-en

Abstract:

This work proposes a task-based methodology for the measurement of employment and investment in organisational capital (OC) in 20 OECD countries. It builds on the methodology of Squicciarini and Le Mouel (2012) and uses information from the OECD Programme for the International Assessment of Adult Competencies (PIAAC). OC is defined as firm-specific organisational knowledge resulting from the performance of tasks affecting the long-term functioning of firms,

such as developing objectives and strategies; organising, planning and supervising production; and managing human resources. Cross-country heterogeneity in OC-related occupations emerges: while 20 occupational classes of the International Standard Classification of Occupations (ISCO 2008) are on average identified as being OC-related, country-specific values range between 14 (in Korea) and 24 occupations (in Poland). A core group of managerial occupations are consistently identified as OC occupations across countries, whereas differences arise in the selection of professionals and associate professionals in science and engineering, health, education, and business administration. Estimates suggest the share of OC occupations in total employment to amount to 16% on average, with country-specific values that vary between 9.5% (Denmark) and 26% (United Kingdom); and that total investment in OC, as a share of value-added, ranges from 1.4% in the Czech Republic to 3.7% in the United Kingdom, with an average 2.2% across all countries. Managers appear to account for less than half of total employment and investment in OC. Total investment in OC results higher in services than in manufacturing. In the services sector, on average half of investment in OC comes from small firms, while in manufacturing, 45% of investment in OC comes from large firms. Finally, the importance of OC investment in the public sector is investigated. With only few exceptions, investment in OC is higher in the public sector than in the private sector. These estimates of OC investment can be used to analyse its role with respect to skill use and mismatch, its impact on the routinisation of tasks and resulting polarisation of wage distribution, and its role in firms' integration and upgrading along global value chains (GVC).

Available at (open access): <https://doi.org/10.1787/5jrs3smfgcjb-en>

Title:

Meisel, K., & Mickler, R. (2015). PIAAC: Konsequenzen für Bildungspolitik und Praxis der Erwachsenenbildung [PIAAC: Consequences for educational policy and for the practice of adult education]. *Zeitschrift für Pädagogik*, 61(2), 205-222.

Abstract:

The contribution focuses on the consequences of the PIAAC study and draws attention to the circumstance that the reactions to the findings have so far not had sufficient impact either on further education policy or on the practice of continuing education. A closer look at the results within the context of other thematically related studies reveals the continuing relevance and importance of basic education. Feedback from politics, the media, or the specialist community does not provide evidence of a unified maxim for action; however, concrete demands from the side of those concerned can be formulated. Consequences necessarily ensuing from these demands, which are directed at further education policy and at the practice of continuing education, are specified and hampering framework conditions as well as misdirected prioritizations are identified.

Available at (open access): https://www.pedocs.de/volltexte/2018/15322/pdf/ZfPaed_2015_2_Meisel_Mickler_PIAAC.pdf

Title:

Meroni, E. C., Vera-Toscano, E., & Costa, P. (2015). Can low skill teachers make good students? Empirical evidence from PIAAC and PISA. *Journal of Policy Modeling*, 37(2), 308-323. doi: 10.1016/j.polmod.2015.02.006

Abstract:

Using teachers' skills from the Survey of Adult Skills (PIAAC) and students' performance from the Programme for International Students Assessment (PISA) we exploit a multilevel model to investigate how much of the variation in student performance can be explained by teacher quality at the country level across a number of OECD countries. Results show how teachers' skills seem to have

positive effects on student achievement and explain part of the variation between countries in students' achievement. National policies and efforts made from Education departments to improve teacher quality seem crucial to achieve both overall excellence and greater equity across countries. (C) 2015 The Authors. Published by Elsevier Inc.

Available at (open access): <http://dx.doi.org/10.1016/j.jpolmod.2015.02.006>

Title:

Montt, G. (2015). *The causes and consequences of field-of-study mismatch: An analysis using PIAAC*. OECD Social, Employment and Migration Working Papers No. 167. Paris: OECD Publishing. doi: 10.1787/5jrxm4dhv9r2-en

Abstract:

Field-of-study mismatch occurs when workers educated in a particular field work in another. It is conceptually distinct from qualifications or skills mismatch, although a part of qualifications and skills mismatch results from graduates from a particular field having to downgrade to find work in another field. Some studies have identified labour market dynamics related to field-of-study mismatch, but few (if any) have sought to directly understand the interplay between labour supply factors (the types of skills brought to the workplace) and the labour demand factors (the types of skills demanded by employers) in field-of-study mismatch. Using data from the Programme for International Assessment of Adult Competencies' Survey of Adult Skills (PIAAC), this paper shows that although students may choose to specialise in a particular field, it is not solely up to them to actually work in that field. In accordance with assignment theories, both the degree of saturation of a particular field in the labour market and the level of generic skills of a particular field predict the occurrence of field-of-study mismatch, highlighting that mismatch is the result of both labour supply- and demand-side factors. The paper then evaluates the costs to individuals – in terms of wages, risk of being out of work and job satisfaction. Findings suggest that the costs of field-of-study mismatch may only be high in terms of individual earnings when it is associated to qualification mismatch. For economies, field-of-study mismatch, when associated with qualifications mismatch, can amount to important costs, meriting the attention of policy makers to better aligning course places to skill needs or by encouraging skill transferability across fields.

Available at (open access): <http://dx.doi.org/10.1787/5jrxm4dhv9r2-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2015). *OECD skills outlook 2015: Youth, skills and employability*. Paris: OECD Publishing. doi: 10.1787/9789264234178-en

Abstract:

Young people around the world are struggling to enter the labour market. In some OECD countries, one in four 16-29 year-olds is neither employed nor in education or training. The OECD Skills Outlook 2015 shows how improving the employability of youth requires a comprehensive approach. While education, social, and labour market policies have key roles to play, co-ordination between public policies and the private sector is also crucial. The publication, which builds on the results of the 2012 Survey of Adult Skills (PIAAC) presented in the first edition of the Skills Outlook, also presents examples of successful policies in selected countries.

Available at: <http://dx.doi.org/10.1787/9789264234178-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2015). *Adults, computers and problem solving: What's the problem?* Paris: OECD Publishing. doi: 10.1787/9789264236844-en

Abstract:

The report provides an in-depth analysis of the results from the Survey of Adult Skills related to problem solving in technology-rich environments, along with measures concerning the use of ICT and problem solving. The Nordic countries and the Netherlands have the largest proportions of adults (around 40%) who score at the higher levels in problem solving, while Ireland, Poland and the Slovak Republic have the smallest proportions of adults (around 20%) who score at those levels. Variations in countries' proficiency in problem solving using ICT are found to reflect differences in access to the Internet and in the frequency with which adults use e-mail. The report finds that problem-solving proficiency is strongly associated with both age and general cognitive proficiency, even after taking other relevant factors into account. Proficiency in problem solving using ICT is related to greater participation in the labour force, lower unemployment, and higher wages. By contrast, a lack of computer experience has a substantial negative impact on labour market outcomes, even after controlling for other factors. The discussion considers policies that promote ICT access and use, opportunities for developing problem-solving skills in formal education and through lifelong learning, and the importance of problem-solving proficiency in the context of e-government services.

Available at (open access): <https://doi.org/10.1787/9789264236844-en>

Title:

Paccagnella, M. (2015). *Skills and wage inequality: Evidence from PIAAC*. OECD Education Working Papers No. 114. Paris: OECD Publishing. doi: 10.1787/5js4xfgl4ks0-en

Abstract:

This paper exploits data from the Survey of Adult Skills (PIAAC) to shed light on the link between measured cognitive skills (proficiency), (formal) educational attainment and labour market outcomes. After presenting descriptive statistics on the degree of dispersion in the distributions of proficiency and wages, the paper shows that the cross-country correlation between these two dimensions of inequality is very low and, if anything, negative. As a next step, the paper provides estimates of the impact of both proficiency and formal education at different parts of the distribution of earnings. Formal education is found to have a larger impact on inequality, given that returns to education are in general much higher at the top than at the bottom of the distribution. The profile of returns to proficiency, by contrast, is much flatter. This is consistent with the idea that PIAAC measures rather general skills, while at the top end of the distribution the labour market rewards specialized knowledge that is necessarily acquired through tertiary and graduate education. Finally, a decomposition exercise shows that composition effects are able to explain a very limited amount of the observed cross-country differences in wage inequality. This suggests that economic institutions, by shaping the way personal characteristics are rewarded in the labour market, are the main determinants of wage inequality.

Available at (open access): <http://dx.doi.org/10.1787/5js4xfgl4ks0-en>

Title:

Pfarr, K., Blohm, M., Blom, A. G., Erdel, B., Felderer, B., Fräisendorf, M., Hajek, K., Helmschrott, S., Kleinnert, C., et al. (2015). Are incentive effects on response rates and nonresponse bias in large-scale, face-to-face surveys generalizable to Germany? Evidence from ten experiments. *Public Opinion Quarterly*, 79(3), 740-768. doi: 10.1093/poq/nfv014

Abstract:

In survey research, a consensus has grown regarding the effectiveness of incentives encouraging survey participation across different survey modes and target populations. Most of this research has been based on surveys from the United States, whereas few studies have provided evidence that these results can be generalized to other contexts. This paper is the first to present comprehensive information concerning the effects of incentives on response rates and nonresponse bias across large-scale surveys in Germany. The context could be viewed as a critical test for incentive effects because Germany's population is among the most survey-critical in the world, with very low response rates. Our results suggest positive incentive effects on response rates and patterns of effects that are similar to those in previous research: The effect increased with the monetary value of the incentive; cash incentives affected response propensity more strongly than lottery tickets do; and prepaid incentives could be more cost effective than conditional incentives. We found mixed results for the effects of incentives on nonresponse bias. Regarding large-scale panel surveys, we could not unequivocally confirm that incentives increased response rates in later panel waves.

Available at (open access): <https://doi.org/10.1093/poq/nfv014>

Title:

Pouliakas, K., & Russo, G. (2015). *Heterogeneity of skill needs and job complexity: Evidence from the OECD PIAAC Survey*. IZA Discussion Papers No. 9392. Bonn: Institute for the Study of Labor.

Abstract:

We use information from the new OECD Survey of Adult Skills (PIAAC) to investigate the link between job tasks and cognitive skill demand in 22 advanced economies. Skill demand is operationalized by the assessed literacy and numeracy skills of workers with well-matched skills to their job duties. Jobs are categorised according to the nature of tasks, including the intensity of abstract reasoning, employee latitude, interactivity or manual work. The analysis confirms the significant relation between task complexity and higher skill needs. The significant relation holds independently of the endogenous supply of formal human capital, occupational or industrial structure and other job or individual characteristics. The results confirm the (indirect) mapping between tasks and skills as predicted by the task approach to labour economics. Given the marked heterogeneity in workplace practices adopted by employers, it is clear that enterprise level workplace development policies are warranted as enablers of skills matching and higher labour productivity.

Available at (open access): <http://hdl.handle.net/10419/124903>

Title:

Prins, E., & Monnat, S. (2015). Examining associations between self-rated health and proficiency in literacy and numeracy among immigrants and US-born adults: Evidence from the Program for the International Assessment of Adult Competencies (PIAAC). *Plos One*, 10(7), 25. doi: 10.1371/journal.pone.0130257

Abstract:

This paper uses data from the Program for the International Assessment of Adult Competencies (PIAAC) to analyze the relationship between self-reported health (SRH) and literacy and numeracy proficiency for immigrants compared to U.S.-born respondents and for Hispanic versus Asian immigrants. The research questions were: (1) Are literacy and numeracy scores associated with adults' SRH? (2) Are associations between SRH and literacy and numeracy proficiency moderated by immigrant status? (3) Among immigrants, are literacy and numeracy scores more strongly associated with SRH for Hispanics versus Asians? Immigrants had significantly lower literacy and numeracy scores, yet reported better health than U.S.-born respondents. Ordinal logistic regression analyses

showed that literacy and numeracy were both positively related to SRH for immigrants and U.S.-born adults, and should therefore be viewed as part of the growing evidence that literacy is an independent and significant social determinant of health. Second, U.S.-born and immigrant adults accrued similarly positive health benefits from stronger literacy and numeracy skills. Third, although Hispanic immigrants were more disadvantaged than Asian immigrants on almost all socioeconomic characteristics and had significantly lower literacy and numeracy scores and worse SRH than Asian immigrants, both Hispanic and Asian immigrants experienced similar positive health returns from literacy and numeracy proficiency. These findings underscore the potential health benefits of providing adult basic education instruction, particularly for immigrants with the least formal schooling and fewest socioeconomic resources.

Available at (open access): <http://dx.doi.org/10.1371/journal.pone.0130257>

Title:

Prins, E., Monnat, S., Clymer, C., & Toso, B. W. (2015). How is health related to literacy, numeracy, and technological problem-solving skills among U.S. adults? Evidence from the Program for the International Assessment of Adult Competencies (PIAAC). *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education*, 4(3), 22-42.

Abstract:

This paper uses data from the Program for the International Assessment of Adult Competencies (PIAAC) to analyze the relationship between U.S. adults' self-reported health and proficiencies in literacy, numeracy, and technological problem solving. Ordinal logistic regression analyses showed that scores on all three scales were positively and significantly related to health. After controlling for respondents' socioeconomic and demographic characteristics, only literacy remained significant, but the magnitude of the literacy effect diminished substantially. These results suggest that socioeconomic resources such as formal education, parents' education, and employment are the "pathway or mechanism" through which literacy, numeracy, and technological problem solving are related to health. Therefore, literacy, numeracy, and technological problem solving should be viewed as social determinants of health. Policy implications include the need for literacy and ESL instruction, coupled with efforts to increase college completion and access to health insurance and support services for people with disabilities.

Available at (open access): <https://static1.squarespace.com/static/55a158b4e4b0796a90f7c371/t/57995fe7725e2582f34ddd00/1469669391938/COABE+Journal+Winter+2015.pdf>

Title:

Quintini, G. (2015). *Working and learning: A diversity of patterns*. OECD Social, Employment and Migration Working Papers No. 169. Paris: OECD Publishing. doi: 10.1787/5jrw4bz6hl43-en

Abstract:

The combination of work and study has been hailed as crucial to ensure that youth develop the skills required on the labour market so that transitions from school to work are shorter and smoother. This paper fills an important gap in availability of internationally-comparable data. Using the 2012 Survey of Adult Skills (PIAAC), it draws a comprehensive picture of work and study in 23 countries/regions. Crucially, it decomposes the total share of working students by the context in which they work (VET, apprenticeships or private arrangements) and assesses the link between field of study and students' work. The paper also assesses how the skills of students are used in the workplace compared to other workers and identifies the socio-demographic factors and the labour market institutions that increase the likelihood of work and study. Finally, while it is not possible to examine the

relationship between work and study and future labour market outcomes at the individual level, some aggregate correlations are unveiled.

Available at (open access): <http://dx.doi.org/10.1787/5jrw4bz6hl43-en>

Title:

Rammstedt, B., Perry, A., & Maehler, D. B. (2015). Zentrale Ergebnisse von PIAAC aus deutscher Perspektive [Key findings of PIAAC from a German Perspective]. *Zeitschrift für Pädagogik*, 61(2), 162-191.

Abstract:

The Program for the International Assessment of Adult Competencies (PIAAC) is an international comparative study on adult skills, namely literacy, numeracy, and problem solving in technology-rich environments. The present contribution gives a brief outline of the study's design and presents results from a German perspective. In literacy Germany is slightly below the OECD average, in numeracy slightly above. As expected, basic skills differ in all countries with individuals' educational achievements. The basic skills investigated in PIAAC are relevant to labor market indicators such as participation in the labor market and earnings.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssaoar-428478>

Title:

Sabatini, J. (2015). *Understanding the basic reading skills of U.S. adults: reading components in the PIAAC literacy survey*. Princeton, N.J.: Educational Testing Service. Retrieved October 17, 2017, from <https://www.ets.org/s/research/report/reading-skills/ets-adult-reading-skills-2015.pdf>

Abstract:

The results of the Programme for the International Assessment of Adult Competencies (PIAAC) survey paint a troubling portrait of the literacy skills of adults in the United States. The survey included a direct assessment of skills and was conducted in 23 countries with nationally representative samples of adults ages 16 through 65. Assessed were cognitive and workplace skills needed for success in the 21st-century global economy. The ability to read fluently and for understanding--to be able to learn from text--is perhaps the most important foundational skill for U.S. adult citizens' health, well-being, and social and economic advancement. It is a gateway to lifelong learning, education, and training. With the emergence of the Internet and social networking (which operate primarily through the written word), reading literacy provides control over an immeasurable, readily accessible library of the world's knowledge, as well as the ability to communicate with friends, family, and employers. While the digital revolution has increased the prevalence of and, access to, visual/aural media, written text--whether on paper or screen--continues to be an omnipresent currency of communication and commerce, except for adults who continue to struggle to read. Adults who have trouble reading, using mathematics, solving problems, and using technology are at a disadvantage when competing for jobs in the 21st-century workforce. The situation is perhaps most dire for those at the lowest level of reading literacy skills, because limited literacy skill reduces their access to print-based training and educational opportunities that could be used to enhance their social and workforce skills. Low literacy adults are not necessarily isolated, thanks to the ever-present visual media and communications available. However, their potential is limited because they cannot use printed media to learn, grow their knowledge, and seek opportunities. Interpersonally, it is often painfully obvious to adults when they cannot read well, as it also is to the casual observer. When confronted with text and a task, they can be observed puzzling and lingering for longer than proficient readers do when performing the same literacy activity. The introduction of reading component tasks in the 2011 PIAAC survey provided a rich opportunity to better understand adults with low

literacy proficiency scores in the United States in comparison to similar populations in other countries. Reading components results help us to understand what adults with scores at or below Level 1 can and cannot do: (1) Can they identify the meaning of high-frequency vocabulary words when they appear in print? (2) Can they evaluate the meaning of single sentences? Can they read for local meaning in simple passages? and (3) What is the range and variation in foundational skills among the lowest scoring adults in a country? These are the questions addressed in this report. In sum, the reading components tasks in PIAAC were designed to complement the applied literacy tasks in order to provide a richer sense of what adults scoring at or below Level 1 can and cannot do when engaging and processing basic written words, sentences, and passages. In the remainder of the report, it describes in more detail: (1) the reading component measures, including the theoretical and empirical rationale for adopting this framework; (2) the results in a select set of countries that participated in the PIAAC survey; and (3) implications of those findings for policy and practice.

Available at (open access): <https://www.ets.org/s/research/report/reading-skills/ets-adult-reading-skills-2015.pdf>

Title:

Squicciarini, M., Marcolin, L., & Horvát, P. (2015). *Estimating cross-country investment in training: An experimental methodology using PIAAC data*. OECD Science, Technology and Industry Working Papers No. 09. Paris: OECD Publishing. doi: 10.1787/5jrs3sftp8nw-en

Abstract:

The present work proposes a novel methodology for the measurement of investment in human capital in the form of training. Differently from existing studies, the expenditures-based approach pursued encompasses investment in formal and on-the-job training, as well as in informal learning and yields estimates that account for both the opportunity and the direct cost of the different forms of training considered. Using a wide array of data sources, including new and rich individual-level data collected through the OECD Programme for the International Assessment of Adult Competencies (PIAAC) survey as well as Labour Force Surveys (LFS) and System of National Accounts (SNA) data, the study proposes estimates of investment in training for the years 2011-2012. These cover 22 OECD countries and are provided at both the economy and industry levels. Estimates suggest that average total investment in training corresponds to 6.7% of gross value added (GVA), with investment in on-the-job training (amounting to 2.4% of GVA, on average) that are substantially in line with those of previous literature. Wide sector and country heterogeneity in the relative importance of investment in formal and on-the-job and informal learning also emerge. On average, production appears more intensive in on-the-job training (relative to other training types) than overall services, but not relative to business services only. Public-oriented services such as education and health services invest a greater (smaller) proportion of total training expenditure in formal (on-the-job) training than other sectors and the overall economy.

Available at (open access): <https://doi.org/10.1787/5jrs3sftp8nw-en>

Title:

Straesser, R. (2015). "Numeracy at work": A discussion of terms and results from empirical studies. *ZDM: The International Journal on Mathematics Education*, 47(4), 665-674. doi: 10.1007/s11858-015-0689-0

Abstract:

With a broad understanding or definition of "work" as something that includes unpaid labour, this paper examines the relationship between numeracy and work, and analyses specific forms and constraints of workplace related numeracy. This is done by highlighting and commenting on existing

literature that focuses on the role of workplace mathematics and the identification of vocational mathematics. Following a numeracy framework suggested by Goos et al. (2014), the paper analyses three case studies, and pays special attention to mathematical knowledge, dispositions to mathematics, and the role of tools in industrial contexts. Workplace related mathematics often mixes mathematical and extra-mathematical knowledge and procedures into one "instrument", hiding and/or changing mathematics as it is encountered in or known from classrooms. Insights gained from case studies are complemented by an analysis of the PIAAC survey study. The paper leads to four major results, including a comment on the use of the term "numeracy" and a remark on "critical orientation" of numeracy from a workplace perspective.

Available at: <http://dx.doi.org/10.1007/s11858-015-0689-0>

Title:

Straková, J. (2015). Strong vocational education: A safe way to the labour market? A case study of the Czech Republic. *Educational Research*, 57(2), 168-181. doi: 10.1080/00131881.2015.1030853

Abstract:

Background: In its communications, the European Commission stresses the importance of vocational education and endorses apprenticeship training. Educational systems that have dual tracks of academic alongside vocational learning routes have been shown to generate better labour market outcomes for school leavers and smooth the school-to-work transition. On the other hand, dual tracked educational systems can reinforce the effect of social origin on educational performance: the differences between the achievement of students from a background characterised by low socio-economic status and students from high socio-economic status backgrounds are greater in a tracked system than in a comprehensive one. In addition to these general tendencies, the content and organisation of vocational education differ in individual countries, as do its strengths and weaknesses and impacts on the labour market prospects of young people. **Purpose:** This paper studies vocational education in the Czech Republic: specifically, its apprenticeship track leading directly to the labour market. It seeks to answer questions about whether the Czech apprenticeship education system provides its students with the knowledge and skills necessary for success in the modern labour market, and whether it facilitates their transition from school to work. The paper also studies the impact of the high vocational specificity of the Czech education system on educational inequalities and the development of these inequalities over time. **Sample:** The research questions are answered using statistical data and analyses of Czech data from international surveys of adult skills: the International Adult Literacy Survey (IALS) and the Organisation for Economic Co-operation and Development Programme for the International Assessment of Adult Competencies (PIAAC), which studied probability samples of adults aged 16–65 years. The IALS data were collected in 1998 and included 3132 cases, and the PIAAC data were collected in 2012 and included 6102 cases. **Design and methods:** The IALS and PIAAC data were analysed using binary logistic regression. Descriptive statistics from PIAAC, statistical yearbooks of education and national surveys on the transition from school to work were also used to provide evidence. **Results:** The analyses show that in spite of its high vocational specificity, the efficiency of the Czech education system in facilitating transition to the labour market is relatively low, as are the achievement outcomes of its apprentices. This high differentiation, moreover, contributes significantly and increasingly to educational inequalities. In the light of those findings, the paper discusses features of the Czech apprenticeship education system and intended policy measures that are aiming to retain the current structure of the system and foster apprenticeship education.

Available at: <http://dx.doi.org/10.1080/00131881.2015.1030853>

Title:

Sturman, L. (2015). What is there to learn from international surveys of mathematical achievement? In R. C. Kadosh & A. Dowker (Eds.), *The Oxford handbook of numerical cognition* (pp. 430-442). New York, US: Oxford University Press. doi: 10.1093/oxfordhb/9780199642342.013.037

Abstract:

This chapter explores some recent headline findings from the mathematical surveys (TIMSS and PISA), the possible uses to which those findings could be put, and some potential abuses of the data. It also looks at issues related to apparently different findings from the two surveys of mathematical achievement/literacy within a country. As well as direct involvement in the international coordination of some of these international studies, the NFER has long-standing experience as the National Centre coordinating and administering international surveys on behalf of the UK education departments. These studies include TIMSS (mathematics and science) and PISA (reading, mathematical literacy, scientific literacy and problem solving), as well as other international surveys such as PIRLS (reading literacy), ICCS (civics and citizenship), PIAAC (adult competences), and ESLC (European languages). This perspective of experience gives the NFER's international comparisons team strong insight into the nature of the surveys, the richness of the datasets produced, the lessons that can, in theory, be learned from them, and key limitations of the lessons that can be drawn from them.

Available at: <http://dx.doi.org/10.1093/oxfordhb/9780199642342.013.037>

Title:

Tippelt, R. (2015). Kompetenzentwicklung im Lebenslauf [Competence development throughout the course of life]. *Zeitschrift für Pädagogik*, 61(2), 157-161. doi: 10.3262/ZP1502157

Abstract:

Skills development is an integral part of the concepts of lifelong learning and development over the life course. Empirical findings show that skills are developed not only in childhood and adolescence but are also of central importance in adulthood. Adopting a cross-national comparative or a social-differentiation perspective, the present essays describe on a representative basis the state of skills development in the residential population in Germany aged 16–65 years and 66–80 years. It must be asked whether, and if so how, further education practitioners and educational policy makers will incorporate these new findings into their formative actions. [Translated on behalf of editors]

Available at: <https://doi.org/10.3262/ZP1502157>

Title:

Tippelt, R. (2015). PIAAC: Kompetenzfeststellung und-debatte in Spanien [Competence assessment and discussion in Spain]. *ZEP: Zeitschrift für Internationale Bildungsforschung und Entwicklungspädagogik*, 38(4), 26-30.

Abstract:

In Spain, the international competence-based studies such as PISA and PIAAC are intensely discussed. This article informs about the understanding of competence underlying these studies, about methodologically and internationally relevant results as well as about the specific disillusioning results on the competencies in reading and in mathematics of the 16 to 65 years olds in Spain. Yet, in the processing cohort-specific differences become evident because the younger age cohort acquires higher competencies as it is possible for the older cohort. In expert discussions different assessments of the PIAAC study result and strategies for educational policy and for practice become apparent, to which an outsider perspective is added.

Available at (open access): https://www.waxmann.com/index.php?elD=download&tid_artikel=ART101866&tuid=frei

Title:

Vicherková, D., Kaduchová, P., Chudy, S., & Harits, I. (2015). Readers' ways by connecting outcomes of PISA and PIAAC research and today's Czech school practice. *IJAEDU-International E-Journal of Advances in Education*, 1(3), 175-182. doi: 10.18768/ijaedu.82244

Abstract:

The aim of this article is to think about key issues of readers' comprehension literacy of specific category of research sample (fifteen and twenty-four) readers. To what extent is the information of both international researches implemented into reality and chosen curriculum. In the first part of the article is introduced the basic terminology (literacy according to OECD, functional literacy and reader's literacy). It is essential to understand that it is not just about literacy skills, i.e. being able to read texts and understand them, but also the skills to find, process, and compare the information contained in the text, and reproduce text content. In the second part the article thinks about and compares selected key data from international PISA and PIAAC research for specific category of research sample (fifteen and twenty-four years old readers). It is also worth considering whether the teaching community and the general public are aware of the need for specific measurements and the international comparison of literacy, in which the Czech Republic participates. In the third part the article focuses on results of international research and practice in the selected curricula of pedagogic -educational institutions for the pupil population. On several examples of pupils task from Czech curriculum are explained the reading strategies. The discussed literacy strategies reflect the skill of the student to find information, process, compare, and evaluate it according to specification. The main objective of this text is to reflect on the possibilities of linking the outputs of both readership surveys, such as functional literacy and school practice in our Czech environment.

Available at: <http://dx.doi.org/10.18768/ijaedu.82244>

Title:

Wiederhold, S. (2015). *Macroeconomic growth and lifelong learning*. Thematic Report, proceedings of LLLight'in'Europe research project Friedrichshafen: LLLightinEurope Research Consortium. Retrieved October 27, 2017, from http://www.lllightineurope.com/fileadmin/lllightineurope/download/LLLight_Macroeconomic_Growth_and_LLL_thematicreport_TR6_20150922.pdf

Abstract:

PIAAC, a new international adult skill survey developed under the patronage of the OECD, offers novel insights on the role of cognitive skills in modern knowledge-based economies. Research based on these data shows that higher cognitive skills – measured across numeracy, literacy, and ICT domains – are systematically related to higher employment probabilities. Moreover, better cognitive skills are also associated with higher wages in all countries participating in PIAAC, with economically meaningful effect sizes. Among prime-age workers (35-54 years old), going up one out of five competency levels in numeracy skills is associated with increased hourly wages averaging some 18 percent across countries. But perhaps the most striking finding from the international analysis is the substantial heterogeneity in returns to skills across countries. Estimated returns to skills in the countries with the highest returns (the United States, Ireland, and Germany) are roughly twice as large as in the countries with the lowest returns (Sweden, the Czech Republic, and Norway). Intriguingly, returns to skills are systematically lower in countries with higher union density, stricter employment protection, and larger public-sector shares. This new research adds to previous evidence showing that cognitive skills are closely linked to economic growth. An increase in educational

achievement by 50 PISA points translates into 1 percentage point higher growth rates in the long run. Importantly, what matters for growth is the skills that people have actually learned, not how long people stayed at school. This evidence strongly calls for a focus on educational outcomes, not just attainment. Given that human capital is a leading determinant of employment, earnings, and economic growth in modern knowledge-based economies such as the European Union, it is all the more worrying that many European countries show a rather poor performance in the recent PIAAC test when compared with the top-performing countries. This signals a dire need for reforms if the European Union wants to prosper in the future. Regarding human capital accumulated at school, a number of rigorous studies show that a good governance framework of the school system and effective teachers are important for achieving high levels of skills among students. However, continuing structural and technological change of the economies clearly asks for skill adaptations and a process of lifelong learning after school. This puts the focus on policies that ensure that skills are effectively retained and used. Furthermore, skills also accumulate by regularly practicing them. This learning by doing seems to develop skills at a faster rate when there is substantial novelty and challenge in the scope of everyday activities undertaken by employees. An economy which has its production composed of intellectually complex activities also appears to grow faster. In fact, more than half of the real per capita income growth in the United States over the period 1980-2010 resulted from an increased complexity of jobs, while just about one-third came from growth in average years of schooling.

Available at (open access): http://www.lllightineurope.com/fileadmin/lllightineurope/download/LLLight_Macroeconomic_Growth_and_LLL_thematicreport_TR6_20150922.pdf

2.9 Publications in 2016

Title:

Barrett, G., & Riddell, W. (2016). *Ageing and literacy skills*. OECD Education Working Papers No. 145. Paris: OECD Publishing. doi: 10.1787/5jlphd2twps1-en

Abstract:

This paper examines the relationship between age and literacy using data from the International Adult Literacy Survey (IALS), the Adult Literacy and Life Skills Survey (ALL) and The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC). A negative partial relationship between literacy and age exists with literacy declining with age, especially after age 45. However, this relationship could reflect some combination of age and birth cohort effects. The analysis shows that in most participating countries the negative literacy-age profile observed in cross-sectional data arises from offsetting ageing and cohort effects. With some exceptions, more recent birth cohorts have lower levels of literacy and individuals from a given birth cohort lose literacy skills after they leave school at a rate greater than indicated by cross-sectional estimates. The results for birth cohort suggest that there is not a general tendency for literacy skills to decline from one generation to the next, but that the majority of the countries examined are doing a poorer job of developing literacy skills in successive generations.

Available at (open access): <https://doi.org/10.1787/5jlphd2twps1-en>

Title:

Blossfeld, P. N., Blossfeld, G. J., & Blossfeld, H.-P. (2016). Changes in educational inequality in cross-national perspective. In M. J. Shanahan, J. T. Mortimer, & M. Kirkpatrick Johnson (Eds.), *Handbook of the life course*. New York: Springer. doi: 10.1007/978-3-319-20880-0_10

Abstract:

In the process of educational expansion and reforms, the old sharp divisions between academic and vocational/technical tracks in the secondary school systems of modern societies have greatly diminished and the proportion of young people who have completed at least upper secondary education has risen impressively. Also, the enrollment in higher education has quickly grown in all modern countries and turned their tertiary educational systems into institutions of mass education. Using truly comparative data from the PIAAC study, we analyze how the educational attainment of men and women from families with different educational backgrounds has changed over time in 22 modern societies. The results show that there are great cross-national differences in the development of inequality of educational opportunity.

Available at: https://doi.org/10.1007/978-3-319-20880-0_10

Title:

Brandt, N., & Sicari, P. (2016). *The skills of polish emigrants: evidence from PIAAC*. Working Papers No. 1332. Paris: OECD Publishing. doi: 10.1787/5jlpq7tg3hxs-en

Abstract:

Based on the OECD data from the Survey of Adult Skills (PIAAC) this paper sheds light on the skills of migrants. In line with earlier research the data show that migrants from Poland are more likely to have a tertiary degree than peers at home, but they often work in elementary professions abroad that do not match these high qualifications. This may well be at least partly a language issue, as migrants from Poland resemble migrants from other low-income countries in that their numeracy and literacy skills in the language of their host country is markedly lower than the average across all PIAAC participants, migrants or not. This gap is smaller, though, when looking only at migrants who report having been tested in a language that they use often and master well. The data reveal an interesting difference with migrants from higher-income countries, as their test results do not differ from the average, although they face the same language issues as other migrants. The reason may well be that only migrants from low-income countries can hope to earn higher wages abroad even if they work in low-skill professions, while migrants from higher-income countries need to master the language of their host country to do well. In fact, Polish migrants earn higher wages than their peers who stayed at home, even though they are particularly often overqualified.

Available at (open access): <https://doi.org/10.1787/5jlpq7tg3hxs-en>

Title:

Chudy, S., & Vicherková, D. (2016). Application of selected outcomes from PISA and PIAAC researches to Czech curriculum and reading education. *Universal Journal of Educational Research*, 4(9), 2002-2010. doi: 10.13189/ujer.2016.040910

Abstract:

This article deals with problematic fields which influence the level of reading strategies of fifteen to nineteen years old pupils (e.g. selected productive learning activities, work with diverse types of texts and information sources etc.). Moreover, the paper provides information about efficiency testing of pupils in selected reading strategies during entrance examination to high school and high school graduation exams. What is the connection between the trends in the Czech and foreign curriculum based upon the PISA and PIAAC outcome application? The aim of this paper is the reflection and analysis of key issues of the functional reading literacy, the methods employed were: content analysis of a selected part of the Czech curriculum, outcome comparison of international reading literacy researches PISA and PIAAC, reflection and analysis of approaches to test tasks for entrance

examination to high school. This paper points out the complexity of curricular system, i.e. interdependence of primary, secondary and lifelong reading education.

Available at (open access): <http://dx.doi.org/10.13189/ujer.2016.040910>

Title:

Cincinnati, S., De Wever, B., Van Keer, H., & Valcke, M. (2016). The influence of social background on participation in adult education: Applying the cultural capital framework. *Adult Education Quarterly*, 66(2), 143-168. doi: 10.1177/0741713615626714

Abstract:

In this article, we address the issue of participation in adult education building on the cultural capital framework. This theoretical framework suggests that (educational) practices are affected by one's social background and, more precisely, by the cultural resources handed down in the family context. To examine the validity of this theoretical framework, we build on data from the Programme for the International Assessment of Adult Competencies from 23 countries (n = 120,789). The Programme data allow using the variables parents' educational level (a proxy for social background), educational attainment, and readiness to learn as precursors of participation in adult education (both a proxy for cultural capital). Our findings suggest that the cultural capital framework is not fully suited to explain participation in adult education: Although social background has an (indirect) influence on participation, its effect does not concur with theoretical predictions, that is, mediated by the readiness to learn.

Available at: <https://doi.org/10.1177/0741713615626714>

Title:

Coben, D., Miller-Reilly, B., Satherley, P., & Earle, D. (2016). Making the most of PIAAC: Preliminary investigation of adults' numeracy practices through secondary analysis of the PIAAC dataset. *Adults Learning Mathematics: An International Journal*, 11(2), 27-40.

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) assesses key information processing skills and collects information on how often people undertake a range of activities at work and in everyday life. We are exploring what secondary analysis of online anonymised PIAAC data can tell us about adults' numeracy practices. In the process we review the accessibility and user-friendliness of the data for novice researchers and practitioners in the hope of encouraging them to explore this rich resource and give a brief account of our experience of the process of accessing publicly-available PIAAC data for secondary analysis.

Available at (open access): <https://hdl.handle.net/10289/11408>

Title:

Danner, D., Blasius, J., Breyer, B., Eifler, S., Menold, N., Paulhus, D. L., Rammstedt, B., Roberts, R., Schmitt, M., et al. (2016). Current challenges, new developments, and future directions in scale construction. *European Journal of Psychological Assessment*, 32, 175-180. doi: 10.1027/10155759/a000375

Abstract:

Measurement instruments are the foundation for empirical research in the social sciences. Instruments are necessary for measuring latent constructs such as cognitive and non-cognitive skills in the Programme for the International Assessment of Adult Competencies (PIAAC), personality

characteristics in studies such as the International Social Survey Program (ISSP), or attitudes in international studies such as the European Social Survey (ESS). Measurement instruments also allow researchers, practitioners, and policy makers to describe individuals, groups, or societies, to assess patients in clinical settings, or to select, classify, or assist in the remediation of workers and students. Many policy, research, and applied decisions depend on measurement instruments and the quality of these decisions depends on the quality of the instruments, which is closely entwined with the scale development process (Ziegler, 2014). The aim of this editorial is to describe challenges and new developments in scale construction and discuss how they can facilitate the quality of measurement instruments.

Available at (open access): <http://dx.doi.org/10.1027/1015-5759/a000375>

Title:

De la Rica, S., & Gortazar, L. (2016). *Differences in job de-routinization in OECD countries: Evidence from PIAAC*. IZA Discussion Papers No. 9736. Bonn: Forschungsinstitut zur Zukunft der Arbeit (IZA). Retrieved December 17, 2017, from <https://ideas.repec.org/p/iza/izadps/dp9736.html>

Abstract:

The aim of the paper is threefold. First, we compute differences on the degree of de-routinization of job contents across a harmonized and hence comparable sample of Anglo-Saxon, many European and even Asian advanced countries. We do so by using very precise information on job contents at the worker level, which allows for job task heterogeneity within occupations. Second we assess the extent to which computer adoption leads to the observed difference in the degree of de-routinization of job contents. Third, we test whether higher degrees of technology adoption are associated to higher wage inequality. Our results show remarkable differences in the degree of de-routinization of job contents across countries, being computer adoption at work a key significant driver of such differences. In particular, ICT use at work explains 13.4% (6.3%) of the cross-country unconditional (conditional) differences in de-routinization of job contents. Regarding the impact of adoption technology on wage inequality, our results indicate that although differences in ICT adoption explain an important and significant part of wage differentials, the effect is homogeneous for all the wage distribution, implying that we cannot find a significant association between wage inequality and technology adoption. Tables, Figures, Appendixes, References.

Available at (open access): <https://www.iza.org/publications/dp/9736/differences-in-job-de-routinization-in-oecd-countries-evidence-from-piaac>

Title:

Desjardins, R., Melo, V., & Lee, J. (2016). Cross-national patterns of participation in adult education and policy trends in Korea, Norway, and Vietnam. *Prospects: Quarterly Review of Comparative Education*, 46(1), 149-170. doi: 10.1007/s11125-016-9384-3

Abstract:

Using comparative data, this article examines the level and distribution of participation in adult education (AE) opportunities among countries that participated in PIAAC (Programme for the International Assessment of Adult Competencies). It considers observed cross-country patterns in relation to some mechanisms that drive unequal chances to participate and to some policy issues that surround the provision, governance, and financing of different types of adult learning. It also explores recent policy developments relevant to AE in three selected countries (Korea, Norway, and Vietnam).

Available at: <https://doi.org/10.1007/s11125-016-9384-3>

Title:

Evans, J. (2016). What to look for in PIAAC results. In K. Yasukawa & S. Black (Eds.), *Beyond Economic Interests. International Issues in Adult Education* (pp. 41-58). Rotterdam: SensePublishers. doi: 10.1007/978-94-6300-444-2_3

Abstract:

In October 2013, results from the Organisation for Economic Co-operation and Development (OECD) sponsored Programme for the International Assessment of Adult Competencies (PIAAC) for 24 participating countries (mostly in Europe, but also including North America, the Far East, and Australia) became available. As the successor to the International Adult Literacy Survey (IALS) in the 1990s and the Adult Literacy and Lifeskills (ALL) survey in the 2000s, PIAAC aims to provide information as an international comparative survey. In this chapter, I focus on how to understand these studies, by considering conceptual issues, methodological aspects (research design and execution), and presentation of results. I also discuss the types of results from Australia made available in October 2013, as well as preliminary results released by the Australian Bureau of Statistics (ABS) earlier in that year (ABS, 2013a, 2013b). The chapter aims to air questions concerning the relevance of these survey results to literacy and numeracy researchers and practitioners, and the types of further research possibly needed, in different national and local contexts. [Source: From the preface]

Available at: https://doi.org/10.1007/978-94-6300-444-2_3

Title:

Falck, O., Heimisch, A., & Wiederhold, S. (2016). *Returns to ICT skills*. OECD Education Working Papers No. 134. Paris: OECD Publishing. doi: 10.1787/5jlzfl2p5rzq-en

Abstract:

How important is mastering information and communication technologies (ICT) in modern labour markets? We present the first evidence on this question, drawing on unique data that provide internationally comparable information on ICT skills in 19 countries from the OECD Programme for the International Assessment of Adult Competencies (PIAAC). Our identification strategy relies on the idea that Internet access is important in the formation of ICT skills, and we implement instrumental-variable models that leverage exogenous variation in Internet availability across countries and across German municipalities. ICT skills are substantially rewarded in the labour market: returns are at 8% for a one standard-deviation increase in ICT skills in the international analysis and are almost twice as large in Germany. Placebo estimations show that exogenous Internet availability cannot explain numeracy or literacy skills, suggesting that our identifying variation is independent of a person's general ability. Our results further suggest that the proliferation of computers complements workers in executing abstract tasks that require ICT skills.

Available at (open access): <http://dx.doi.org/10.1787/5jlzfl2p5rzq-en>

Title:

Feinberg, I., Frijters, J., Johnson-Lawrence, V., Greenberg, D., Nightingale, E., & Moodie, C. (2016). Examining associations between health information seeking behavior and adult education status in the US: An analysis of the 2012 PIAAC data. *Plos One*, 11(2), 20. doi: 10.1371/journal.pone.0148751

Abstract:

This paper presents data from the Program for the International Assessment of Adult Competencies with a focus on the interrelationships among health information seeking behavior (HISB), and health status or use of preventive health measures for U.S. adults both with and without a high

school diploma. Key results of ordinal and binary logistic regression analyses indicated that, after controlling for demographic factors, (1) adults with a high school diploma use more text-based health information sources while adults without a high school diploma use more oral sources, (2) using the Internet as a source of health information is more strongly related to reporting excellent/very good health status than having a high school diploma, (3) those without a high school diploma who use the Internet report the largest increase in health status over any other health information source, and (4) for those with learning disability or vision problem, a high facility in reading English is an important predictor of whether the Internet is used as a health information source. The Internet appears to play a key role in both enhancing health status and enabling use of preventive measures for those with and without a high school diploma; although, individuals without a high school diploma who use the Internet for health information derive substantial benefit in health status.

Available at (open access): <http://dx.doi.org/10.1371/journal.pone.0148751>

Title:

Forster, A. G., Bol, T., & Werfhorst, H. (2016). Vocational education and employment over the life cycle. *Sociological Science*, 3, 473-494. doi: 10.15195/v3.a21

Abstract:

Vocationally educated individuals often find employment sooner after school than those with a general educational qualification. A recent study has argued that the higher employment probability associated with a vocational qualification reverses in later life. The main explanation is that although having (occupation-)specific skills is an advantage when entering the labor market, specific skills also make the vocationally educated less flexible. This life cycle effect is hypothesized to be especially strong in countries where the vocational system provides highly occupation-specific skills. We test these two hypotheses on cross-national data from PIAAC 2012. Using logistic regressions with country fixed effects, we find that individuals with a vocational qualification have a higher employment probability than those with a general qualification at the start of their career, but this pattern reverses in later life. In contrast to earlier findings, we do not find that this effect varies systematically across countries with different vocational educational systems.

Available at (open access): <http://dx.doi.org/10.15195/v3.a21>

Title:

Goldhammer, F., Martens, T., Christoph, G., & Lüdtke, O. (2016). *Test-taking engagement in PIAAC*. OECD Education Working Papers No. 133. Paris: OECD Publishing. doi: 10.1787/5jlzfl6fhxs2-en

Abstract:

In this study, we investigated how empirical indicators of test-taking engagement can be defined, empirically validated, and used to describe group differences in the context of the Programme of International Assessment of Adult Competences (PIAAC). The approach was to distinguish between disengaged and engaged response behavior by means of response time thresholds. Constant thresholds of 3000 ms and 5000 ms were considered, as well as item-specific thresholds based on the visual inspection of (bimodal) response time distributions (VI method) and the proportion correct conditional on response time ($P_{>0\%}$ method). Overall, the validity checks comparing the proportion correct of engaged and disengaged response behavior by domain and by item showed that the $P_{>0\%}$ method performed slightly better than the VI method and the methods assuming constant thresholds. The results for Literacy and Numeracy by module revealed that there was an increase from Module 1 to Module 2 in the proportion of disengaged responses, suggesting a drop in test-taking engagement. The investigation of country differences in test-taking engagement by

domain using the P+>0% method showed that the proportion of responses classified as disengaged was quite low. For Literacy, the proportion was well below 5% for the majority of countries; in Numeracy, the proportion was even smaller than 1% for almost all countries; while for Problem solving, the proportion of disengaged responses was more than 5% but usually well below 10%. There were significant differences in test-taking engagement between countries; the obtained effect sizes were small to medium. Population differences in test-taking engagement were highly correlated between the three domains, suggesting that test-taking engagement can be conceived as a consistent characteristic. Furthermore, there was a clear negative association between test-taking disengagement and proficiency in Literacy, Numeracy and Problem solving, respectively. Finally, subgroup differences for gender, age, educational attainment, and language proved to be insignificant or very small. Results suggest that males tend to be more disengaged, that disengagement increases with age in Problem solving, with lower educational attainment and when the test language is not the same as a testee's native language.

Available at (open access): <http://dx.doi.org/10.1787/5jlzfl6fhxs2-en>

Title:

Golsteyn, B. H. H., Vermeulen, S., & Wolf, I. (2016). Teacher literacy and numeracy skills: International evidence from PIAAC and ALL. *De Economist*, 1-25. doi: 10.1007/s10645-016-9284-1

Abstract:

Using the OECD-studies PIAAC and ALL, this paper shows that teachers on average have better literacy and numeracy skills than other respondents in almost all of the 15 countries in the samples. In most countries, teachers outperform others in the bottom percentiles, while in some countries they perform better than others throughout the skill distribution. These results imply that the scope to improve teachers' skills varies between countries and that policy makers should take the shape of the skills distribution into account when designing interventions in order to most efficiently raise teachers' skills.

Available at (open access): <http://dx.doi.org/10.1007/s10645-016-9284-1>

Title:

Gorges, J., Maehler, D. B., Koch, T., & Offerhaus, J. (2016). Who likes to learn new things: Measuring adult motivation to learn with PIAAC data from 21 countries. *Large-scale Assessments in Education*, 4(1), 1-22. doi: 10.1186/s40536-016-0024-4

Abstract:

Background: Despite the importance of lifelong learning as a key to individual and societal prosperity, we know little about adult motivation to engage in learning across the lifespan. Building on educational psychological approaches, this article presents a measure of Motivation-to-Learn using four items from the background questionnaire of the Programme for the International Assessment of Adult Competencies (PIAAC). Methods: We used multiple-group confirmatory factor analyses for ordered categorical data to investigate the scale's dimensionality and measurement invariance across countries. Regression analyses were used to investigate the scale's criterion validity. Results: Results show that the proposed four-item scale fits the data considerably better than the original six-item scale labeled Readiness-to-Learn. Further analyses support the scale's configural, metric (weak) and partial scalar (strong) measurement invariance across 21 countries. As expected, Motivation-to-Learn has significant relations to the working population's engagement in learning in terms of participation in non-formal education over the last 12 months. These relations remain relevant after taking literacy as an indicator of level of education into account. Conclusion: The Motivation-to-Learn scale presented here may be used to indicate adult motivation in cross-country

comparisons. The potential of using the scale in future PIAAC analyses and research on adult learning is discussed.

Available at (open access): <https://doi.org/10.1186/s40536-016-0024-4>

Title:

Green, F., & Henseke, G. (2016). Should governments of OECD countries worry about graduate underemployment? *Oxford Review of Economic Policy*, 32(4), 514-537. doi: 10.1093/oxrep/grw024

Abstract:

To assess potential public concerns, this paper examines theory and evidence surrounding graduate educational underemployment (overeducation) in this era of mass higher education. Using a new, validated, index of graduate jobs, we find that the prevalence of graduate underemployment across 21 countries is correlated with the aggregate supply–demand imbalance, but not with indicators of labour market flexibility. Underemployment’s association with lower job satisfaction and pay is widespread. Yet in most countries there are external benefits (social trust, volunteering, and political efficacy) associated with higher education, even for those who are underemployed. Taken together with existing studies we find that, in this era of mass higher education participation, underemployment is a useful indicator of the extent of macroeconomic disequilibrium in the graduate labour market. We conclude that governments should monitor graduate underemployment, but that higher education policy should be based on social returns and should recall higher education’s wider purposes.

Available at (open access): <https://doi.org/10.1093/oxrep/grw024>

Title:

Grotlüschen, A. (2016). Literacy level I and below versus literacy level IV and above. *Zeitschrift für Weiterbildungsforschung-Report*, 39(2), 255-270. doi: 10.1007/s40955-016-0068-7

Abstract:

Literacy as specified in the recent PIAAC survey (OECD 2013) is separated into competence levels. This allows a comparison of adults performing on literacy Level I and below versus those performing on Level IV and above. The PIAAC survey also contains variables on participation in adult education. Core findings confirm the Matthew effect for participation rates, but not for training hours.

Available at: <https://doi.org/10.1007/s40955-016-0068-7>

Title:

Grotlüschen, A., Mallows, D., Reder, S., & Sabatini, J. (2016). *Adults with low proficiency in literacy or numeracy*. OECD Education Working Papers No. 131. Paris: OECD Publishing. doi: 10.1787/5jm0v44bnmxx-en

Abstract:

This paper offers a comprehensive analysis of the information from the Survey of Adult Skills (PIAAC) regarding adults with low literacy and numeracy proficiency. The paper first describes the demographic and socio-economic characteristics of these populations. Although, they are more likely than the rest of the population to exhibit certain characteristics, such as lower levels of educational attainment, lower rates of unemployment or more disadvantaged backgrounds, adults with low literacy are found in among all socio-demographic groups and in all walks of life. The paper then explores the frequency with which adults with low proficiency engage in the reading, writing and numeracy practices and the relationship between these practices and a range of social and economic

outcomes. For most outcomes, levels of engagement in literacy practices appear to be as strong predictors as proficiency, indicating the importance of encouraging more intense use of these skills both in and outside of work. The unique data from the Survey of Adult Skills regarding performance on the simple reading tasks (the so called "reading components") is also analysed. Adults with low proficiency are found to be able to easily recognise commonly used words in printed form but often have difficulty with processing the logic of sentences and reading extended passages for basic meaning. Adults with low proficiency are considerably less likely than their more proficient peers to participate in formal or non-formal adult education or training programmes, which is mostly due to the socio-demographic and employment characteristics of this population. However, the lower participation rates among the low proficient adults does not appear to be a consequence of their lack of motivation as much as of the presence of various obstacles to participation, such as lack of time and the cost of training.

Available at (open access): <http://dx.doi.org/10.1787/5jm0v44bnmxx-en>

Title:

Gustafsson, J. E. (2016). Lasting effects of quality of schooling: Evidence from PISA and PIAAC. *Intelligence*, 57, 66-72. doi: 10.1016/j.intell.2016.05.004

Abstract:

The aim was to investigate to what extent quality of compulsory schooling is reflected in adult literacy and numeracy performance levels. Data from five administrations of the PISA survey between 2000 and 2012 for 20 countries were analyzed, along with data from corresponding age cohorts for the same set of countries participating in the cross-sectional PIAAC survey. For each country the PISA data was used to estimate linear achievement trends for literacy, numeracy and science to indicate change in quality of schooling and for the PIAAC data mean differences were computed between a younger and an older age group. The PIAAC performance differences were strongly related to the PISA achievement trends ($r=0.70$), and relations held up when controls were introduced for level of education attained ($\beta = 0.55$) and for general social and cultural development of the country ($\beta = 0.48$). It is concluded that quality of schooling has lasting impact on adult literacy and numeracy performance levels. (C) 2016 Elsevier Inc. All rights reserved.

Available at: <http://dx.doi.org/10.1016/j.intell.2016.05.004>

Title:

Hampf, F., & Woessmann, L. (2016). *Vocational vs. general education and employment over the life-cycle: New evidence from PIAAC*. CESifo Working Paper No. 6116. Munich: CESifo Group Munich.

Abstract:

It has been argued that vocational education facilitates the school-to-work transition but reduces later adaptability to changing environments. Using the recent international PIAAC data, we confirm such a trade-off over the life-cycle in a difference-in-differences model that compares employment rates across education type and age. An initial employment advantage of individuals with vocational compared to general education turns into a disadvantage later in life. Results are strongest in apprenticeship countries that provide the highest intensity of industry-based vocational education.

Available at (open access): https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2871126

Title:

He, J., & Van de Vijver, F. J. R. (2016). Response styles in factual items: Personal, contextual and cultural correlates. *International Journal of Psychology*, 51(6), 445-452. doi: 10.1002/ijop.12263

Abstract:

This study investigated response styles in factual items and explored their associations with personal, contextual and cultural factors. Responses on various factual questions, cognitive tests and interviewers' observational data from a total of 152,514 respondents in 22 countries in the Programme for the International Assessment of Adult Competencies (PIAAC) were analysed. Indexes of extreme, midpoint and acquiescent response styles were extracted from Likert-scale and dichotomous responses of factual items. A general response style (GRS) with a positive loading of extreme response style and negative loadings of midpoint and acquiescent response styles was confirmed. This factor showed a similar cross-cultural patterning as another general factor from attitudinal and self-evaluative items of Likert scales in a previous study, which indicated the pervasiveness of response styles irrespective of types of survey items. In a multilevel analysis, the individual-level GRS was found to be negatively related to being male, educational level and literacy competency, and positively related to 3rd-person presence and background noise, and at country level negatively associated with socioeconomic development. Cross-level interactions were also found. Implications on the pervasiveness and nature of response styles are discussed.

Available at: <http://dx.doi.org/10.1002/ijop.12263>

Title:

Henseke, G., & Green, F. (2016). *"Graduate jobs" in OECD countries*. OECD Education Working Papers No. 144. Paris: OECD Publishing. doi: 10.1787/5jlphd30vdr0-en

Abstract:

A recurring issue for education policy-makers is the labour market effect of the long-term global mass expansion of higher education, particularly on what is a "graduate job". The traditional assumption is that graduate jobs are virtually coterminous with professional and managerial occupations. A new indicator of graduate jobs, termed ISCO(HE)2008, is derived using task-based data drawn from the Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC). The new classification shows that several jobs in ISCO major group 3 "Technicians and Associate Professionals" are also classed as graduate jobs in many countries. Altogether, 27.6% of jobs are classified as graduate jobs in the 15 OECD country-regions for which we have data. Considerable variation in the proportion of graduate jobs is found across industries and countries and in the short period from 2011 to 2013, the proportion of graduate jobs has become more diverse across countries.

Available at (open access): <https://doi.org/10.1787/5jlphd30vdr0-en>

Title:

Jimeno, J. F., Lacuesta, A., Martínez-Matute, M., & E., V. (2016). *Education, labour market experience and cognitive skills*. OECD Education Working Paper No. 146. Paris: OECD Publishing. doi: 10.1787/5jlphd2qj19n-en

Abstract:

This paper examines how formal education and experience in the labour market correlate with measures of human capital available in The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC). The findings are consistent with the notion that, in producing human capital, work experience substitutes formal education at the bottom of the schooling distribution. First, the number of years of working experience correlates with literacy proficiency only among low-educated individuals. Secondly, low-educated workers who only perform simple tasks on their jobs (calculating percentages or reading emails) do better in numeracy and literacy tests than similar employees who did not perform those tasks. Thirdly,

workers in jobs intensive in numeric tasks perform relatively better in the numeracy section of the PIAAC test than in the literacy part. Overall, our results suggest that the contribution of on-the-job learning to skill formation is about a third of that of compulsory schooling in most of the countries that participated in PIAAC.

Available at: <https://doi.org/10.1787/5jlphd2qj19n-en>

Title:

Kena, G., Hussar, W., McFarland, J., Brey C., Musu-Gillette, L., Wang, X., Zhang, J., Rathbun, A., Wilkinson-Flicker, S., et al. (2016). *The condition of education 2016* [NCES 2016-144]. Washington: NCES - National Center for Education Statistics. Retrieved October 27, 2017, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016144>

Abstract:

NCES has a mandate to report to Congress on the condition of education by June 1 of each year. The Condition of Education 2016 summarizes important developments and trends in education using the latest available data. The 2016 report presents 43 key indicators on the status and condition of education and are grouped under four main areas: (1) population characteristics, (2) participation in education, (3) elementary and secondary education, and (4) postsecondary education. Also included in the report are 3 Spotlight indicators that provide a more in-depth look at some of the data.

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016144>

Title:

Lane, M., & Conlon, G. (2016). *The impact of literacy, numeracy and computer skills on earnings and employment outcomes*. OECD Education Working Papers No. 129. Paris: OECD Publishing. doi: 10.1787/5jm2cv4t4gzs-en

Abstract:

Using the 2012 PIAAC data, our analysis confirms that there are significantly higher earnings and employment returns to "both" increasing levels of formally recognised education, and to increasing levels of numeracy, literacy and information and communication technologies (ICT) skills proficiencies controlling for the level of education. Unsurprisingly, the labour market returns to changes in formally recognised levels of education in general exceed the labour market returns associated with increasing levels of skills proficiency. In the case of literacy and numeracy proficiencies, improved literacy and numeracy skills narrow the labour market outcomes gap between individuals with different levels of formally recognised education, but do not close it completely. The analysis demonstrates more substantial returns to ICT skills. Furthermore, possession of higher levels of ICT skills and lower levels of formally recognised qualification are often associated with higher returns compared to individuals with higher levels of formally recognised education but lower ICT proficiency levels. In other words, ICT skills proficiencies often entirely compensate for lower formally recognised qualifications in the labour market.

Available at (open access): <https://doi.org/10.1787/5jm2cv4t4gzs-en>

Title:

Li, T., Davier, M., & Hancock, G. R. (2016). *The prediction of labor force status: Implications from international adult skill assessments*. Research Report. doi: 10.1002/ets2.12097

Abstract:

This report investigates the prediction of labor force status using observed variables, such as

gender, age, and immigrant status, and more importantly, measured skill variables, including literacy proficiency and a categorical rating of educational attainment based on the 1994 International Adult Literacy Survey (IALS), the 2003 Adult Literacy and Life Skills Survey (ALL), and the 2011 Programme for the International Assessment of Adult Competencies (PIAAC) projects. We explored the regression relations in the past two decades for six trend countries and subnational regions that provide data for all assessments: the United States, Norway, the Netherlands, Italy, Canada's English-speaking region, and Canada's French-speaking region. Probit regression models with latent predictors were used in this cross-sectional study to investigate how those variables are structurally related to labor market outcomes. Results show the importance of literacy proficiency and education in determining individuals' labor force status across countries/regions, but with key differences among these countries/regions.

Available at (open access): <http://dx.doi.org/10.1002/ets2.12097>

Title:

Lind, P., & Mellander, E. (2016). *Relations between immigration and adult skills: Findings based on PIAAC*. Working Paper No. 21. Uppsala: Institute for Evaluation of Labour Market and Education Policy.

Abstract:

The international survey of adult skills, PIAAC, records large differences in numeracy and literacy skills between immigrants and non-immigrants. We examine how these differences relate to the countries' average skills and skill rankings. Immigrants are defined by country of birth or in terms of languages spoken. For almost all countries, the differences in average skills between non-immigrants and the country's entire population are significant but small. Regarding skill rankings significant differences are found only for Sweden and these are found to be sensitive to the treatment of individuals that could not conduct the skill tests due to language difficulties.

Available at (open access): <http://hdl.handle.net/10419/166022>

Title:

Lundetræ, K., & Gabrielsen, E. (2016). Relationship between literacy skills and self-reported health in the Nordic countries. *Scandinavian Journal Of Public Health*, 44(8), 758-764. doi: 10.1177/1403494816668082

Abstract:

Aims: This study investigated the association between literacy skills and self-reported health among Danish (n = 7284), Finnish (n = 5454), Norwegian (n = 4942) and Swedish (n = 4555) participants aged 16–65 years. Methods: Logistic regression models were used to assess the association between literacy skills and self-reported health after adjusting for sex, age and educational level. Results: Nordic participants aged 16–65 years with literacy skills at the lowest level reported sub-optimal health more often (28–37%) than those with literacy skills at the highest level (7–9%). After adjusting for sex, age and educational level, the likelihood of reporting sub-optimal health was 1.99–3.24 times as high for those with literacy skills at the lowest level as for those with literacy skills at the highest level. Conclusions: These results suggest that poor literacy skills increase the likelihood of experiencing poor health in the Nordic countries, even after controlling for educational level.

Available at (open access): <http://dx.doi.org/10.1177/1403494816668082>

Title:

Marcolin, L., Miroudot, S., & Squicciarini, M. T. (2016). *The routine content of occupations: New cross-country measures based on PIAAC*. OECD Trade Policy Papers No. 188. Paris: OECD Publishing. doi:10.1787/5jm0mq86fljg-en

Abstract:

This work proposes a novel measure of the routine content of occupations, called the Routine Intensity Indicator (RII), built on data from the OECD Programme for the International Assessment of Adult Competencies (PIAAC) survey. The RII uses information about the extent to which workers can modify the sequence of their tasks and decide the type of tasks to be performed on the job. Based on median RII values of individuals in 3-digit occupations across 20 OECD countries, jobs are grouped into quartiles of routine-intensity. On average, in 2012, 46% of employed persons worked in non-routine (18%) or low (28%) routine intensive occupations, with the distribution differing significantly across countries. The relationship between the routine content of occupations and the skills of the workforce is also investigated. While a negative correlation does emerge between skill content and routine intensity – i.e. more routine-intensive occupations tend to be associated with lower skills – this relationship is not necessarily very strong.

Available at (open access): <https://doi.org/10.1787/5jm0mq86fljg-en>

Title:

O'Keeffe, C. (2016). Producing data through E-Assessment: A trace ethnographic investigation into e-assessment events. *European Educational Research Journal*, 15(1), 99-116. doi: 10.1177/1474904115612486

Abstract:

In this paper, I examine the role of human and digital actants in various material and spatial configurations during the Programme for the International Assessment of Adult Competencies (PIAAC) e-assessment events. It reports on an investigation into how data are produced and subsequently fed into statistical models that in turn produce analyses of skills in "centres of calculation". These data are then used to produce reports, scientific papers, marketing documents and visualizations that profoundly affect how we understand concepts such as literacy or skill. Drawing upon the theoretical resources of Actor Network Theory, this investigation employs a new and innovative methodology, trace ethnography, to follow the distributed agency of hypermobile digital actants. I examine the detail of e-assessment events and interactions between coded technologies and people and how these are translated into statements about what it means to be literate. This, in turn, highlights the role of non-governmental organizations in influencing educational and economic policy-making through the intensification of data production.

Available at (open access): <http://dx.doi.org/10.1177/1474904115612486>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Analysing adult skills: Proceeding of the 2nd International PIAAC Conference*. Paris: OECD Publishing. Retrieved October 27, 2017, from <https://www.oecd.org/skills/piaac/PDF%20for%20web%20Analysing%20Adults%27%20Skills.pdf>

Abstract:

This volume collects a selection of papers from the 2nd PIAAC International conference, jointly organized by the OECD and the Dutch Government in November 2015 in Haarlem, the Netherlands. The three papers collected in this volume represent the work of scholars who were invited to present

their work in the plenary session of the conference. The authors are all renowned scholars in their respective fields. Each of the papers represents an important contribution to the better understanding of issues of labor market and education policy that are at the center of the policy concerns of many governments.

Available at (open access): <https://www.oecd.org/skills/piaac/PDF%20for%20web%20Analysing%20Adults%27%20Skills.pdf>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Skills matter: Further results from the Survey of Adult Skills*. Paris: OECD Publishing. doi: 10.1787/9789264258051-en

Abstract:

In the wake of the technological revolution that began in the last decades of the 20th century, labour market demand for information-processing and other high-level cognitive and interpersonal skills is growing substantially. The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), was designed to provide insights into the availability of some of these key skills in society and how they are used at work and at home. The first survey of its kind, it directly measures proficiency in several information-processing skills – namely literacy, numeracy and problem solving in technology-rich environments. This volume reports results from the 24 countries and regions that participated in the first round of the survey in 2011-12 (first published in OECD Skills Outlook 2013: First Results from the Survey of Adult Skills) and from the nine additional countries that participated in the second round in 2014-15 (Chile, Greece, Indonesia [Jakarta], Israel, Lithuania, New Zealand, Singapore, Slovenia and Turkey). It describes adults' proficiency in the three information-processing skills assessed, and examines how skills proficiency is related to labour market and social outcomes. Another related report, *The Survey of Adult Skills: Reader's Companion, Second Edition*, describes the design and methodology of the survey and its relationship to other international assessments of young students and adults.

Available at (open access): <http://dx.doi.org/10.1787/9789264258051-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *The Survey of Adult Skills – Reader's companion, Second Edition*. Paris: OECD Publishing. doi: 10.1787/9789264258075-en

Abstract:

In the wake of the technological revolution that began in the last decades of the 20th century, labour market demand for information-processing and other high-level cognitive and interpersonal skills is growing substantially. The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), was designed to provide insights into the availability of some of these key skills in society and how they are used at work and at home. The first survey of its kind, it directly measures proficiency in several information-processing skills – namely literacy, numeracy and problem solving in technology-rich environments. The Survey of Adult Skills: Reader's Companion, Second Edition describes the design and methodology of the survey and its relationship to other international assessments of young students and adults. It is a companion volume to *Skills Matter: Further Results from the Survey of Adult Skills*. Skills Matter reports results from the 24 countries and regions that participated in the first round of the survey in 2011-12 (first published in OECD Skills Outlook 2013: First Results from the Survey of Adult Skills) and from the nine additional countries that participated in the second round in 2014-15 (Chile, Greece, Indonesia [Jakarta], Israel, Lithuania, New Zealand, Singapore, Slovenia and Turkey).

Available at: <http://dx.doi.org/10.1787/9789264258075-en>

Title:

Paccagnella, M. (2016). *Age, ageing and skills: Results from the survey of adult skills*. OECD Education Working Papers No. 132. Paris: OECD Publishing. doi: 10.1787/5jm0q1n38lvc-en

Abstract:

This paper presents a comprehensive analysis of the link between age and proficiency in information-processing skills, based on information drawn from the Survey of Adult Skills (PIAAC). The data reveal significant age-related differences in proficiencies, strongly suggesting that proficiency tends to "naturally" decline with age. Age differences in proficiency are, at first sight, substantial. On average across the OECD countries participating in PIAAC, adults aged 55 to 65 score some 30 points less than adults aged 25 to 34 on the PIAAC literacy scale, which is only slightly smaller than the score point difference between tertiary educated and less-than-upper-secondary educated individuals. However, despite their lower levels of proficiency, older individuals do not seem to suffer in terms of labour market outcomes. In particular, they generally earn higher wages, and much of the available empirical evidence suggests that they are not less productive than younger workers. Older and more experienced individuals seem therefore able to compensate the decline in information processing skills with the development of other skills, generally much more difficult to measure. On the other hand, proficiency in information-processing skills remain a strong determinant of important outcomes at all ages: this makes it important to better understand which factors are the most effective in preventing such age-related decline in proficiency, which does not occur to the same extent in all countries and for all individuals. Two broad interventions seem to be particularly promising in this respect. First, it is important to ensure that there is adequate and effective investment in skills development early in the life-cycle: as skills beget skills, starting off with a higher stock of human capital seems also to ensure smaller rates of proficiency decline. Second, it is equally important that policies are in place that provide incentives to individuals (and firms) to invest in skills across the entire working life. In this respect, changes in retirement policies can not only have the short-term effect of providing some reliefs to public finance, but have the potential to radically reshape incentives to stay active, to practice their skills and to invest more in training, thus helping to maintain high levels of proficiency.

Available at (open access): <http://dx.doi.org/10.1787/5jm0q1n38lvc-en>

Title:

Paccagnella, M. (2016). *Literacy and numeracy proficiency in IALS, ALL and PIAAC*. OECD Education Working Papers No. 142. Paris: OECD Publishing. doi: 10.1787/5jlpq7qglx5g-en

Abstract:

This paper analyses proficiency in literacy and numeracy in the countries that have participated in the International Adult Literacy Survey (IALS, administered between 1994 and 1998), the Adult Literacy and Life Skills Survey (ALL, administered between 2003 and 2007) and the Survey of Adult Skills (PIAAC, administered in 2012). While many countries experienced small to modest changes in literacy proficiency between IALS and PIAAC, others saw sizeable variations, mostly on the negative side. In the shorter span that separated ALL and PIAAC, numeracy proficiency clearly declined (except in Italy), while literacy moved less on average (except for the large increase registered in Italy and the large decline experienced by Norway). Changes in the composition of the population have had little impact on observed changes in scores. Larger variations took place within different socio-demographic groups, but these tended to cancel each other out on aggregate. In particular, large variations are observed by age and levels of education. Older adults in PIAAC are generally more proficient than their IALS counterparts, probably due to the increase in educational attainments that took place over recent decades. On the contrary, tertiary-educated individuals appear to be on average less proficient than in the past, which may signal that the expansion of tertiary education

has been accompanied by a decline in the average quality of university graduates (or of university instruction). There is also no evidence that the change in delivery mode, with a switch to a computer-based assessment in PIAAC, had any significant effect on performance. However, the OECD is unable to ascertain how differences in implementation and technical standards affect the comparability of the data, so that a certain degree of caution should always be exercised in interpreting these results. Amongst the countries that experienced larger changes in literacy proficiency between surveys, a close inspection of IALS data (in particular through an investigation of response patterns at the item level) highlights some anomalies in Italy and Poland (and, to a lesser extent, in England and Northern Ireland), suggesting that particular caution should be exercised in interpreting the evolution of proficiency in these countries.

Available at (open access): <https://doi.org/10.1787/5jlpq7qglx5g-en>

Title:

Palczyńska, M., & , K. (2016). *Measurement properties of non-cognitive scales in the polish follow-up study on PIAAC (POSTPIAAC)*. OECD Education Working Papers No. 149. Paris: OECD Publishing. doi: 10.1787/c533e448-en

Abstract:

There is a growing literature providing evidence that not only cognitive skills but also non-cognitive skills are important for economic and social outcomes. This paper assesses the measurement properties of the Big Five and Grit scales in a large representative sample of adults in Poland. The data from the Polish Follow-up Study on the Programme for International Assessment of Adult Competencies (postPIAAC) include longitudinal information on PIAAC respondents in Poland and additional background information not available in the international study. The results presented in this paper show that not all the criteria concerning the reliability, validity and comparability of these scales have been satisfied, though the personality measures significantly contribute to explaining the variability in policy-relevant outcomes. Most of the questions discriminate well between people possessing a high and a low level of a given trait, though reverse-worded items perform weaker. The Big Five theoretical five-factor structure was not replicated; however, a six-factor model with an additional factor loading reverse-worded items fits the data. In case of Grit, a bi-factor model, which has an equivalent interpretation to the second-order theoretical structure, holds. The scales are not fully measurement invariant. The results confirm earlier findings from the literature that differences in personality traits are clearly associated with differences in life outcomes. For most of the outcomes, the Big Five traits outperform cognitive skills in predictive power. Only educational attainment is more strongly related to cognitive skills, while for wages, the predictive power of personality and cognitive skills is similar. The paper provides recommendations for incorporating measures of personality traits into competence surveys.

Available at (open access): <https://doi.org/10.1787/c533e448-en>

Title:

Patterson, M. B., & Paulson, U. G. (2016). Adult transitions to learning in the USA: What do PIAAC survey results tell us? *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education*, 5(1), 5-27.

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) assessed literacy, numeracy, and technology-related skills of adults and found skill levels of US adults are well below the international average. In a world where advanced skills are requisite to workplace competitiveness, low skills are a danger sign. An initial PIAAC finding was that half of US adults do not complete

a postsecondary degree. A question remains: do adults continue to learn purposefully—that is, either formally or non-formally—after leaving secondary settings, and how does learning relate to their education levels? A related purpose of the paper is to describe learning types that adults pursue. The paper also investigates barriers to and motivators for learning. Implications for adult educators are discussed.

Available at (open access): <https://static1.squarespace.com/static/55a158b4e4b0796a90f7c371/t/57995d789f7456dc5697a96a/1469668780681/COABE+Journal+Spring+2016.pdf>

Title:

Pena, A. A. (2016). PIAAC skills and economic inequality. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education*, 5(2), 17-34.

Abstract:

Mixed findings characterize the literature on skills and economic distributions within and across countries. The Programme for the International Assessment of Adult Competencies (PIAAC) offers new, internationally comparable data on literacy, numeracy, and digital problem-solving skills that can be combined with wage information. This paper presents statistical analyses, aimed at quantifying the contributions of observable and unobservable contributors to earnings inequality. Substantial inequality is documented across countries and skill measures, thus reinforcing previous findings that skill, even by the broader definition used here, is only a partial explanation for differences in economic inequality across countries. The paper concludes with future research possibilities that can further understandings of inequality dynamics within and across nations. [The original version of this paper was commissioned by American Institutes for Research (AIR), funded through a contract with the National Center for Education Statistics (NCES).

Available at (open access): <https://static1.squarespace.com/static/55a158b4e4b0796a90f7c371/t/594380d2b8a79bebc4ac22e6/1497596136586/Journal+for+Web+Volume+5%2C+No+2%2C+Summer+2016.pdf>

Title:

Perry, A. (2016). *Forschungsdatenzentrum PIAAC: Jahresbericht 2015. Berichtszeitraum 01.01.2015-31.12.2015 [Research Data Center PIAAC: Annual Report 2015]*. GESIS Papers No. 2016/11. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

Annual Report 2015 from Research Data Center PIAAC. Reporting period 01/01/2015 to 12/31/2015. [Note from editors]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-47751-2>

Title:

Perry, A., & Rammstedt, B. (2016). The research data center PIAAC at GESIS. *Jahrbücher für Nationalökonomie und Statistik*, 236(5), 581-593.

Abstract:

With the Programme for the International Assessment of Adult Competencies (PIAAC) researchers can shed light on how competencies are acquired, how its use helps us maintain and further develop skills, and whether adults are prepared for the challenges of modern knowledge societies (OECD, 2013). The Organisation for Economic Co-operation and Development (OECD) initiated PIAAC in more than 30 countries to assess competencies of the adult population. Similar to the Programme

for International Student Assessment (PISA), PIAAC is planned to be repeated in regular intervals. Therefore, the next cycle of PIAAC is planned for 2022. The OECD published the PIAAC international public use file of the first cycle of PIAAC (OECD, 2015) in 2013. Due to German confidentiality rules, GESIS published a scientific use file (Rammstedt et al., 2015) that includes information that could not be released in the public use file. Further national data and para data for PIAAC can shed light on further research questions as well as methodological aspects of PIAAC. This data is currently and will be made available in the Research Data Center PIAAC (RDC PIAAC) at GESIS. In addition to this, various add-on studies were and are currently being conducted in Germany, such as Competencies in Later Life (CiLL) and the longitudinal study PIAAC-L. However, the PIAAC data presents challenges due to imputed competency scores (plausible values) and country-specific complex sample techniques. The RDC PIAAC provides information on analytic methods and the available analysis tools. It also offers workshops to familiarize users with the data and to teach them how to analyze the PIAAC data. Given the brevity of the PIAAC data release, an impressive number of research papers were published that use PIAAC data. Research with PIAAC focuses, for example, on the returns to skills (e.g., Hanushek et al., 2015), skill and wage inequality (Paccagnella, 2015), skill mismatch (Allen et al., 2013; Perry et al., 2014), non-monetary outcomes, such as trust (Borgonovi & Burns, 2015), and also methodological aspects, such as incentives in large-scale assessments (Martin et al., 2014). This paper aims to present central aspects of PIAAC, analytical procedures for the competence measures and the complex sample design, as well as data, information and services provided through the RDC PIAAC at GESIS.

Available at: <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-58121-8>

Title:

Pokropek, A. (2016). Grade of membership response time model for detecting guessing behaviors. *Journal of Educational And Behavioral Statistics*, 41(3), 300-325. doi:10.3102/1076998616636618

Abstract:

A response model that is able to detect guessing behaviors and produce unbiased estimates in low-stake conditions using timing information is proposed. The model is a special case of the grade of membership model in which responses are modeled as partial members of a class that is affected by motivation and a class that responds only according to the level of ability. Monte Carlo simulations were conducted to compare the proposed model with an approach that ignored guessing and an approach based on item filtering. In each simulated condition, the proposed model outperformed the other approaches by showing the lowest level of bias and the highest precision of item and persons estimates. Finally, the model was estimated using real life data from Programme for the International Assessment of Adult Competencies research (PIAAC). The results showed slight but expected corrections for the levels of proficiency in all countries.

Available at: <https://doi.org/10.3102/1076998616636618>

Title:

Post, D. (2016). Adult literacy benefits? New opportunities for research into sustainable development. *International Review of Education*, 62(6), 751-770. doi: 10.1007/s11159-016-9602-5

Abstract:

Understandings of "literacy" broadened after the United Nations Development Decade of the 1960s. The corresponding research into the benefits of literacy also widened its focus beyond economic growth. The effects of adult literacy and its correlates appeared diffuse with the rise of New Literacy Studies, and the scholarship on consequences seemed less essential to advocates following the rise of a human rights perspective on education. In 2016 the agenda for literacy research has returned-

but at a higher level—to concern over its benefits. The United Nations Sustainable Development Goals (SDGs) have reintegrated literacy research within an agenda to understand the channels through which literacy skills might effect change. This article briefly reviews progress in adult literacy, touches on existing perspectives on literacy, and then illustrates four recent sources of information useful in the revitalised agenda offered by the SDGs. Data from the Programme for the International Assessment of Adult Competencies (PIAAC) study conducted by the Organisation for Economic Co-operation and Development (OECD), the World Values Survey (WVS), and the World Bank's Skills Toward Employment and Productivity (STEP) study are now available to researchers wishing to link educational change with attitudinal and behavioural change. Another important resource are the emerging data on mobile learning. By integrating literacy into the SDGs, literacy researchers can reveal the channels through which literacy can contribute to social welfare and transformation.

Available at: <http://dx.doi.org/10.1007/s11159-016-9602-5>

Title:

Prokic-Breuer, T., & McManus, P. A. (2016). Immigrant educational mismatch in Western Europe, apparent or real? *European Sociological Review*, 32(3), 411-438. doi: 10.1093/esr/jcw005

Abstract:

Are immigrant workers in developed nations relegated to labour market positions that are beneath their qualification and skill level? This article uses newly available data from the Programme for the International Assessment of Adult Competencies to examine immigrant economic incorporation in 13 European nations. Our analyses show that immigrants in Europe are significantly more likely than natives to hold educational qualifications above those necessary for their job, and yet, immigrants are significantly less likely to be in jobs that underutilize their cognitive skills. Among workers in the highest cognitive proficiency levels, however, we find no differences between immigrants and natives in predicted overeducation. Therefore, the observed discrepancy between qualifications held and qualifications required for the job are more likely to indicate 'apparent' qualification mismatch rather than 'real' qualification mismatch among immigrants as compared with the native population. Based on our findings, we conclude that differences in educational quality, language proficiency, and the imperfect transferability of skills contribute to high rates of overeducation among immigrants.

Available at: <http://dx.doi.org/10.1093/esr/jcw005>

Title:

Rammstedt, B., Danner, D., & Martin, S. (2016). The association between personality and cognitive ability: Going beyond simple effects. *Journal of Research in Personality*, 62, 39-44. doi: 10.1016/j.jrp.2016.03.005

Abstract:

To examine the relationship between the Big Five and cognitive ability, we investigated whether we could replicate in a heterogeneous population sample the positive association between cognitive ability and Openness and Emotional Stability and its negative association with Conscientiousness. Besides analyzing the pure associations, we shed further light on sources of these associations by investigating potential moderating effects of education and labor force participation. Our results clearly replicate the previously found positive association between cognitive ability and Emotional Stability and Openness and the negative relationship between Conscientiousness and cognitive ability. The correlation between cognitive ability and Openness was found to be moderated by educational attainment, the negative association between Conscientiousness and cognitive ability was moderated by labor force participation.

Available at (open access): <https://doi.org/10.1016/j.jrp.2016.03.005>

Title:

Rammstedt, B., & Maehler, D. B. (2016). Ausgewählte Ergebnisse zu PIAAC 2012: Lesekompetenz im Zusammenhang mit der Weiterbildungsbeteiligung, der Gesundheit und der politischen Selbstwirksamkeit [Selected results for PIAAC 2012: The correlaton of literacy with participation in further education, health awareness, and social engagement]. In BMBF (Eds.), *Bildungsforschung 2020: Zwischen wissenschaftlicher Exzellenz und gesellschaftlicher Verantwortung* (pp. 347-362). Berlin.

Abstract:

This contribution compares 22 PIAAC countries and presents findings regarding the relationship between literacy and participation in further education, health awareness, and social engagement.

Available at (open access): <https://www.bmbf.de/publikationen/?P=2020>

Title:

Rammstedt, B., Maehler, D. B., & Perry, A. (2016). Indikatoren geringer Lesekompetenz in Deutschland [Indicators of low literacy in Germany]. In A. Dietzen, R. Nickolaus, B. Rammstedt, & R. Weiß (Eds.), *Kompetenzorientierung. Berufliche Kompetenzen entwickeln, messen und anerkennen* (pp. 29-46). Bielefeld: W. Bertelsmann Verlag. doi: 10.3278/111-082w

Abstract:

Active and successful participation in society calls for key skills such as literacy. On the basis of the data of the Programme for the International Assessment of Adult Competencies (PIAAC), this contribution specifically examines the proportion of the German population who have only low literacy skills. The analyses on the basis of the PIAAC survey data, which are representative of the resident population in Germany, reveal that the probability that individuals belong to the group with the lowest level of literacy proficiency is greater if they have a low level of educational attainment – in particular, a lower secondary leaving certificate (Hauptschulabschluss) or no leaving certificate at all. A migration background and a low level of participation in further education and training also proved to be risk factors. [Translated on behalf of editors]

Available at: <http://dx.doi.org/10.3278/111-082w>

Title:

Rampey, B., Keiper, S., Mohadjer, L., Krenzke, T., Li, J., Thornton, N., & Hogan, J. (2016). *Highlights from the U.S. PIAAC survey of incarcerated adults: Their skills, work experience, education, and training: Program for the International Assessment of Adult Competencies: 2014* (NCES 2016-040). Washington DC: Retrieved October 27, 2017, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016040>

Abstract:

The U.S. PIAAC Survey of Incarcerated Adults was designed to provide policymakers, administrators, educators, and researchers with information to improve educational and training opportunities for incarcerated adults and foster skills they need in order to return to, and work successfully in, society upon release from prison. This report highlights data from the survey's extensive background questionnaire and direct assessments of cognitive skills. It examines the skills of incarcerated adults in relationship to their work experiences and to their education and training in prison. Results for incarcerated adults on the literacy and numeracy domains are presented in two ways: (1) as scale scores (estimated on a 0-500 scale), and (2) as percentages of adults reaching the proficiency levels established for each of these domains. The report includes results for groups of incarcerated adults

by various characteristics, including employment prior to incarceration, experiences with prison jobs, skills certifications, educational attainment in prison, and participation in academic programs and training classes.

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016040>

Title:

Rampey, B., Goodman, F., Mohadjer, M., Krenzke, T., & Hogan, J. (2016). *Skills of U.S. unemployed, young, and older adults in sharper focus: Results from the Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014: First look* [NCES 2016-039rev]. Washington DC: National Center for Education Statistics.

Abstract:

The purpose of this report is to present updated and additional results from the U.S. PIAAC household data collection, based on data collected in 2012 and 2014. PIAAC is an international large-scale study of adult skills and life experience focusing on education and employment that was developed and organized by the Organization for Economic Cooperation and Development (OECD). PIAAC was first conducted in 2011–2012 in the United States and 23 other countries. In the United States, PIAAC was administered to a nationally representative sample of 5,000 adults between the ages of 16 and 65. Similar nationally representative samples of adults were surveyed in each of the 23 other participating countries. In 2013–14, NCES conducted a second round of data collection in the United States to enhance the U.S. PIAAC dataset. Specifically, the second round of data collection added (a) 3,600 adults from three key subgroups of policy interest and (b) 1,200 incarcerated adults in federal and state prisons. The three key subgroups of adults “living in households” that were oversampled were: unemployed adults, young adults (ages 16–34), and older adults (ages 66–74). The expanded national household sample (8,600 adults, combining the first and second rounds) supports more accurate and reliable national estimates of unemployed and young adults and makes possible analyses of older adults.

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016039rev>

Title:

Rindermann, H., & Thompson, J. (2016). The cognitive competences of immigrant and native students across the world: An analysis of gaps, possible causes and impact. *Journal of biosocial science*, 48(1), 66–93. doi: 10.1017/S002193201400048

Abstract:

Immigration, immigration policies and education of immigrants alter competence levels. This study analysed their effects using PISA, TIMSS and PIRLS data (1995 to 2012, N=93 nations) for natives' and immigrants' competences, competence gaps and their population proportions. The mean gap is equivalent to 4.71 IQ points. There are large differences across countries in these gaps ranging from around +12 to –10 IQ points. Migrants' proportions grow roughly 4% per decade. The largest immigrant-based ‘brain gains’ are observed for Arabian oil-based economies, and the largest ‘brain losses’ for Central Europe. Regarding causes of native–immigrant gaps, language problems do not seem to explain them. However, English-speaking countries show an advantage. Acculturation within one generation and intermarriage usually reduce native–immigrant gaps (\cong 1 IQ point). National educational quality reduces gaps, especially school enrolment at a young age, the use of tests and school autonomy. A one standard deviation increase in school quality represents a closing of around 1 IQ point in the native–immigrant gap. A new Greenwich IQ estimation based on UK natives' cognitive ability mean is recommended. An analysis of the first adult OECD study PIAAC revealed that larger proportions of immigrants among adults reduce average competence levels and positive

Flynn effects. The effects on economic development and suggestions for immigration and educational policy are discussed.

Available at: <https://doi.org/10.1017/S0021932014000480>

Title:

Siddiq, F., Hatlevik, O. E., Olsen, R. V., Throndsen, I., & Scherer, R. (2016). Taking a future perspective by learning from the past – a systematic review of assessment instruments that aim to measure primary and secondary school students' ICT literacy. *Educational Research Review*, 19, 58-84. doi: 10.1016/j.edurev.2016.05.002

Abstract:

This study systematically reviews literature on assessment instruments of primary and secondary school students' ICT literacy. It has three objectives: (1) Describe the development and characteristics of the assessments; (2) Present a synthesis of the facets of ICT literacy measured; and (3) Investigate to what extent information about reliability and validity is provided. A total of 38 tests reported in 66 studies were included. The results indicate that most of the tests target lower secondary students, comprise multiple-choice item designs, and are evaluated by quantitative methodology. The majority of the tests measure facets such as searching, retrieving, and evaluating digital information, and technical skills. In particular, the access to tests measuring digital communication, collaboration, safety, and problem solving is limited. This review demonstrates that an adequate norm for documenting and reporting test quality is lacking. Our findings point to potential future directions in developing and reporting assessments of ICT literacy.

Available at: <https://doi.org/10.1016/j.edurev.2016.05.002>

Title:

Smith, T. J., Smith, M. C., Rose, A. D., & Ross-Gordon, J. M. (2016). An assessment of the factor structure and factorial invariance of scores from the readiness to learn scale. *Learning and Individual Differences*, 49, 230-236. doi: 10.1016/j.lindif.2016.06.015

Abstract:

The present study examines data from the Readiness to Learn scale obtained from the Background Questionnaire of the PIAAC Survey of Adult Skills and carries out a series of psychometric assessments. Data from the U.S. sample were used, consisting of responses from N =5010 respondents between the ages of 16 and 65 years. Variables of interest included the six indicators of “readiness to learn”. Additionally, for the factorial invariance analyses that were carried out, gender (male/female), highest attained educational level, and adult work status were used as grouping variables. [Source: From the method part of the publication]

Available at: <http://dx.doi.org/10.1016/j.lindif.2016.06.015>

Title:

Støren, L. A. (2016). Factors that promote innovativeness and being an innovative learner at work - results from PIAAC. *European Journal of Education*, 51(2), 176-192. doi: 10.1111/ejed.12173

Abstract:

In this article, innovative activity is considered in the light of broader conceptualisations of innovativeness and what it means to be innovative. Central to the definition of innovativeness used in the analysis is that the worker actively seeks new knowledge and uses it for work-related tasks. This is based on previous research emphasising learning-by-doing, taking new knowledge into use and

learning organisations. Innovativeness is analysed for Denmark, Finland, The Netherlands and Norway. Data from the PIAAC survey of adult skills are examined to identify key factors involved in promoting innovative behaviours at work. Significant country differences are found. Findings suggest that the work profiles of the workers, the work environment and the intensity of training and learning are very important for the innovative capabilities of the workforce.

Available at (open access): <http://dx.doi.org/10.1111/ejed.12173>

Title:

Tan, T., Ramos, C., Sheng, Y., & Sung, J. (2016). The determinants of training participation, a multi-level approach: Evidence from PIAAC. In L. Ark, D. Bolt, W. Wang, J. Douglas, & M. Wiberg (Eds.), *Quantitative Psychology Research* (pp. 363-375). Cham: Springer International Publishing. doi: 10.1007/978-3-319-38759-8_27

Abstract:

This chapter uses the first round of the Programme for the International Assessment of Adult Competencies (PIAAC) survey data to find out the determinants of training participation of workers for the 24 countries that participated in the survey. Two measures are used in quantifying training participation: (1) whether workers participated in any training during the last 12 months and (2) the number of training modes of participation (number of types of trainings workers attended during the last 12 months). Logistic and Poisson multilevel models were used to model the two measures respectively. Both models show similar findings for the fixed effects. The results of the random slopes models show that heterogeneity exists across the 24 countries, indicating that the effects of covariates on workers' training participation and the number of training modes vary across countries. The magnitude of correlations of these random slopes differs between the logistic and Poisson models, indicating that the associations of these random effects are not totally in agreement between training participation and the number of training modes.

Available at: https://doi.org/10.1007/978-3-319-38759-8_27

Title:

Taylor, N. A., Greenberg, D., & Terry, N. P. (2016). The relationship between parents' literacy skills and their preschool children's emergent literacy skills. *Journal of Research and Practice for Adult Literacy, Secondary, and Basic Education*, 5(2), 5.

Abstract:

The aim of the present study was to investigate the correlational and predictive relationships between parents with low literacy skills (n = 96) and their 3-5 year old children's emergent literacy skills (n = 96). In the study parents were assessed on measures of reading comprehension, decoding, fluency, oral vocabulary, and word identification, and prekindergarten children were assessed on similar measures of alphabet knowledge, beginning sound awareness, print awareness, and oral vocabulary. Results indicated that parents' word identification and fluency skills were positively correlated with all of the children's literacy skills with the exception of print awareness. Parents' decoding, receptive vocabulary, and expressive vocabulary skills were positively associated with all of the children's literacy skills with the exception of phonological awareness. Also, hierarchical regressions indicated a predictive relationship between several of the skills after accounting for child age and parent educational level. This study adds to the family literacy literature indicating the importance of the relationship between children and their parents' literacy skills.

Available at: <https://eric.ed.gov/?id=EJ1125474>

Title:

Teltemann, J., & Schunck, R. (2016). Sozialwissenschaftliche Datensätze für Sekundäranalysen von Integrationsprozessen [Social science data sets for secondary analyses of integration processes]. In D. Maehler & H. U. Brinkmann (Eds.), *Methoden der Migrationsforschung* (pp. 311-344). Wiesbaden: Springer VS.

Abstract:

This book contribution presents by way of example German and international (standardized) survey datasets in which the case numbers and information collected enable the identification and examination of the living situation – and thus the integration – of persons with a migration background in different areas of life. Both panel studies and cross-sectional – but often repeatedly conducted – surveys are presented. The aim of the contribution is to examine general possibilities for the secondary analysis of data on the integration of migrants and frequently occurring problems in this respect. The longitudinal studies NEPS and CILS4EU are presented in two separate contributions as they are complex and very important for the analysis of integration processes. In addition to details of the operationalization of migration background in the respective datasets and of the general design, the contribution provides information on data access and gives examples of research questions examined in relevant preliminary studies. The German Socio-Economic Panel (SOEP), the German Microcensus, and the international educational studies PISA and PIAAC are presented in greater detail. The datasets featured here are suitable for the analysis of a range of questions (especially integration-related questions). However, the generated findings can also be used as benchmarks for further primary surveys. Other sections of the contribution summarize general information on data types and sources at different levels of aggregation. [Translated on behalf of editors]

Available at: https://link.springer.com/chapter/10.1007/978-3-658-10394-1_11

Title:

Tikkanen, T., & Nissinen, K. (2016). Participation in job-related lifelong learning among well-educated employees in the Nordic countries. *International Journal of Lifelong Education*, 35(3), 216-234. doi: 10.1080/02601370.2016.1165749

Abstract:

The purpose of this study was to explore participation in job-related lifelong learning (LLL) among well-educated mature workers and compare it across four Nordic countries. Although this group generally is very active in LLL, the centrality of knowledge work in society, rapid pace of skills-renewal and rising learning demands for all qualifications levels, necessitates a better understanding of the patterns and factors affecting their skill development. The paper builds on theories of learning motivation, human capital and workplace learning. Data from the Survey of Adult Skills (PIAAC) by the OECD were used. In addition to high participation rates, systematic level differences in participation were found across the countries. Results of logit regression analyses revealed clear differences between countries in the models that explained participation, which gave limited support to a single "Nordic model" of LLL. Furthermore, the predictors of participation commonly found among adult populations, low-educated individuals and/or younger adults, appeared less valid for well-educated individuals.

Available at: <http://dx.doi.org/10.1080/02601370.2016.1165749>

Title:

Vera-Toscano, E., & Meroni, E. (2016). *A descriptive analysis of the evolution of occupational mismatch in Europe*. Luxembourg: Publications Office of the European Union. doi: 10.2791/495552

Abstract:

Using the two surveys on adult skills- IALS and PIAAC- we investigate the evolution of occupational mismatch in Europe. We focus on both overeducation and overskilling and study how the incidence of the two phenomena in the years covered by the surveys: mid 90s and 2011. Our main findings are that in both time periods a substantial share of the working population is in a mismatched job, with great heterogeneities by countries and that overeducation and overskill seem to capture two distinct phenomena as the share of individuals who is mismatch in both categories is low relative to the ones who are mismatch in either one of the two. In addition we exploit heterogeneities by countries and by age groups and find that: (a) a group of countries (PL, SE and UK) have decreased their share of only overeducated workers, compensating it with an increase in share of overskilled workers; (b) overeducation and overskilling seem to decrease as individuals get older (c) greater overeducation is observed for the younger cohorts, especially in BE, DK, IE, FI, NL and SE.

Available at (open access): <http://dx.doi.org/10.2791/495552>

Title:

Vörös, Z., & Rouet, J.-F. (2016). Laypersons' digital problem solving: Relationships between strategy and performance in a large-scale international survey. *Computers in Human Behavior*, 64, 108-116. doi: 10.1016/j.chb.2016.06.018

Abstract:

This study examines the role of online data as indicators of the cognitive processes involved in problem solving in a technology-rich environment. More specifically, we analyze the relationship between response time, logged action count and task outcomes in a sample of over 23,000 adults from 16 countries who participated in the Problem solving in technology-rich environments (PS-TRE) assessment as part of the Program for the International Assessment of Adult Competencies (PIAAC) survey. Based on a selection of tasks used in the PS-TRE assessment, the results show that while time on task may have a heterogeneous effect on a population level depending on task difficulty, action count is positively linked to task accuracy. The data also reveals a surprisingly varied and task-specific relationship between those variables.

Available at: <http://dx.doi.org/10.1016/j.chb.2016.06.018>

Title:

Weeks, J. P., Davier, M., & Yamamoto, K. (2016). Using response time data to inform the coding of omitted responses. *Psychological Test and Assessment Modeling*, 58(4), 671-701.

Abstract:

Examinees may omit responses on a test for a variety of reasons, such as low ability, low motivation, lack of attention, or running out of time. Some decision must be made about how to treat these missing responses for the purpose of scoring and/or scaling the test, particularly if there is an indication that missingness is not skill related. The most common approaches are to treat the responses as either not reached/administered or incorrect. Depending on the total number of missing values, coding all omitted responses as incorrect is likely to introduce negative bias into estimates of item difficulty and examinee ability. On the other hand, if omitted responses are coded as not reached and excluded from the likelihood function, the precision of estimates of item and person parameters will be reduced. This study examines the use of response time information collected in many computer-based assessments to inform the coding of omitted responses. Empirical data from the Programme for the International Assessment of Adult Competencies (PIAAC) literacy and numeracy cognitive tests are used to identify item-specific timing thresholds via several logistic regression models that predict the propensity of responding rather than produce a missing data point. These

thresholds can be used to inform the decision about whether an omitted response should be treated as not administered or as incorrect. The results suggest that for many items the timing thresholds (20 to 30 seconds on average) at a high expected probability level of observing a response are notably higher than thresholds used in the evaluation of rapid guessing of responses (e.g. 5 seconds).

Available at (open access): http://www.psychologie-aktuell.com/fileadmin/download/ptam/4-2016_20161219/06_Weeks.pdf

2.10 Publications in 2017

Title:

Belzer, A. (2017). Reflections on the PIAAC literacy and numeracy frameworks. *Adult Learning*, 28(3), 118-120. doi: 10.1177/1045159516655150

Abstract:

The Program for International Assessment of Adult Competencies (PIAAC) results, released in 2013, have spurred researchers to engage in rich analyses. In addition to making it possible to compare skill levels among the 23 participating nations, the PIAAC data have enabled researchers to analyze relationships among cognitive literacy, numeracy, and problem solving in technology-rich environments skills; age, gender, race/ethnicity, educational level; and a host of personal and social outcomes including health, economic well-being, and civic engagement. The authors described how the definitional frameworks for literacy and numeracy that guided the development of the PIAAC assessment tasks could also guide practice. The underlying assumption of these commissions is that in order for instruction to improve literacy levels, it should reflect current understandings of what literacy and numeracy are.

Available at: <http://dx.doi.org/10.1177/1045159516655150>

Title:

Billington, M. G., Nissinen, K., & Gabrielsen, E. (2017). When investment in basic skills gives negative returns. *Adult Education Quarterly*, 67(2), 136-154. doi: 10.1177/0741713617692413

Abstract:

In recent years, the Norwegian government has invested heavily in improving basic skills in the adult population. Initiatives have included legislation, the introduction of work-based adult education programs, and reforms in schooling. In light of this investment, we explore trends in adult literacy and numeracy, by comparing data from two international surveys of adult skills, conducted in 2003 and 2012. Paradoxically, the proportion of low-performing adults appears to have increased, most significantly in the 16- to 24-year age group and in the foreign-born population. The profile of the lowest performing group has changed in the intervening years. These findings suggest that adult education programs and the education system more generally may not be in concord with the goal of including all in the communities of the literate. We discuss policy implications, in the context of the Scandinavian model, but argue that the discussion is applicable beyond national boundaries.

Available at (open access): <http://dx.doi.org/10.1177/0741713617692413>

Title:

Blossfeld, P. N., Blossfeld, G. J., & Blossfeld, H.-P. (2017). The speed of educational expansion and changes in inequality of educational opportunity. In T. Eckert & B. Gniewosz (Eds.), *Bildungsgerechtigkeit* (pp. 77-92). Wiesbaden: Springer Fachmedien Wiesbaden.

Abstract:

Using PIAAC data, this paper studies the relationship between the speed of the process of educational expansion and the change in inequality of educational opportunity in 22 industrialized countries. Our empirical results suggest that rapid educational expansion can help to achieve more educational equality. If the pie is getting larger quickly, there is less conflict over the relative size of the slices.

Available at: https://link.springer.com/chapter/10.1007%2F978-3-658-15003-7_6

Title:

Borgonovi, F., Pokropek, A., Keslair, F., Gauly, B., & Paccagnella, M. (2017). *Youth in transition. How do some of the cohorts participating in PISA fare in PIAAC?* OECD Education Working Papers No. 155. Paris: OECD Publishing. doi: 10.1787/51479ec2-en

Abstract:

This paper uses data from PISA and the OECD Survey of Adult Skills (PIAAC) to examine the evolution of socio-economic and gender disparities in literacy and numeracy proficiency between the ages of 15 and 27 in the sample of countries that took part in both studies. Socio-economic disparities are exacerbated between the age of 15 and 27 and the socio-economic gap in proficiency widens, particularly among low-achievers. Gender disparities in literacy at age 15 are marked across the performance spectrum but are particularly wide among low-performers. However, by age 24 there is no difference in the literacy proficiency of males and females. The gender gap in numeracy at age 15 is quantitatively small when compared with the gap in literacy, although it is more pronounced among high achievers. The paper canvasses possible explanations for the trends observed and discusses implications for policy and practice, including the extent to which the lack of an established link between PISA and PIAAC limits the analytical value of the two studies.

Available at (open access): <https://doi.org/10.1787/51479ec2-en>

Title:

Broecke, S., Quintini, G., & Vandeweyer, M. (2017). Explaining international differences in wage inequality: Skills matter. *Economics of Education Review*, 60, 112-124. doi: 10.1016/j.econedurev.2017.08.005

Abstract:

Several studies employing decomposition methods have argued that skills only play a minor role in explaining cross-country differences in wage inequality. In this paper, we build upon the work of Leuven, Oosterbeek and van Ophem (2004) and extend the decomposition analysis to take account of the relative demand for, and supply of, skills. Doing this confirms that skills do matter and are likely to be at least as important as labour market institutions in explaining international differences in wage inequality.

Available at: <https://doi.org/10.1016/j.econedurev.2017.08.005>

Title:

Bussi, M., & Parelusssen, J. (2017). Back to basics – literacy proficiency, immigration and labour market outcomes in Sweden. *Social Policy & Administration*, 51(4), 676–696. doi: 10.1111/spol.12319

Abstract:

We explore how education, literacy skills and migrant origin affect employment and over-

qualification mismatch, using a simple model of human capital, standard regression methods and data from the OECD Survey of Adult Skills (PIAAC). Sweden is an interesting case, as a compressed wage distribution makes thresholds to enter the labour market high for those with low education and low skills. Skill and education levels are high among the native-born. At the same time, the high influx of humanitarian and family reunion migrants, who are on average less educated and less skilled than natives, increases the supply of low-skilled labour. We find that substantial employment penalties all but disappear when controlling for migrants' lower literacy proficiency. In contrast, the high incidence of over-qualification mismatch among immigrants is little sensitive to literacy proficiency and demographic profiles. However, having participated in education and training activities in Sweden improves matching considerably, in particular if such activities are manifested in formal qualifications.

Available at: <http://dx.doi.org/10.1111/spol.12319>

Title:

Calero, J., & Choi, u. (2017). The distribution of skills among the European adult population and unemployment: A comparative approach. *European Journal of Education*, 52(3), 348-364. doi: 10.1111/ejed.12222

Abstract:

The most painful effect of the Great Recession in European countries has been the surge in unemployment rates during a period that has been characterised by an increase in income inequality and the heterogeneous pattern of this inequality by educational level. Thus, workers with low levels of educational attainment were among the first to lose their jobs. This article addresses two main research questions: first, it estimates the importance of the level of skills and education on the probability of being unemployed, disentangling the extent of the effects of human capital and signalling theories of education; and, second, it provides evidence of the impact of inequalities in the previous socioeconomic and cultural background of individuals on the probability of being unemployed. These two objectives are assessed using data for 24 jurisdictions that participated in the first round of the OECD's "Programme for the International Assessment of Adult Competencies" (PIAAC). Skill levels play a central role in explaining unemployment in Europe and act as an indirect channel via which a family's sociocultural background has an impact on its labour market status. Combining the results of alternative models, we identify those European labour markets that are most sensitive to human capital.

Available at: <http://dx.doi.org/10.1111/ejed.12222>

Title:

Christl, M., & Köppl-Turyna, M. (2017). *Gender wage gap and the role of skills: Evidence from PIAAC dataset*. GLO Discussion Paper No. 63. Maastricht: Global Labor Organization (GLO). Retrieved December 27, 2017, from <http://hdl.handle.net/10419/157335>

Abstract:

Our paper makes a first attempt to address the impact of skills and skill use in the analysis of the gender wage gap using the PIAAC dataset. Using the case of Austria, we show that skill use as well as the skill match play an important role with regard to wage regressions of men as well as women. When we take skills into account in the gender wage gap analysis, the unexplained part of the gender wage gap is reduced by almost 4 percentage points along the whole wage distribution. Our results suggest that skill use and match play a crucial role in explaining the gender wage gap. Additionally, we show, that the self-selection problem biases the results, in particular in the lower and middle parts of the wage distribution and that we should control for it, although the effect is small.

When we additionally consider discretionary bonus payments, we find that the unexplained part in the gender wage gap increases, especially in the upper part of the wage distribution.

Available at (open access): <http://hdl.handle.net/10419/157335>

Title:

De la Rica, S., & Gortazar, L. (2017). *Digitalization at work, job tasks and wages: Cross-country evidence from PIAAC*. GLO Discussion Paper No. 22. Maastricht: Global Labor Organization (GLO). <http://hdl.handle.net/10419/155358>

Abstract:

The aim of the paper is threefold. First, we compute differences on job tasks (Abstract, Routine and Manual) across a harmonized and hence comparable sample of Anglo-saxon, many European and even Asian advanced countries. We do so by using very precise information on job contents at the worker level, which allows for job task heterogeneity within occupations. Second we assess the extent to which computer adoption leads to the observed differences of job contents across countries. Third, we test the impact of tasks at work on average wages and wage inequality. Our results show remarkable differences in the degree of polarization of job contents across countries, being computer adoption at work a key significant driver of such differences. In particular, ICT use at work explains 10.0% (7.7%) of the cross-country conditional differences in Abstract (Routine) tasks at work. Finally, our results indicate that although differences in tasks explain an important and significant part of wage differentials (similar to what is found in Autor and Handel, 2013), we cannot find a clear pattern in the explanation of wage inequality gaps by looking at differences in task endowments and task returns.

Available at (open access): <http://hdl.handle.net/10419/155358>

Title:

Duchhardt, C., Jordan, A.-K., & Ehmke, T. (2017). Adults' use of mathematics and its influence on mathematical competence. *International Journal of Science and Mathematics Education*, 15(1), 155-174. doi: 10.1007/s10763-015-9670-1

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) has recently drawn additional attention to “mathematical literacy” as an important influential factor for individuals' life chances. High levels of mathematical literacy have thereby been linked to using mathematics in daily and working life frequently. In this paper, based on the data from Germany, we focus on the construct “use of mathematics” in two ways: First, we analyze in depth how it can be utilized to describe different groups of adults. Second, we investigate its role as predictor of mathematical competence and mediator of other relevant background variables. Results show that three groups of adults can be distinguished that use mathematics differently in daily and working life. However, the construct can sensibly be described as unidimensional. In a path model, “use of mathematics” turns out to be the strongest predictor of mathematical competence. In addition, it mediates effects of the mathematical requirements of the job, duration of education, and gender.

Available at: <http://dx.doi.org/10.1007/s10763-015-9670-1>

Title:

Flisi, S., Goglio, V., Meroni, E. C., Rodrigues, M., & Vera-Toscano, E. (2017). Measuring occupational mismatch: Overeducation and overskill in Europe - evidence from PIAAC. *Social Indicators Research*, 131(3), 1211-1249. doi: 10.1007/s11205-016-1292-7

Abstract:

Occupational mismatch has been a hot topic in the economics literature in recent decades; however, no consensus has been reached on how to conceptualise and measure this phenomenon. We explore the unique opportunity offered by the PIAAC survey to measure occupational mismatch at the individual level based on both education- (overeducation) and skill-based (overskilling) variables by using both objective and subjective measures. For this purpose, we use data on 17 European countries and compute up to 20 different indicators of occupational mismatch. We find that the conceptualisation and measurement of occupational mismatch are indeed important and that education and skill mismatch do not measure the same phenomenon. In fact, only a small percentage of mismatched individuals are mismatched with respect to both education and skill, whereas the majority are mismatched with respect to either education or skill only. At the country level, we find a negative correlation between the incidence of education and skill mismatch, which has important implications for policies aiming to address this labour market inefficiency.

Available at (open access): <https://link.springer.com/article/10.1007/s11205-016-1292-7>

Title:

Gebrande, J. (2017). Alters-oder Kohorteneffekte? Lesekompetenz von Frauen im Alter [Age or cohorts effect? Literacy of older women]. In O. Dörner, C. Iller, H. Pätzold, J. Franz, & B. Schmidt-Hertha (Eds.), *Biografie – Lebenslauf – Generation. Perspektiven der Erwachsenenbildung*. Leverkusen: Verlag Barbara Budrich.

Abstract:

This chapter investigates women's literacy in Germany. Using the German PIAAC data (Rammstedt et al., 2016) and CiLL data (Friebe et al., 2017) the contribution analyzed and discussed age and cohorts effects to explain literacy decrease in older ages. [Note from editors]

Available at (open access): <https://www.jstor.org/stable/pdf/j.ctvbkk32g.15.pdf>

Title:

Goldhammer, F., Martens, T., & Lüdke, O. (2017). Conditioning factors of test-taking engagement in PIAAC: An exploratory IRT modelling approach considering person and item characteristics. *Large-scale Assessments in Education*, 5(18). doi: 10.1186/s40536-017-0051-9

Abstract:

Background: A potential problem of low-stakes large-scale assessments such as the Programme for the International Assessment of Adult Competencies (PIAAC) is low test-taking engagement. The present study pursued two goals in order to better understand conditioning factors of test-taking disengagement: First, a model-based approach was used to investigate whether item indicators of disengagement constitute a continuous latent person variable by domain. Second, the effects of person and item characteristics were jointly tested using explanatory item response models. **Methods:** Analyses were based on the Canadian sample of Round 1 of the PIAAC, with N = 26,683 participants completing test items in the domains of literacy, numeracy, and problem solving. Binary item disengagement indicators were created by means of item response time thresholds. **Results:** The results showed that disengagement indicators define a latent dimension by domain. Disengagement increased with lower educational attainment, lower cognitive skills, and when the test language was not the participant's native language. Gender did not exert any effect on disengagement, while age had a positive effect for problem solving only. An item's location in the second of two assessment modules was positively related to disengagement, as was item difficulty. The latter effect was negatively moderated by cognitive skill, suggesting that poor test-takers are especially likely to disengage with more difficult items. **Conclusions:** The negative effect of cognitive skill, the

positive effect of item difficulty, and their negative interaction effect support the assumption that disengagement is the outcome of individual expectations about success (informed disengagement).

Available at (open access): <https://doi.org/10.1186/s40536-017-0051-9>

Title:

Goldhammer, F., Naumann, J., Rölke, H., Stelter, A., & Tóth, K. (2017). Relating product data to process data from computer-based competency assessment. In D. Leutner, J. Fleischer, J. Grünkorn, & E. Klieme (Eds.), *Competence assessment in education: Research, models and instruments* (pp. 407-425). Cham: Springer International Publishing. doi: 10.1007/978-3-319-50030-0_24

Abstract:

Competency measurement typically focuses on task outcomes. Taking process data into account (i.e., processing time and steps) can provide new insights into construct-related solution behavior, or confirm assumptions that govern task design. This chapter summarizes four studies to illustrate the potential of behavioral process data for explaining task success. It also shows that generic process measures such as time on task may have different relations to task success, depending on the features of the task and the test-taker. The first study addresses differential effects of time on task on success across tasks used in the OECD Programme for the International Assessment of Adult Competencies (PIAAC). The second study, also based on PIAAC data, investigates at a fine-grained level, how the time spent on automatable subtasks in problem-solving tasks relates to task success. The third study addresses how the number of steps taken during problem solving predicts success in PIAAC problem-solving tasks. In a fourth study, we explore whether successful test-takers can be clustered on the basis of various behavioral process indicators that reflect information problem solving. Finally, we address how to handle unstructured and large sets of process data, and briefly present a process data extraction tool.

Available at: http://dx.doi.org/10.1007/978-3-319-50030-0_24

Title:

Gorges, J., Koch, T., Maehler, D. B., & Offerhaus, J. (2017). Same but different? Measurement invariance of the PIAAC motivation-to-learn scale across key socio-demographic groups. *Large-scale Assessments in Education*, 5(1), 13. doi: 10.1186/s40536-017-0047-5

Abstract:

Background: Data from the Programme for the International Assessment of Adult Competencies (PIAAC) revealed that countries systematically differ in their respondents' literacy, numeracy, and problem solving in technology-rich environments skills; skill levels also vary by gender, age, level of education or migration background. Similarly, systematic differences have been documented with respect to adults' participation in education, which can be considered as a means to develop and maintain skills. From a psychological perspective, motivation to learn is considered a key factor associated with both skill development and participation in (further) education. In order to account for motivation when analyzing PIAAC data, four items from the PIAAC background questionnaire were recently compiled into a motivation-to-learn scale. This scale has been found to be invariant (i.e., showing full weak and partial strong measurement invariance) across 21 countries. **Methods:** This paper presents further analyses using multiple-group graded response models to scrutinize the validity of the motivation-to-learn scale for group comparisons. **Results:**

Results indicate at least partial strong measurement invariance across gender, age groups, level of education, and migration background in most countries under study (all CFI > .95, all RMSEA < .08). Thus, the scale is suitable for comparing both means and associations across these groups.

Conclusions: Results are discussed in light of country characteristics, challenges of measurement invariance testing, and potential future research using PIAAC data.

Available at (open access): <https://doi.org/10.1186/s40536-017-0047-5>

Title:

Greiff, S., Scheiter, K., Scherer, R., Borgonovi, F., Graesser, B., Kitajima, A., & Rouet, J.-F. (2017). *Adaptive problem solving*. OECD Education Working Papers No. 156. Paris: OECD Publishing. doi: 10.1787/90fde2f4-en

Abstract:

The set of skills that is required to be a successful citizen in the 21st century is rapidly evolving. New technologies and social systems grow increasingly complex and require individuals to quickly and flexibly adapt to new and changing circumstances. This paper outlines the key features of the domain of adaptive problem solving that is proposed to be assessed in the 2nd cycle of the OECD Survey of Adult Skills (PIAAC) in addition to the domains of numeracy and literacy. Adaptive problem solving is considered to be a crucial 21st century skill that combines cognitive and meta-cognitive processes. The paper develops a definition of adaptive problem solving building on relevant work in cognitive psychology and cognitive science, introduces its covariates and preconditions, discusses relevant assessment principles, and provides insights on the relevance of adaptive problem solving for labour markets and social integration.

Available at (open access): <https://doi.org/10.1787/90fde2f4-en>

Title:

Hämäläinen, R., De Wever, B., Nissinen, K., & Cincinato, S. (2017). Understanding adults' strong problem-solving skills based on PIAAC. *Journal of Workplace Learning*, 29(7/8), 537-553. doi: 10.1108/JWL-05-2016-0032

Abstract:

Research has shown that the problem-solving skills of adults with a vocational education and training (VET) background in technology-rich environments (TREs) are often inadequate. However, some adults with a VET background do have sound problem-solving skills. The present study provides insight into the socio-demographic, work-related, and everyday life factors that are associated with a strong problem-solving performance. The study builds on large-scale data of the Programme for the International Assessment of Adult Competencies (PIAAC) and gives insight into VET adults (N=12,929) with strong problem-solving skills in eleven European countries. Findings This study introduces new knowledge with respect to the socio-demographic, work-related, and everyday life background factors that contribute to successful VET adults' problem-solving skills. Our findings illustrate that a continuous process of development including non-formal and informal activity as well as learning taking place at work is associated with strong performance in problem-solving skills in TRE. An important implication of this study is that this article explored new knowledge about good problem-solvers in TREs with a VET background and can be used to support the development of VET adults' problem-solving skills in TREs.

Available at (open access): <https://doi.org/10.1108/JWL-05-2016-0032>

Title:

Hampf, F., Wiederhold, S., & Woessmann, L. (2017). Skills, earnings, and employment: Exploring causality in the estimation of returns to skills. *Large-scale Assessments in Education*, 5(12). doi: 10.1186/s40536-017-0045-7

Abstract:

Ample evidence indicates that a person's human capital is important for success on the labor market in terms of both wages and employment prospects. However, unlike the efforts to identify the impact of school attainment on labor-market outcomes, the literature on returns to cognitive skills has not yet provided convincing evidence that the estimated returns can be causally interpreted. Using the PIAAC Survey of Adult Skills, this paper explores several approaches that aim to address potential threats to causal identification of returns to skills, in terms of both higher wages and better employment chances. We address measurement error by exploiting the fact that PIAAC measures skills in several domains. Furthermore, we estimate instrumental-variable models that use skill variation stemming from school attainment and parental education to circumvent reverse causation. Results show a strikingly similar pattern across the diverse set of countries in our sample. In fact, the instrumental-variable estimates are consistently larger than those found in standard least-squares estimations. The same is true in two "natural experiments," one of which exploits variation in skills from changes in compulsory-schooling laws across U.S. states. The other one identifies technologically induced variation in broadband Internet availability that gives rise to variation in ICT skills across German municipalities. Together, the results suggest that least-squares estimates may provide a lower bound of the true returns to skills in the labor market.

Available at (open access): <https://doi.org/10.1186/s40536-017-0045-7>

Title:

Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2017). Coping with change: International differences in the returns to skills. *Economics Letters*, 153, 15-19. doi: 10.1016/j.econlet.2017.01.007

Abstract:

International data from the PIAAC survey allow estimation of comparable labor-market returns to skills for 32 countries. Returns to skills are larger in faster growing economies, consistent with the hypothesis that skills are particularly important for adaptation to economic change.

Available at: <https://doi.org/10.1016/j.econlet.2017.01.007>

Title:

Kankaraš, M. (2017). *Personality matters*. OECD Education Working Papers No. 157. Paris: OECD Publishing. doi: 10.1787/8a294376-en

Abstract:

Personality characteristics shape human behaviour and influence a wide range of life events and outcomes. They do so not only through their direct effects on life outcomes, but also through their indirect effects on other important personal factors and intermediate life events, such as the development of cognitive capacities, the attainment of educational qualifications and the formation of a family. As such, personality characteristics have a demonstrable relevance for a wide range of policy issues and represent an important, although often neglected, subject of policy interest. This paper reviews the scientific literature covering a wide range of personality characteristics, discussing their conceptualisations and main features, their relevance for important outcomes in life and work, and the chief ways they are measured. It aims to provide a comprehensive overview of various attributes of personality from the perspective of their potential importance for the Survey of Adult Skills (PIAAC), taking into account their analytical potential and policy relevance. The paper also outlines and evaluates the most important measurement instruments for each personality characteristic, with a focus on short self-report scales as the most appropriate form for inclusion in large-scale international surveys. Finally, it presents some considerations related to the evaluation and

promotion of personality characteristics and introduces the substantive and measurement criteria that could be used to select the personality attributes, and related measurement scales, to include in large-scale surveys.

Available at (open access): <https://doi.org/10.1787/8a294376-en>

Title:

Kirsch, I., & Lennon, M. L. (2017). PIAAC: A new design for a new era. *Large-scale Assessments in Education*, 5(11). doi: 10.1186/s40536-017-0046-6

Abstract:

As the largest and most innovative international assessment of adults, PIAAC marks an inflection point in the evolution of large-scale comparative assessments. PIAAC grew from the foundation laid by surveys that preceded it, and introduced innovations that have shifted the way we conceive and implement large-scale assessments. As the first fully computer-delivered survey of adults, those innovations included: a comprehensive assessment design involving multistage adaptive testing; development of an open-source platform capable of delivering both cognitive measures and nationally-specific background questionnaires; automated scoring of open-ended items across more than 50 languages; enhanced cognitive measures that included electronic texts and interactive stimuli; the inclusion of new item types and response modes; and the use of log file and process data to interpret results. This paper discusses each of these innovations along with the development of data products and dissemination activities that have extended the utility of the survey, providing today's policy makers with information about the extent to which adults possess the critical skills required for both their own success and the health and vibrancy of societies around the world. As this paper suggests, the innovations introduced via PIAAC broadened the relevance and utility of the survey along with the accuracy and validity of the data, strengthening the foundation upon which future surveys can continue to build.

Available at (open access): <http://dx.doi.org/10.1186/s40536-017-0046-6>

Title:

Krüger, J. (2017). *Die Illusion der Chancengleichheit. Der Einfluss der sozialen Herkunft auf die kognitive Kompetenz Erwachsener* [The illusion of equal opportunities. The influence of social background on the cognitive competence of adults] (Master's thesis). RWTH Aachen University.

Abstract:

Based on the German PIAAC data (Rammstedt et al., 2016) and based on the assumptions such as the ones from Boudon (1947), the master's thesis examined the effect of social origin on the cognitive competence of adults. [Note from editors]

Available at: Library of RWTH Aachen University

Title:

Krupar, A., Horvatek, R., & Byun, S.-y. (2017). Does nonformal education matter? Nonformal education, immigration, and skills in Canada. *Adult Education Quarterly*, 67(3), 186-208. doi: 10.1177/0741713617697423

Abstract:

This article examined the relationship between participation in adult nonformal education (NFE), defined as on-the-job training, attending private lessons, attending seminars, or distance learning, and Canadian immigrant respondents' literacy and numeracy outcomes, using data from the

Program for the International Assessment of Adult Competencies Survey. We found that although participation in some forms of NFE was significantly related to higher literacy and numeracy scores, such relationship tended to be greater for first-generation immigrants than for nonimmigrant adults, even after controlling for their linguistic and formal educational background. Our findings suggested that first-generation immigrants in Canada might benefit the most from increased participation in NFE programs and targeted policies.

Available at (open access): <http://dx.doi.org/10.1177/0741713617697423>

Title:

Lavrijsen, J., & Nicaise, I. (2017). Returns on vocational education over the life cycle: Between immediate labour market preparation and lifelong employability. *International Review of Education*, 63(2), 257-280. doi: 10.1007/s11159-017-9630-9

Abstract:

An important issue in the design of secondary-level education is the balance between conveying general and occupation-specific (vocational) skills. On the one hand, vocationally oriented programmes, providing occupation-specific skills with immediate labour market relevance, have repeatedly been shown to secure safe pathways into employment. On the other hand, these programmes tend to put less emphasis on developing general knowledge, skills and competencies, including numeracy and literacy, which are foundational to lifelong learning. Hence, when the needs of the labour market change, employees who opted for a vocational track when they were at secondary school risk being less flexible in adapting to such changes later in their career. The authors of this article examine whether this results in a trade-off between short-term gains and long-term losses by considering differences in the labour market careers of vocationally and generally educated respondents in the 2012 Programme for the International Assessment of Adult Competencies (PIAAC). Their results suggest that early labour market benefits of vocational specialisation decrease over time; the authors relate this to its lower ability to equip secondary school students–future employees–with skills for lifelong learning.

Available at: <http://dx.doi.org/10.1007/s11159-017-9630-9>

Title:

Lavrijsen, J., & Nicaise, I. (2017). Systemic obstacles to lifelong learning: The influence of the educational system design on learning attitudes. *Studies in Continuing Education*, 39(2), 176-196. doi: 10.1080/0158037X.2016.1275540

Abstract:

Comparative research has often emphasized the importance of external barriers (e.g. enrolment costs) to explain inequalities in lifelong learning participation. However, individuals, in particular the low educated, are often not only prevented from participation by external barriers, but also by negative psychological dispositions about learning. In this article, we study how dispositions about learning as measured in PIAAC (2012) vary between countries. In particular, we assess how these cross-country differences are related to a number of design characteristics of the initial school system. We improve the cross-sectional research design by controlling attitudes among adults for attitudes collected among primary school students, making use of diff-in-diff and pseudo-panel-techniques. Overall, we find that strong external differentiation mechanisms, in particular tracking students at a young age and making extensively use of grade retention, are associated with less positive attitudes towards learning among adults. However, a number of methodological issues, related to small country samples and differences in data definition between surveys, calls for further investigation.

Available at: <https://doi.org/10.1080/0158037X.2016.1275540>

Title:

Lee, J.-W., & Wie, D. (2017). Returns to education and skills in the labor market: Evidence from Japan and Korea. *Asian Economic Policy Review*, 12(1), 139-160. doi: 10.1111/aep.12169

Abstract:

This study investigates the determinants of skill proficiency, and the impact of adult skills on earnings, in Japan and Korea. Using the Program for the International Assessment of Adult Competencies survey data, it shows that Japanese adults perform better than Korean respondents, on average, on skill proficiency tests. A decomposition analysis shows that the score gap in literacy, numeracy, and problem solving skills between the two countries is mostly due to different returns to individual characteristics such as upper-secondary and tertiary education. Adult skills have a positive and significant impact on individual earnings and employment probability, in both countries. In Japan, the returns to literacy, numeracy, and problem-solving skills increase significantly with experience, and tend to fall with formal education, suggesting employer learning or human capital accumulation through career progression. In contrast, in Korea, the returns to literacy and numeracy skills do not seem to increase with experience.

Available at (open access): <http://dx.doi.org/10.1111/aep.12169>

Title:

Lee, Y. (2017). Does context matter? Literacy disparities in self-rated health using evidence from 17 developed countries. *American Journal of Health Behavior*, 41(3), 287-300. doi: 10.5993/AJHB.41.3.8

Abstract:

The study examines whether adult literacy skills predict self-rated health status beyond educational credentials in 17 developed countries using a cross-national survey, the Programme for the International Assessment of Adult Competencies (PIAAC). Methods: The study uses linear regression models with country-level fixed effects to predict self-rated health to account the unobserved country-level heterogeneity. A total of 73,806 respondents aged 25 to 65 were included in the analysis. Results: Although adult literacy is positively associated with better self-rated health in general, the strength of the relationship varies across nations. The literacy-related health inequalities are less severe in countries with the higher public share of health expenditures that may better address the needs of individuals with limited cognitive abilities. Curriculum standardization also contributes to reducing the literacy gradients in health by decreasing variations in skills obtained in school across individuals with different social origins. Conclusions: Overall, this study reveals that promoting equity in adult literacy skills is an important way to improve a population's health. Country-level differences in the strength of the relationship between literacy and self-rated health are systematically related to between-country differences in health financing and educational systems.

Available at: <http://dx.doi.org/10.5993/AJHB.41.3.8>

Title:

Levels, M., Dronkers, J., & Jencks, C. (2017). Contextual explanations for numeracy and literacy skill disparities between native and foreign-born adults in western countries. *Plos ONE*, 12(3). doi: 10.1371/journal.pone.0172087

Abstract:

Using new direct measures of numeracy and literacy skills among 85,875 adults in 17 Western countries, we find that foreign-born adults have lower mean skills than native-born adults of the same

age (16 to 64) in all of the examined countries. The gaps are small, and vary substantially between countries. Multilevel models reveal that immigrant populations' demographic and socioeconomic characteristics, employment, and language proficiency explain about half of the cross-national variance of numeracy and literacy skills gaps. Differences in origin countries' average education level also account for variation in the size of the immigrant-native skills gap. The more protective labor markets in immigrant-receiving countries are, the less well immigrants are skilled in numeracy and literacy compared to natives. For those who migrate before their teens (the 1.5 generation), access to an education system that accommodates migrants' special needs is crucial. The 1 and 1.5 generation have smaller numeracy and literacy skills gaps in more ethnically diverse societies.

Available at (open access): <https://doi.org/10.1371/journal.pone.0172087>

Title:

Maddox, B., & Zumbo, B. D. (2017). Observing testing situations: Validation as jazz. In B. Zumbo & A. Hubley (Eds.), *Understanding and investigating response processes in validation research* (pp. 179-192). Cham: Springer International Publishing. doi: 10.1007/978-3-319-56129-5_10

Abstract:

In this chapter, we describe how observations of real-life testing situations can provide insights into test validation by focusing on response processes and test performance that are not easily captured by large-scale quantitative data or by conventional 'think aloud' protocols. The chapter is structured in the following way. Theory and Method describes the key approaches to the study of face-to-face testing situations. Informed by Goffman's micro-analysis of social situations, we describe an approach to the study of testing situations that draws on research traditions in linguistic anthropology and conversation analysis. Assessment Observed illustrates the method with short transcripts from sequences of interaction in the Slovenian PIAAC assessment. The transcripts illustrate temporal, interactive, and affective characteristics of the testing situation. They illustrate the potential for studies of the testing situation to provide new insights into response processes. In the final part of the chapter. Integrating Data, we consider how micro-analytic insights from testing situations can inform, and be integrated into, validation practice.

Available at: http://dx.doi.org/10.1007/978-3-319-56129-5_10

Title:

Maehler, D. (2017). Sozioökonomische Faktoren in Deutschland besonders wichtig für Kompetenzdisparitäten zwischen Bevölkerung mit und ohne Zuwanderungshintergrund: Ländervergleich auf Basis der PIAAC-Studie [Socio-economic factors in Germany are important for competence disparities between the population with and without immigration background: Country comparison based on the PIAAC study]. *Informationsdienst Soziale Indikatoren (ISI)*, 58, 1-5.

Abstract:

Germany is today one of the most prominent immigration countries. The increase in migration worldwide poses challenges at different levels to both target and host countries. With regard to the immigrant adult population, integration into the labor market is the focus of discussions in the OECD and especially in Germany (OECD, 2016). In order to succeed it is first necessary to obtain a reliable picture of the existing skills of immigrants. Initial surveys of recently immigrated refugees already give a first indication of the situation. On average, a low level of formal education is assumed (Brücker, Rother & Schupp, 2016). For example, Wößmann (2015) calls for alternative training models (including partial qualification), which take into account different courses of life in different cultural and social settings in order to prepare low-skilled immigrants for the German labor market. As part of such considerations, various projects have been launched to first assess the existing skills of

immigrants (see also OECD, 2016). In Germany, for example, Maehler, Shajek and Brinkmann (in press) are putting together a handbook of diagnostic procedures for the migrant population. Among other things, the identification and recognition of professional qualifications and professional qualifications acquired abroad are discussed (Atanassov & Erbe, in press). In contrast, the "Integration through Qualification" funding program has compiled competence assessment procedures for practitioners (e.g., Employment Agencies, Job Centers and Labor Market Actors) (IQ Fachstelle, 2015). It is based on the premise that a comprehensive picture of the competencies of an individual can not be achieved by only recording the professional skills. Comprehensive standards of competence assessment processes are expected, covering professional competencies, key competencies and individual resources (IQ Fachstelle, 2015). For example, literacy is fundamental to other subject-related competences and has a strong link with other areas of competence (see, for example, Maehler et al., 2013; OECD, 2013). This article assesses how well immigrants are qualified compared to the native populations across countries and what factors are relevant for their key competencies.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-52983-6>

Title:

Maehler, D. B., & Konradt, I. (2017). *Forschungsdatenzentrum PIAAC: Jahresbericht 2016; Berichtszeitraum 01.01.2016-31.12.2016 [Research Data Center PIAAC: Annual Report 2016]*. GESIS Papers No. 2017/14. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

Annual Report 2016 from Research Data Center PIAAC. Reporting period 01/01/2016 to 12/31/2016.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-52180-4>

Title:

Maehler, D. B. & Rammstedt, B. (2017). *The International Conference on PIAAC and PIAAC-Longitudinal*. Mannheim. Retrieved October 27, 2017, from https://www.gesis.org/fileadmin/-upload/PIAAC_Konferenz/PIAAC_Conference_Booklet_2017.pdf

Abstract:

The conference focuses on scientific work based on the international data of the first cycle of PIAAC and especially on analyses of the German PIAAC longitudinal follow-up, PIAACL. The conference program reflects the broad and interdisciplinary focus of PIAAC. Particularly the contributions based on the PIAAC-L data offer first insights into the longitudinal effects of and on the PIAAC skills. The conference not only provides the opportunity to learn about adult skills, but, beyond that, it also enables networking and thus provides the ground for future joint research and practice. Eventually, we aim to inspire additional work based on the extensive PIAAC and PIAAC-L data and to provide insights into design and measurement alternatives for the upcoming second cycle of PIAAC.

Available at (open access):

https://www.gesis.org/fileadmin/upload/PIAAC_Konferenz/PIAAC_Conference_Booklet_2017.pdf

Title:

Maehler, D. B., Martin, S., & Rammstedt, B. (2017). Coverage of the migrant population in large-scale assessment surveys. Experiences from PIAAC in Germany. *Large-scale Assessments in Education*, 5(9). doi: 10.1186/s40536-017-0044-8

Abstract:

Background: European countries, and especially Germany, are currently very much affected by

human migration flows, with the result that the task of integration has become a challenge. Only very little empirical evidence on topics such as labor market participation and processes of social integration of migrant subpopulations is available to date from large-scale population surveys. The present paper provides an overview of the representation of the migrant population in the German Programme for the International Assessment of Adult Competencies (PIAAC) sample and evaluates reasons for the under-coverage of this population. Methods: We examine outcome rates and reasons for nonresponse among the migrant population based on sampling frame data, and we also examine para data from the interviewers' contact protocols to evaluate time patterns for the successful contacting of migrants. Results and Conclusions: This is the first time that results of this kind have been presented for a large-scale assessment in educational research. These results are also discussed in the context of future PIAAC cycles. Overall, they confirm the expectations in the literature that factors such as language problems result in lower contact and response rates among migrants.

Available at (open access): <https://doi.org/10.1186/s40536-017-0044-8>

Title:

Mamedova, S., Sparks, D., & Hoyer, K. M. (2017). *Adult education attainment and assessment scores: A cross-national comparison stats in brief* [NCES 2018-007]. Washington DC: Center for Education Statistics. Retrieved November 10, 2017, from <https://nces.ed.gov/pubs2018/2018007.pdf>

Abstract:

The Organization for Economic Cooperation and Development (OECD) conducted the Program for the International Assessment of Adult Competencies (PIAAC), a multi-domain adult skills assessment with an extensive background questionnaire, in 2012. PIAAC is a global effort to understand how individuals' education, workplace experiences, and other background factors relate to cognitive skills in the domains of literacy, numeracy, and problem solving in technology-rich environments. This Statistics in Brief builds upon the findings in the earlier National Center for Education Statistics (NCES) report (Goodman et al. 2013) to provide additional cross-national comparisons of adult literacy and numeracy proficiencies by education attainment. Specifically, the brief highlights differences between several countries in the average literacy and numeracy scores for adults at different levels of education attainment. The brief further compares gaps in literacy and numeracy scores between adults of higher and lower education attainment across participating countries. The results from the earlier NCES reports indicated that adults in the United States performed lower than or not measurably different from the PIAAC international average in literacy and in numeracy (Goodman et al. 2013, Rampey et al. 2016). Specifically, in literacy, average scores ranged from 250 in Italy to 296 in Japan. The U.S. average score was 270, while the PIAAC international average was 273. Compared with the U.S. average score, average scores were higher in 12 countries, lower in 5 countries, and not measurably different in 5 countries. In numeracy, average scores ranged from 246 in Spain to 288 in Japan. The U.S. average score was 253, while the PIAAC international average was 269. Compared with the U.S. average score in numeracy, average scores were higher in 18 countries, lower in 2 countries, and not measurably different in 2 countries (Goodman et al. 2013).

Available at (open access): <https://nces.ed.gov/pubs2018/2018007.pdf>

Title:

Massing, N., & Gauly, B. (2017). Training participation and gender: Analyzing individual barriers across different welfare state regimes. *Adult Education Quarterly*, 67(4), 266-285. doi: 10.1177/0741713617715706

Abstract:

Lifelong learning is becoming increasingly important in today's societies. Individuals need to

develop their skills through training in order to be successfully integrated in the labor market. We use data from the Programme for the International Assessment of Adult Competencies to investigate gender differences in training across 12 countries. We analyze participation and perceived barriers to training for women in comparison with men and control for family structure and employment. As institutional framework, we use four different welfare state regimes to show how policies can affect the decision to participate. Our results show that different welfare regimes have an impact on the extent adults take part in training and on their perceived barriers. In all countries except Belgium and the Nordic states, men are more likely to participate in training. However, this inequality disappears once controlling for further individual characteristics. Our research provides insights why adults are deterred from engaging in training.

Available at: <https://doi.org/10.1177/0741713617715706>

Title:

Massing, N., & Schneider, S. L. (2017). Degrees of competency: The relationship between educational qualifications and adult skills across countries. *Large-scale Assessments in Education*, 5(6). doi: 10.1186/s40536-017-0041-y

Abstract:

Background: Educational qualifications and literacy skills are highly related. This is not surprising as it is one aim of educational systems to equip individuals with competencies necessary to take part in society. Because of this relationship educational qualifications are often used as a proxy for “human capital”. However, from a theoretical perspective, there are many reasons why this relationship is not perfect, and to some degree this is due to third variables. Thus, we want to explore the net relationship between educational attainment (harmonized according to the International Standard Classification of Education, ISCED) and literacy skills, and how much skills vary within education levels across countries. Methods: We use data from 21 countries from the Programme for the International Assessment of Adult Competencies 2012. This paper compares the literacy skills of adults who achieved different levels of educational attainment across countries. Given the high degree of educational differentiation in most countries, we do this using a more differentiated educational attainment variable than what is commonly used. In our analyses we firstly adjust for factors that are likely to affect access to education and the acquisition of educational qualifications and literacy skills, such as parental education and language and migration background. In a second step, we also take into account factors affecting skill development after initial formal education, such as occupation and skill use at home. Results: We firstly find a high degree of heterogeneity of skills across countries for equivalent education categories. Secondly, we find skill similarities for equivalent education categories classified at different broad education levels, sometimes even breaking the hierarchical order of ‘higher education entails higher competencies’. Conclusion: We conclude that ISCED levels cannot be taken as a cross-nationally comparable proxy for human capital in terms of literacy skills, and that education has to be harmonized in a substantively more meaningful way in future adult literacy surveys.

Available at (open access): <https://doi.org/10.1186/s40536-017-0041-y>

Title:

Mateos-Romero, L., & Salinas-Jiménez, M. M. (2017). Skills heterogeneity among graduate workers: Real and apparent overeducation in the Spanish labor market. *Social Indicators Research*, 132(3), 1247-1264. doi: 10.1007/s11205-016-1338-x

Abstract:

This paper takes account of skills heterogeneity among workers with a higher education degree and

proposes a new measure to differentiate between real and apparent overeducation based on the level of cognitive skills actually achieved by the individuals. This proposal is applied to the study of the wage effects of overeducation in the Spanish labor market using data from PIAAC. The results suggest that between a quarter and a half of the graduate workers who appear to be overeducated in the Spanish labor market could be considered as being only apparently overeducated since they show a lower level of skills than that corresponding to their educational level or, alternatively, a level of cognitive skills which is commensurate with their job. Different returns are found for each group of overeducated individuals both when compared with adequately educated peers within a similar level of education (with greater wage penalties for apparently overeducated workers) and when the comparison is done with well-matched co-workers doing a similar job (with a wage premium for real overeducation but no significant returns for apparently overeducated workers). These different returns by skill levels beyond what overeducation measures implies that the market distinguishes between education and skills and that educational attainment per se does not perfectly align with acquired skills, meaning that traditional measures of overeducation would overstate the actual level of skills mismatch in the labor market.

Available at: <http://dx.doi.org/10.1007/s11205-016-1338-x>

Title:

Nieto, S., & Ramos, R. (2017). Overeducation, skills and wage penalty: Evidence for Spain using PIAAC data. *Social Indicators Research*, 134(1), 219-236. doi: 10.1007/s11205-016-1423-1

Abstract:

The literature on educational mismatches finds that overeducated workers suffer a wage penalty compared with properly educated workers with the same level of education. Recent literature also suggests that individuals' skill heterogeneity could explain wage differences between overeducated and properly matched workers. The hypothesis is that overeducated workers earn less due to their lower competences and skills in relative terms. However, that hypothesis has been rarely tested due to data limitations on individuals' skills. The aim of this paper is to test the individuals' skill heterogeneity theory in Spain using microdata from PIAAC, because it is one of the developed countries supporting the highest overeducation rates and where its adult population holds the lowest level of skills among a set of developed countries. Our hypothesis is that the wage penalty of overeducation in Spain is explained by the lower skill level of overeducated workers. The obtained evidence confirms this hypothesis but only to a certain extent as skills only explain partially the wage penalty of overeducation.

Available at: <http://dx.doi.org/10.1007/s11205-016-1423-1>

Title:

Pellizzari, M., & Fichen, A. (2017). A new measure of skill mismatch: Theory and evidence from PIAAC. *IZA Journal of Labor Economics*, 6(1). doi: 10.1186/s40172-016-0051-y

Abstract:

This paper proposes a new measure of skill mismatch to be applied to the recent OECD Survey of Adult Skills (PIAAC). The measure is derived from a formal theory and combines information about skill proficiency, self-reported mismatch and skill use. The theoretical foundations underling this measure allow identifying minimum and maximum skill requirements for each occupation and to classify workers into three groups: the well-matched, the under-skilled and the over-skilled. The availability of skill use data further permits the computation of the degree of under- and over-usage of skills in the economy. The empirical analysis is carried out using the first round of the PIAAC data, allowing comparisons across skill domains, labour market statuses and countries.

Available at (open access): <http://dx.doi.org/10.1186/s40172-016-0051-y>

Title:

Perry, A. (2017). Are over-qualified immigrants mismatched according to their actual skills? An international comparison of labor market placement in OECD countries. GESIS Papers No. 2017/19. Köln: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

Previous research finds that immigrants are more often over-qualified than natives. Reasons can be imperfect transferability and signaling of skills. However, over-qualification does not necessarily imply that someone is over-skilled when it comes to actual skills and vice versa. The Programme for the International Assessment of Adult Competencies (PIAAC 2012) provides most recent data on basic skills of the working-age population. With this data I examine numeracy mismatch of first generation immigrants and natives in 13 OECD countries. My results suggest that especially non-native speaking immigrant workers have difficulties finding employment that aligns with their skill level. This results in genuine mismatch of immigrants, meaning that they are more often over-qualified than native workers and at the same time (comparing individuals at the same skill level) more often over-skilled. Hence, their skills are not put into effective use. These findings differ across occupations.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-52592-5>

Title:

Rammstedt, B., Danner, D., & Lechner, C. (2017). Personality, competencies, and life outcomes: Results from the German PIAAC longitudinal study. *Large-scale Assessments in Education*, 5(2). doi: 10.1186/s40536-017-0035-9

Abstract:

The present paper investigates the power of personality to predict important life outcomes in the context of the Programme for the International Assessment of Adult Competencies (PIAAC). On the most global level, personality can be described by the Big Five dimensions, extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. These five dimensions were assessed in the German PIAAC longitudinal study (N = 4122) and can thus be directly related to the central competence and outcome indicators measured in PIAAC. In a first step, we report the relationships between the Big Five dimensions and the basic competencies literacy and numeracy. In a second step, we investigate the extent to which the five personality dimensions can contribute to explaining six important life outcomes, above and beyond competencies and sociodemographic characteristics. Our results indicate that personality is substantially related to all six life outcomes. The portion of variance explained by personality was similar to, and sometimes larger than, that explained by competencies. After adjusting for competencies, personality was incrementally predictive of life satisfaction and health, in particular, and, to a lesser extent, of educational attainment, employment status, and income. The only outcome of which personality was not incrementally predictive over and above competencies was participation in continuing education. Overall, these findings highlight the merit of including measures for the Big Five personality domains in upcoming cycles of PIAAC.

Available at (open access): <https://doi.org/10.1186/s40536-017-0035-9>

Title:

Rammstedt, B., Martin, S., Zabal, A., Carstensen, C., & Schupp, J. (2017). The PIAAC longitudinal study in Germany: Rationale and design. *Large-scale Assessments in Education*, 5(4). doi: 10.1186/s40536-017-0040-z

Abstract:

In Germany, the respondents who had participated in the 2012 survey of the Programme for the International Assessment of Adult Competencies (PIAAC) were re-approached for the panel study PIAAC-L. PIAAC-L aims at investigating the longitudinal effects of skill outcomes over the life course and the development of the key skills assessed in PIAAC. Moreover, additional and alternative background information was collected and analyzed within PIAAC-L. PIAAC-L consists of three follow-up waves to the initial PIAAC 2012 survey. The present paper describes the rationale for PIAAC-L and the benefits of conducting a longitudinal PIAAC follow-up study in Germany. In addition, we outline the general design of PIAAC-L and the specific design of the three waves of data collection. Finally, we address the analytic potential of PIAAC-L data set and its availability to the scientific community.

Available at (open access): <https://doi.org/10.1186/s40536-017-0040-z>

Title:

Romero, L. M., Murillo Huertas, I. P., & M., S. J. (2017). Wage effects of cognitive skills and educational mismatch in Europe. *Journal of Policy Modeling*, 39(5), 909-927. doi: 10.1016/j.jpolmod.2017.08.001

Abstract:

This paper analyzes the returns to education and educational mismatch in thirteen European countries taking account not only of years of education but also of cognitive skills actually acquired by workers. Using the PIAAC database, our results suggest that both years of education and skills contribute to determine wages, with higher returns to years of education as the level of skills increases. Educational and skills mismatches appear to be two different phenomena, with educational mismatch lying behind wages. It is also found that the higher the level of skills achieved by an individual, the higher the returns to years of required education or to years of overeducation. Policy implications are derived as regards educational mismatch, which reflects inefficiencies in the allocation of the educational resources, and as regards the relevance of cognitive skills, leaving room for improving the quality of education to fully take advantage of educational investments.

Available at: <http://dx.doi.org/10.1016/j.jpolmod.2017.08.001>

Title:

Scandurra, R., & Calero, J. (2017). Modelling adult skills in OECD countries. *British Educational Research Journal*, 43(4), 781-804. doi: 10.1002/berj.3290

Abstract:

Research in the social sciences has focused extensively on the relationship between family background, educational attainment and social destination, on the one hand, and on the processes of skills creation and skills use, on the other. This paper brings these two branches of the literature together by examining the correlation between a range of social factors. The methodology we adopt provides a comprehensive approach to the study of the channels through which literacy skills are acquired, taking into account the interrelation of family background, educational attainment, and the use of skills at work and at home. We use the Programme of International Assessment of Adult Competences (PIAAC) dataset and apply a structural equation model (SEM). Our results show that family background and education play an important role in the configuration of adult skills and skill practices. Unequal family access to resources has a strong impact at later stages in life and strongly

affects educational attainment and skills outcomes. Additionally, skills use has a positive and direct impact on adult skills.

Available at: <http://dx.doi.org/10.1002/berj.3290>

Title:

Schnepf, S. V. (2017). How do tertiary dropouts fare in the labour market? A comparison between EU countries. *Higher Education Quarterly*, 71(1), 75-96. doi: 10.1111/hequ.12112

Abstract:

Dropping out of university is regularly discussed as a negative indicator. However, research on actual career trajectories of dropouts is virtually non-existent. This study estimates the association between tertiary dropouts and career chances in 15 European countries. Using data from the 2011 Programme for the International Assessment of Adult Competencies (PIAAC), estimates are derived from the application of propensity score matching taking a variety of individual background characteristics including cognitive skills into account. Results indicate that individuals are likely to fare better in the labour market if they enrol in university and drop out than if they do not enrol at all. Policy makers need to revise the notion that dropping out is purely negative.

Available at: <http://dx.doi.org/10.1111/hequ.12112>

Title:

Tverdstup, M., & Paas, T. (2017). Gender-specific human capital: Identification and quantifying its wage effects. *International Journal of Manpower*, 38(6), 854-874. doi: 10.1108/IJM-05-2016-0111

Abstract:

Purpose: The purpose of this paper is to better understand the possible reasons behind gender pay disparities, focussing on the unique features of male and female human capital and their wage returns. Despite increasing convergence of male and female human capital attainments, substantial differences remain. Extraction of human capital components non-overlapping across genders provides more profound explanation of the unexplained wage gap of men and women. **Design/methodology/approach:** Starting with the non-parametric matching-based decomposition technique, the authors extend the pay gap estimation framework and focus on males and females having no counterpart in a set of characteristics within the opposite gender. The authors identify gender-unique human capital in terms of differences in distribution of individual characteristics across men and women and gender-specific combination of human capital characteristics. Wage returns to gender-specific profiles are evaluated applying wage regression on both full distribution of earnings and wage quantiles. The research relies on the Survey of Adult Skills (PIAAC) database for Estonia, which incorporates both formal education and cognitive skill records. **Findings:** The study identifies sets of characteristics and competencies exclusive for both genders, proving that male and female profiles cannot be directly compared. The results suggest that men possess high individual and combined abilities in numeracy and problem solving in technology-rich environment, not always reached by females. This potentiates men's higher earnings in spite of their generally lower formal educational attainments. Wage gap analysis over the full distribution of earnings shows even larger "glass ceiling" effect for females, possessing woman-specific human capital. **Originality/value:** The authors raise a research from a novel perspective towards a role of human capital in gender wage inequality. Instead of usual reference to observable gaps in male and female characteristics, the authors identify the gender-specific human capital profiles, to a large extent non-reached by the opposite gender. Analysed associations between gender-specific characteristics and earnings provide an insight to possible effects of gender-unique human capital on a male-female wage disparity.

Available at: <http://dx.doi.org/10.1108/IJM-05-2016-0111>

Title:

Vera-Toscano, E., Rodrigues, M., & Costa, P. (2017). Beyond educational attainment: The importance of skills and lifelong learning for social outcomes. Evidence for Europe from PIAAC. *European Journal of Education*, 52(2), 217-231. doi: 10.1111/ejed.12211

Abstract:

Empirical evidence suggests that educational attainment nurtures people's social outcomes and promotes active participation in society and stability. However, it is unclear to what extent other types of human capital also correlate with social outcomes. Hence, we explored the opportunity offered by the PIAAC survey through its provision of information on educational attainment, observed individual key skills proficiency, and participation in adult education and training (adult lifelong learning). We therefore studied the association between these human capital variables and social outcomes, and more specifically interpersonal trust and participation in volunteering activities. Results revealed that these social outcomes were affected not only by the formal qualification obtained, determined by the education variable, but also throughout the life-cycle. Indeed, education and training when undertaken during adult life have a significant impact, especially on volunteering. The fact that the skill proficiency also plays a significant role is extremely relevant, as skills are more likely to change over the life-cycle, either in a positive or negative way. Whilst the formal education received is constant after exiting the educational system, skills reflect competences more accurately: first, because those with the same level of education may have different skill levels because of differences in the quality of education or ability; second, because skills can vary over time. For example, they may increase with work experience or informal education, or decrease as a result of depreciation and ageing. These findings suggest that social outcomes are prone to be affected by many factors other than formal education, suggesting that policy makers can implement recommendations even after formal education has been completed.

Available at (open access): <http://dx.doi.org/10.1111/ejed.12211>

Title:

Yasukawa, K., Hamilton, M., & Evans, J. (2017). A comparative analysis of national media responses to the OECD Survey of Adult Skills: Policy making from the global to the local? *Compare: A Journal of Comparative and International Education*, 47(2), 271-285. doi: 10.1080/03057925.2016.1158644

Abstract:

The Organization for Economic Co-operation and Development's (OECD) Programme of International Assessment of Adult Competencies (PIAAC) is put forward as a landmark development in the lifelong monitoring and international comparison of education. The first round of PIAAC's Survey of Adult Skills compared performance in literacy, numeracy and problem solving in technology-rich environments across 24 countries. However, the translation of any OECD agenda into national policies is mediated by many actors, including the media. This paper examines and compares how the national media of Japan, England and France reported on the PIAAC results of their countries and the extent to which these reports mirror key messages from the OECD's Country Notes. It begins to trace how the OECD PIAAC agendas materialise into national policies. Although their role in this initial period was limited, we argue the roles of the media together with other policy actors must be monitored as they interact to shape possibilities for sustainable adult education policies.

Available at: <http://dx.doi.org/10.1080/03057925.2016.1158644>

Title:

Zeyer, B. (2017). *Digitale Kompetenz und Löhne in Deutschland. Eine Analyse mit PIAAC 2012 [Digital skills and wages in Germany. Analyzes based on PIAAC 2012]*. (Master's thesis). Ruhr-Universität Bochum.

Abstract:

Based on the German PIAAC data (Rammstedt et al., 2016) the master's thesis investigates the correlation between digital skills (e.g., problem solving in technology-rich environments) and wages in Germany. [Note from editors]

Available at: Library of Ruhr-Universität Bochum.

2.11 Publications in 2018

Title:

Ackermann-Piek, D. (2018). *Interviewer effects in PIAAC Germany 2012* (Dissertation). Mannheim University. Retrieved February 15, 2019, from <https://ub-madoc.bib.uni-mannheim.de/42772>

Abstract:

Concerns about interviewer effects in interviewer-mediated surveys have accompanied generations of survey researchers. Following the Total Survey Error (TSE) framework, this dissertation examines interviewer effects in multiple areas of a survey: interviewer effects on estimates of substantive survey variables and interviewer effects on unit nonresponse. The aim is to address whether the same interviewer characteristics are associated with interviewer effects across these multiple error sources. Researchers typically address interviewer effects on a single source of error. Part of the reason for this is that sufficient data on multiple error sources are seldom available in a single survey. Using data from PIAAC Germany 2012, in this dissertation the results of analyses into individual error sources described in the TSE can be combined.

Available at (open access): <https://ub-madoc.bib.uni-mannheim.de/42772>

Title:

Addey, C. (2018). Assembling literacy as global: The danger of a single story. In M. Milana, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The palgrave international handbook on adult and lifelong education and learning* (pp. 315-35). London: Palgrave Macmillan. doi: 10.1057/978-1-137-55783-4_17

Abstract:

This chapter enquires into the dominant conceptualization of literacy in international assessments of adult literacy. Framed by debates about evolving conceptualizations of international commensurative practices on literacy, it explores how a single story of literacy has been chosen, defined, organized, measured, legitimated and interpreted in international large-scale assessments. Taking a New Literacy Studies (NLS) ontological approach to literacy as its point of departure, the analysis draws on the theoretical assumptions of Latourian Actor-Network Theory and Adichie's experience of 'The danger of a single story' to propose a concept of 'global literacy', which is described as both assembled and single. The chapter argues that global literacy is not intrinsically bad, but that, in Adichie's words, it is only one of the many literacy stories. The epistemological pluralisms of literacy include global literacy, but only as one of many literacy stories.

Available at: https://doi.org/10.1057/978-1-137-55783-4_17

Title:

Akgündüz, Y. E., & Torun, H. (2018). *Two and a half million Syrian refugees, skill mix and capital intensity*. GLO Discussion Paper No. 186. Maastricht: Global Labor Organization (GLO). Retrieved February 15, 2019, from <http://hdl.handle.net/10419/175271>

Abstract:

We investigate how the rapid increase in the low-skilled labor supply induced by the inflow of 2.5 million Syrian refugees changed the tasks performed by native workers and the amount of capital used by firms in Turkey. Despite the unexpected nature of the refugee inflow, location choice of the refugees may be endogenous to the labor market opportunities of hosting regions. To handle this endogeneity issue, we use an instrument for the refugee intensity based on the distance of Turkish regions to the Syrian ones. The results based on Labor Force Survey suggest that the inflow of refugees increased natives' task complexity, reducing the intensity of manual tasks, and raising the intensity of abstract, routine and ICT tasks. This effect is particularly strong for natives with medium level of education. Exploiting the administrative firm data that contains the entirety of firms in the country, we find that the firms reduced their fixed assets. The fixed asset reduction is largest in machinery and equipment, which can be interpreted as a decline in the capital intensity of production. We conclude that tasks provided by Syrian refugees are substitutes for natives' manual tasks and firms' capital, and complementary to natives' more complex tasks.

Available at (open access): <http://hdl.handle.net/10419/175271>

Title:

Albrecht, S. (2018). *Empirical studies in labour and migration economics* (Dissertation). Universiteit van Amsterdam. Retrieved February 15, 2019, from <https://pure.uva.nl/ws/files/29052726/Thesis.pdf>

Abstract:

This thesis consists of three empirical studies investigating topics in the fields of labour and migration economics, using a combination of administrative and survey data. The first study in labour economics seeks to answer the question of whether international differences in earnings inequality between skilled and (relatively) unskilled workers can be explained by differences in the relative supply of and demand for skilled and unskilled workers across countries. Both the second and third studies are placed in the field of migration economics, dealing with the topical issue of refugee migration. Specifically, they investigate the social and attitudinal effects of the reception of refugees on host communities. The second study employs a case study of a town in rural Australia to examine how a large influx of refugees to the township has impacted social capital among the native residents. The third study broadens the context by using refugee centre data from all of the Netherlands over a number of years to link exposure to refugees to changes in natives' attitudes to immigration. While the three studies differ (in parts) in the subfield, context and methodology of empirical micro-economics, a uniting factor is that they are motivated by important real-world problems, and that any conclusions drawn are based on the thorough analysis of a suitable dataset.

Available at (open access): <https://pure.uva.nl/ws/files/29052726/Thesis.pdf>

Title:

Almeida, R. K., Fernandes, A. M., & Viollaz, M. (2018). Software adoption, employment composition, and the skill content of occupations in Chilean firms. *The Journal of Development Studies*, 56(1), 169-185. doi: 10.1080/00220388.2018.1546847

Abstract:

We contribute to the technology, skills, and jobs debate by exploiting a novel dataset for Chilean firms between 2007 and 2013, with information on the firms' adoption of complex software used in client management, production, or administration and business software packages. Instrumental variables estimates show that, in the medium-run, adoption of this complex software reallocates employment away from professional and technical workers, toward administrative and unskilled workers (production and services). Adoption also increases the use of routine and manual tasks and reduces that of abstract tasks within firms. The contrast between ours and previous findings shows that labour market impacts of technology adoption hinge on the type of technology and its complementarity with the skills content of occupations.

Available at: <https://doi.org/10.1080/00220388.2018.1546847>

Title:

Andrews, D., Nicoletti, G., & Timiliotis, C. (2018). *Digital technology diffusion. A matter of capabilities, incentives or both?* OECD Economics Department Working Papers No. 1476. Paris: OECD Publishing. doi: 10.1787/7c542c16-en

Abstract:

Insufficient diffusion of new technologies has been quoted as one possible reason for weak productivity performance over the past two decades (Andrews et al., 2016). This paper uses a novel data set of digital technology usage covering 25 industries in 25 European countries over the 2010-16 period to explore the drivers of digital adoption across two broad sets of digital technologies by firms, cloud computing and back or front office integration. The focus is on structural and policy factors affecting firms' capabilities and incentives to adopt – including the availability of enabling infrastructures (such as high-speed broadband internet), managerial quality and workers skills, and product, labour and financial market settings. We identify the effects of structural and policy factors based on the difference-in-difference approach pioneered by Rajan and Zingales (1998) and show that a number of these factors are statistically and economically significant for technology adoption. Specifically, we find strong support for the hypothesis that low managerial quality, lack of ICT skills and poor matching of workers to jobs curb digital technology adoption and hence the rate of diffusion. Similarly our evidence suggests that policies affecting market incentives are important for adoption, especially those relevant for market access, competition and efficient reallocation of labour and capital. Finally, we show that there are important complementarities between the two sets of factors, with market incentives reinforcing the positive effects of enhancements in firm capabilities on adoption of digital technologies.

Available at (open access): <https://doi.org/10.1787/7c542c16-en>

Title:

Annen, S. (2018). Measuring labour market success: A comparison between immigrants and native-born Canadians using PIAAC. *Journal of Vocational Education & Training*, 71(2), 218-238. doi: 10.1080/13636820.2018.1473469

Abstract:

Canadian society is characterised by a plurality of immigrants and Canadian migration policy and corresponding recognition approaches are strongly geared to economic criteria, qualifications and skills. This paper addresses the question how immigrants who have acquired their highest qualification outside Canada are able to use their foreign qualifications and skills in their current job. The analyses are conducted to verify the assumptions of human capital theory as well as the lack of transferability of human capital across country borders. To answer these questions a labour market

success index is developed, which is used as a dependent variable in regression models. The results show that traditional operationalisations of human capital (years of education, years of work experience and skills) have a positive effect on individual labour market success. At the same time, being born abroad and having acquired one's highest qualification abroad in comparison to Canada, especially in a Non-Western country, has negative effects on the overall labour market success of an individual. Detailed comparisons regarding different indicators of labour market success also prove these comparatively negative effects. The results demonstrate the limited explanatory power of human capital theory and the necessity to complement it with Bourdieu's concepts of social and cultural capital.

Available at: <https://doi.org/10.1080/13636820.2018.1473469>

Title:

Avvisati, F., Cherian, M., Encinas-Martin, M., Fitzpatrick, M., Pacileo, B., & Toledo, D. (2018). *Skills in Ibero-America: Insights from PISA 2015*. Paris: OECD Publishing.

Abstract:

In a knowledge-based global economy, investment in human capital is an essential component of any inclusive growth strategy. When workers lack the necessary skills, new technologies and production processes are adopted more slowly and do not translate into new growth models with higher value-added activities. However, skills affect individual's lives and well-being far beyond what can be measured by labour-market earnings and economic growth. This is particularly relevant for Ibero-American countries as they embark on a path of structural reforms to unleash new and sustainable sources of growth.

Available at (open access): <http://www.oecd.org/pisa/sitedocument/Skills-in-Ibero-America-Insights-from-PISA-2015.pdf>

Title:

Barker, A. (2018). *Increasing inclusiveness for women, youth and seniors in Canada*. OECD Economics Department Working Papers No. 1519. Paris: OECD Publishing. doi: 10.1787/83cb8b8d-en

Abstract:

Women, youth and seniors face barriers to economic inclusion in Canada, with considerable scope to improve their labour market outcomes. There has been no progress in shrinking the gender employment gap since 2009, and women, particularly mothers, continue to earn significantly less than men, in part due to a large gap in unpaid childcare responsibilities. Outside the province of Québec, low (but increasing) rates of government support for childcare should be expanded considerably, as should fathers' low take-up of parental leave. Skills development should be prioritised to arrest declining skills among youth and weak wage growth among young males with low educational attainment. Fragmented labour market information needs to be consolidated to address wage penalties associated with the widespread prevalence of qualifications mismatch. Growth in old-age poverty should be tackled through further increases in basic pension payments over time. Linking changes in the age of eligibility for public pensions to life expectancy would boost growth by increasing employment of older Canadians still willing and able to work. For all three groups, well-targeted expansions of in-work tax benefits and active labour market spending have the potential to increase employment.

Available at (open access): <https://doi.org/10.1787/83cb8b8d-en>

Title:

Bashir, S., Lockheed, M., Ninan, E., & Tan, J.-P. (2018). *Facing forward: Schooling for learning in Africa*. Washington: World Bank Publications. Retrieved February 15, 2019, from <https://openknowledge.worldbank.org/bitstream/handle/10986/29377/9781464812606.pdf?sequence=14&isAllowed=y>

Abstract:

This book lays out a range of policy and implementation actions that are needed for countries in sub-Saharan Africa to meet the challenge of improving learning while expanding access and completion of basic education for all. It underscores the importance of aligning the education system to be relentlessly focused on learning outcomes and to ensuring that all children have access to good schools, good learning materials, and good teachers. It is unique in characterizing countries according to the challenges they faced in the 1990s and the educational progress they have made over the past 25 years. The authors review the global literature and contribute their extensive new analyses of multiple datasets from over three dozen countries in the region. They integrate findings about what affects children's learning, access to schooling, and progress through basic education. The book examines four areas to help countries better align their systems to improve learning: completing the unfinished agenda of reaching universal basic education with quality; ensuring effective management and support of teachers; targeting spending priorities and budget processes on improving quality; and closing the institutional capacity gap. It concludes with an assessment of how future educational progress may be affected by projected fertility rates and economic growth. The primary audience for this book are policy makers in Africa, practitioners, and partners concerned about building the knowledge capital of sub-Saharan Africa.

Available at (open access): <https://openknowledge.worldbank.org/bitstream/handle/10986/29377/9781464812606.pdf?sequence=14&isAllowed=y>

Title:

Bechichi, N., Grundke, R., Jamet, S., & Squicciarini, M. (2018). *Moving between jobs*. OECD Science, Technology and Industry Policy Papers No. 52. Paris: OECD Publishing. doi: 10.1787/d35017ee-en

Abstract:

This paper aims to inform policies facilitating job-to-job transitions triggered by changes in the task content of occupations and in job demand. It assesses the distances existing between occupations in terms of cognitive skills and of skills as they emerge from the tasks performed on the job, and the training needs that moving between occupations entails. Skill “shortages” and “excesses” calculated on data for 31 countries and aggregated over 127 occupations are used to estimate the training efforts required to meet the skills requirements of the destination job. Distances in cognitive skills are found to be higher among low-skilled or from mid- to high-skilled occupations than among higher-skilled occupations. Conversely, distances in task-related skills are higher within high-skilled than low-skilled occupations. These results call for policies aimed at developing general cognitive skills complemented by task-related skills for workers in low-skilled occupations, and on-the-job training options for workers in high-skilled occupations.

Available at (open access): <https://doi.org/10.1787/d35017ee-en>

Title:

Becker Patterson, M. (2018). The forgotten 90%: Adult nonparticipation in education. *Adult Education Quarterly*, 68(1). doi: 10.1177/02F0741713617731810

Abstract:

Despite a highly developed U.S. adult education system, 90% of adults aged 20 years and older considered the least educated did not participate recently in formal or nonformal education. What are nonparticipants' characteristics, learning backgrounds, and skill levels? What predicts their likelihood of not participating in recent formal or nonformal education? The author analyzed 2012/2014 Program for the International Assessment of Adult Competencies–USA data. Situational deterrents of increasing age, parental education, low income, and work and family responsibilities contribute to nonparticipation. Dispositional deterrents include health and disability challenges, low social trust, and difficulties relating new ideas to real life. Institutional deterrents are education costs and little work schedule flexibility. Supports reported by nonparticipants are liking to learn new things, use of computers, and getting information from television and people they trust. Results from Program for the International Assessment of Adult Competencies–USA analyses inform adult and post-secondary educators and policy makers on what happened to—and how to reach—the forgotten 90%.

Available at (open access): <https://doi.org/10.1177%2F0741713617731810>

Title:

Behr, D. (2018). Translating questionnaires for cross-national surveys: A description of a genre and its particularities based on the ISO 17100 categorization of translator competences. *Translation & Interpreting*, 10(2), 5-20. doi: 10.12807/ti.110202.2018.a02

Abstract:

Sound questionnaire translation is crucial for collecting equivalent data in cross-national surveys. The topic is widely discussed in fields in which translated questionnaires are used, such as in the social sciences or in cross-cultural psychology, but hardly in translation studies. This article aims at bridging this gap by bringing the genre of questionnaires closer to translation scholars and practitioners. To begin with, we will provide a sketch of key characteristics of cross-national survey methodology, with a special focus on questionnaire translation. Next, the multi-dimensional concept of translation competence will be introduced. Along the ISO 17100 competence model then, we will list requirements, challenges, and resources for questionnaire translation and illustrate those with examples. The concluding paragraph will highlight areas for interdisciplinary research involving both translation studies and cross-national survey methodology.

Available at (open access): <https://doi.org/10.12807/ti.110202.2018.a02>

Title:

Bentaouet Kattan, R., Macdonald, K., & Patrinos, H. A. (2018). *Automation and labor market outcomes: The pivotal role of high-quality education*. Policy Research Working Paper No. WPS8474. Washington: The World Bank. doi: 10.1596/1813-9450-8474

Abstract:

Automation will be a boon or a catastrophe depending on whom you listen to. This paper proposes an overlapping-generations model with endogenous school choice in which the quality of a country's education system determines how well skill supply can respond to increased demand from automation and subsequently whether automation will be beneficial or detrimental. In this sense, education quality in the model offers a bridge between the optimistic and pessimistic perspectives on automation. In testing the model's assumptions, the paper finds evidence that educational attainment, cognitive skills, and select noncognitive skills are associated with avoiding automation-prone occupations. Consistent with the model's predictions, census data indicate that countries have historically relied most on these types of occupations at middle-income status. The model and

empirical findings suggest that it is middle-income countries that are most vulnerable to automation if their education systems are unable to affect cognitive and noncognitive skills sufficiently. As a result, automation may herald a much different growth model for developing countries: one in which developing these skills is central.

Available at (open access): <https://doi.org/10.1596/1813-9450-8474>

Title:

Berson, C. (2018). Fixed-term contracts and labor market duality in France. *De Economist*, 166(4), 455-476. doi: 10.1007/s10645-018-9318-y

Abstract:

The French labor market is segmented between permanent and temporary workers. The second category has difficulty in getting an open-ended contract. This paper aims at depicting workers on short-term contracts and shows the consequences on their professional career are negative and significant. A large part of the wage gap between permanent and temporary workers remains unexplained by observable characteristics. They receive less on-the-job training and their likelihood of obtaining a stable job is lower than 30% after 1 year and a half. They have also a higher probability of being the adjustment variable in case of an economic negative shock. These different findings show the importance of using public policies to encourage transitions from fixed-term to permanent employment and reducing labor-market duality.

Available at: <https://doi.org/10.1007/s10645-018-9318-y>

Title:

Bertschek, I., Arnold, D., Erdsiek, D., Nicolay, K., Bieber, D., & Kreutzer, E. (2018). *Arbeiten 4.0 - Chancen und Herausforderungen für Luxemburg [Work 4.0 – Opportunities and challenges for Luxembourg]*. Studie im Auftrag von Arbeitsministerium, Handelskammer, Arbeitnehmerkammer Luxemburg. ZEW-Gutachten und Forschungsberichte Mannheim: Zentrum für Europäische Wirtschaftsforschung (ZEW). Retrieved February 15, 2019, from <http://hdl.handle.net/10419/181909>

Abstract:

The aim of this study was to investigate the ongoing digital transformation and its potential impact on the future of work in Luxembourg taking into account its specific economic structure. The study aims to inform policy and economic actors about potential fields of action and contribute to the national social dialogue. The methodological approach relies on desk research and on statistical analysis of available data sources (e.g. PIAAC data). Furthermore, guideline-based interviews with representatives from policy, economy, and social communities in Luxembourg were conducted. [Note from editors]

Available at (open access): <http://hdl.handle.net/10419/181909>

Title:

Biagi, F., Grubanov-Boskovic, S., Natale, F., & Sebastian, R. (2018). *Migrant workers and the digital transformation in the EU*. JRC Technical Reports No. 30. Luxembourg: European Union. doi: 10.2760/561934

Abstract:

The aim of this report is to provide insights on the implications that structural changes in the labour market related to the Digital Transformation (DT) could have on the integration of EU mobile citizens and third country nationals working in the EU. A comprehensive analysis of the changing nature

of the EU labour markets and the effects of DT is provided in the upcoming European Commission's 2018 Employment and Social Developments in Europe (ESDE) review. Building upon these general findings, this report contributes to the debate from a migration specific point of view by providing evidence on the extent to which migrants are employed in occupations that are potentially prone to automation and therefore may disappear in future. The analysis is based on data drawn from EU LFS 2015- 2016 and PIAAC 2012 surveys.

Available at (open access): <https://doi.org/10.2760/561934>

Title:

Bijlsma, I., & Velden, R. (2018). *Much ado about social outcomes? Effective skill, skill mismatch, and their relation with job satisfaction and other social outcomes*. ROA Research Memoranda No. 002. Maastricht: Research Centre for Education and the Labour Market. Retrieved February 15, 2019, from https://cris.maastrichtuniversity.nl/portal/files/26163153/ROA_RM_2018_2.pdf

Abstract:

Skills and skill mismatches are claimed to have major consequences for societies and individuals, although convincing evidence mainly exists for wages. Our article examines the association between skill mismatch and job satisfaction as well as other social outcomes, such as political efficacy and social trust. Drawing on data from the OECD Programme for the International Assessment of Adult Competencies (PIAAC), we contribute to sociological research by applying the 'effective skill' concept, a new conceptual approach to measure skill mismatch. We relate this new concept to job satisfaction and other social outcomes, comparing our results with alternative skill mismatch indicators. Our findings provide empirical evidence for two important messages: First, we provide evidence that once we use objective indicators for the skill match – and we make use of all measures that we currently have – there is no association between skill mismatch and job satisfaction. In fact, job satisfaction is driven by skill use, not by skill mismatches or skill proficiency. Second, we show that effective skill and skill mismatch are associated with other social outcomes, having quite considerable effects especially on political efficacy.

Available at (open access): https://cris.maastrichtuniversity.nl/portal/files/26163153/ROA_RM_2018_2.pdf

Title:

Blasius, J. (2018). Fabrication of interview data. *Quality Assurance in Education*, 26(2), 213-226. doi: 10.1108/QAE-06-2017-0028

Abstract:

Purpose: Evidence from past surveys suggests that some interviewees simplify their responses even in very well-organized and highly respected surveys. This paper aims to demonstrate that some interviewers, too, simplify their task by at least partly fabricating their data, and that, in some survey research institutes, employees simplify their task by fabricating entire interviews via copy and paste. **Design/methodology/approach:** Using data from the principal questionnaires in the Programme for International Student Assessment (PISA) 2012 and the Programme for the International Assessment of Adult Competencies (PIAAC) data, the author applies statistical methods to search for fraudulent methods used by interviewers and employees at survey research organizations. **Findings:** The author provides empirical evidence for potential fraud performed by interviewers and employees of survey research organizations in several countries that participated in PISA 2012 and PIAAC. **Practical implications:** The proposed methods can be used as early as the initial phase of fieldwork to flag potentially problematic interviewer behavior such as copying responses. **Originality/value:** The

proposed methodology may help to improve data quality in survey research by detecting fabricated data.

Available at: <https://doi.org/10.1108/OAE-06-2017-0028>

Title:

Bode, E., & Gold, R. (2018). Adult training in the digital age. *Economics: The Open-Access, Open-Assessment E-Journal*, 12(36), 1-14. doi: 10.5018/economics-ejournal.ja.2018-36

Abstract:

Digital technologies will both create new jobs and replace existing ones. To cope with increasing labor market dynamics in the digital age, workers will have to become more mobile across jobs, occupations, and industries. The relative importance of their job-specific skills will decrease while that of their general skills applicable to various occupations will increase. The G20 should establish national adult training programs that focus on improving workers' general skills, specifically their theoretical, non-cognitive, and digital skills. These general skills will enable workers to work with technology instead of competing with it, thereby increasing their job mobility and employability.

Available at (open access): <https://doi.org/10.5018/economics-ejournal.ja.2018-36>

Title:

Boeren, E., & Whittaker, S. (2018). A typology of education and training provisions for low educated adults: Categories and definitions. *Studies in the Education of Adults*, 50(1), 4-18. doi: 10.1080/02660830.2018.1520017

Abstract:

It is Europe's ambition to be a strong knowledge based economy. The European Commission recognises the role of lifelong learning in achieving this aim. However, exploring participation rates in post-compulsory learning, it is clear that access to education and training is unequally distributed in society. We know that participation rates vary by socio-economic and socio-demographic groups, as well as by country. However, the role of education and training institutions in facilitating and enabling participation is less well known and deserves further in-depth attention. In order to fill this gap, we scrutinised definitions and categorisations of adult education provisions as published by the leading international organisations in the field of education and training. We paid specific attention to opportunities available for the lowest educated adults in society. Based on our review, we constructed a new typology consisting of seven categories for addition to the knowledge base and use in our own Horizon 2020 project. The categories are: (1) basic skills and basic education, (2) second chance education at upper secondary levels, (3) post-secondary VET, (4) apprenticeships, (5) training that forms part of Active Labour Market Policies, (6) workplace or job-related learning and (7) personal or social learning.

Available at: <https://doi.org/10.1080/02660830.2018.1520017>

Title:

Borgonovi, F., Choi, u., & Paccagnella, M. (2018). *The evolution of gender gaps in numeracy and literacy between childhood and adulthood*. OECD Education Working Papers No. 184. Paris: OECD Publishing. doi: 10.1787/0ff7ae72-en

Abstract:

Numeracy and literacy skills have become increasingly important in modern labour markets. The large gender differences that several studies have identified have therefore sparked considerable

attention among researchers and policy makers. Little is known about the moment in which such gaps emerge, how they evolve and if their evolution differs across countries. We use data from large-scale international assessments to follow representative samples of birth-cohorts over time, and analyse how gender gaps in numeracy and literacy evolve from age 10 to age 27. Our results suggest that, across the countries examined, males' advantage in numeracy is smallest at age 10 and largest at age 27. The growth in magnitude of the gender gap is particularly pronounced between the age of 15 and 27. Such evolution stands in sharp contrast with the evolution of the gender gap in literacy, which is small at age 10, large and in favour of females at age 15, and negligible by age 27.

Available at (open access): <https://doi.org/10.1787/Off7ae72-en>

Title:

Borgonovi, F., Ferrara, A., & Maghnouj, S. (2018). *The gender gap in educational outcomes in Norway*. OECD Education Working Papers No. 183. Paris: OECD Publishing. doi: 10.1787/f8ef1489-en

Abstract:

As is the case in most OECD countries, boys in Norway are more likely to have lower levels of academic achievement and attainment than girls. While this phenomenon is not recent, it has become increasingly pronounced in recent years and, as a result, is attracting considerable attention from policy-makers in many countries. This paper develops evidence of gender gaps in educational outcomes in Norway and selected OECD countries and identifies examples of policies and practices that could help close existing gender gaps in Norway. The first part of the paper describes gender gaps in school achievement, attainment, attitudes, beliefs and behaviours using an international comparative analysis. Evidence from PIRLS, TIMSS, PISA and the OECD Survey of Adult Skills (PIAAC) is used to identify gender gaps during primary and secondary schooling as well as young adulthood. The second part of the paper summarises evidence on policies and practices that were implemented in other countries and that could support efforts in Norway to mitigate, prevent and reduce gender gaps in achievement and attainment. Most of the evidence on policies and practices reviewed in the report comes from the peer countries Finland, the Netherlands and the United States that were identified of particular relevance for Norway, given the policy challenge Norway faces.

Available at (open access): <https://doi.org/10.1787/f8ef1489-en>

Title:

Bosio, G., & Cristini, A. (2018). Is the nature of jobs changing? The role of technological progress and structural change in the labour market. In G. Bosio, T. Minola, F. Origo, & S. Tomelleri (Eds.), *Rethinking Entrepreneurial Human Capital: The Role of Innovation and Collaboration* (pp. 15-41). Cham: Springer International Publishing. doi: 10.1007/978-3-319-90548-8_2

Abstract:

We examine the process of radical transformation that during the last decades has changed labor markets in developed countries and, in particular, the nature of jobs. Indeed, the advances in ICT and robotics have generated the concern that automation could substitute people in a wide range of activities, therefore contributing to the potential increase in the fraction of jobs at risk in the next future. However, empirical evidence on labour demand in the majority of OECD countries emphasizes a process of labour market polarization that consists in the hollowing out of routine occupations accompanied by a quasi-simultaneous rise of non-routine occupations, both high skilled conceptual and manual low skilled ones. This process has been explained by the routinization hypothesis, whereby computer-based technologies allow machines to perform repetitive tasks and replace workers in routine jobs where such tasks are prevalent. In this perspective, structural and occupational changes are naturally intertwined with technological change; their understanding can

therefore help unravelling the features of new technologies and how they can influence demand for skills. In such a setting, entrepreneurship can play an important role as driver of innovation and employment growth.

Available at: https://doi.org/10.1007/978-3-319-90548-8_2

Title:

Brandt, N. (2018). *France: Promoting economic opportunities and well-being in poor neighbourhoods*. OECD Economics Department Working Papers No. 1454. Paris: OECD Publishing. doi: 10.1787/266e91e1-en

Abstract:

Thanks to a highly developed welfare state, poverty is moderate on average in France, but – as in other countries – highly concentrated in some neighbourhoods. Their residents face many social disadvantages, including high unemployment and inactivity, schools with many struggling children, often run-down housing and urban infrastructure, and a lack of local enterprises, services and amenities. The government focuses a wide array of policies on these areas to promote better schooling outcomes, employment and local economic activity. Urban renewal and public housing policies aim explicitly at promoting social mixing, often presented as an anti-ghetto policy. Evidence suggests that targeted investment in transport and housing infrastructure as well as education and training could go a long way to improving economic opportunities and well-being in poor areas. In contrast, special economic zones with tax breaks to attract business to these areas have a mixed track record at best. Greater social mixing is difficult to engineer, and it is far from clear if this by itself would improve the lives of the poor. There is a need to better link urban, social and judicial policies favouring alternative sentencing and support for offenders to integrate into society to avoid vicious circles of social disadvantage and crime.

Available at (open access): <https://doi.org/10.1787/266e91e1-en>

Title:

Brandt, N. (2018). *Strengthening innovation in Poland*. OECD Economics Department Working Papers No. 1479. Paris: OECD Publishing. doi: 10.1787/abf2c877-en

Abstract:

Poland's catch up with other OECD country has been largely based on productivity growth resulting from restructuring towards more productive sectors and foreign technology absorption. The economy's own innovation capacity is relatively weak, with low investment in research and development, no tradition of commercialising research and very limited innovation activity within firms. The government plans a higher education reform to strengthen the quality of research output, science-industry cooperation and international collaboration, which are all weak. Considerable EU funding is available to support innovation. Most of it is conditioned on science-industry co-operation, which is showing initial benefits. A lively start-up scene is gradually emerging, and the government foresees considerable public support for venture capital financing. Yet, investment in higher education and research trails behind economies that have been able to build strong science and high-tech start-up activity. Poland's many small and medium-sized enterprises have particularly low productivity, partly related to weaknesses in vocational training and adult education, as too many workers have weak basic and digital skills. The government's education reform and digital strategy address some of these issues.

Available at (open access): <https://doi.org/10.1787/abf2c877-en>

Title:

Braun, H. (2018). How long is the shadow? The relationships of family background to selected adult outcomes: Results from PIAAC. *Large-scale Assessments in Education*, 6(4), 1-52. doi: 10.1186/s40536-018-0058-x

Abstract:

Background: Ongoing interest in the relationships between family background and adult outcomes is motivated by concerns regarding the intergenerational transmission of advantage/disadvantage. Currently all countries are far from achieving the ideal that all individuals, irrespective of their starting points or their demographic characteristics, are able to accumulate sufficient human capital so that they can achieve success in the workplace and fulfill their responsibilities as family members and as citizens. This study quantifies the length of the shadow cast by family background and personal characteristics on an individual's prospects in the labor market. It also examines the extent to which these relationships are mediated by factors more proximal to labor market entry. Methods: This study uses data for 21 OECD countries from the first round of PIAAC. It employs descriptive statistics, correlations and logistic regression. Two dichotomous variables are derived from each country's national annual income distribution: Q1 = 1 if the individual's income is in the first (lower) quartile and Q4 = 1 if the individual works full-time and whose income is in the fourth (upper) quartile. For each country, a nested sequence of logistic regression models are fit to ascertain the role of more proximal factors in mediating the impact of family background and demographic characteristics on these labor market outcomes. Results: The patterns of relationships are qualitatively similar across the 21 countries, although the estimated associations vary greatly in strength. Parental education accounts for substantial proportions of the variation in respondents' Educational Attainment and Cognitive Skills. In most countries, children born to parents with lower levels of education have less than a fifty-fifty chance of exceeding that level. Family background is strongly associated with income, but the relationship is largely mediated by Educational Attainment and Cognitive Skills. Females and younger individuals have much higher odds of being in the lower quartile and much lower odds of reaching the upper quartile, even after adjusting for other variables. The magnitudes of these adjusted odds are concerning. Conclusions: Family background and gender cast a long shadow on individuals' life prospects. Countries vary greatly in their success in mitigating these disadvantages. Formulating effective policies will depend on understanding a complex set of dynamics that surely differ among countries.

Available at (open access): <https://doi.org/10.1186/s40536-018-0058-x>

Title:

Brezis, E. S. (2018). Elitism in higher education and inequality: Why are the Nordic countries so special? *Intereconomics*, 53(4), 201-208. doi: 10.1007/s10272-018-0750-7

Abstract:

Countries in which there are two channels of education may have a separating equilibrium in which individuals with high abilities learn in elite universities and individuals with low ability learn in standard ones. Elite universities have higher budgets, better scholars, better labs and a better student network, resulting in the human capital of these students having a higher productivity in the more competitive tradable sector.

Available at: <https://doi.org/10.1007/s10272-018-0750-7>

Title:

Brezis, E. S., & Brand, G. (2018). Productivity gap between sectors and double duality in labor markets. *Open Economies Review*, 29(4), 725-749. doi: 10.1007/s11079-018-9487-y

Abstract:

Over the last decades, productivity in the tradable sector rose substantially, while in the non-tradable sector, output per worker has remained the same, despite a similar increase in human capital in both sectors. This paper shows that a double duality both in the production and the higher-education sectors as well as heterogeneous ability of individuals might explain the differences in labor productivity between tradable and non-tradable industries. The double duality in the economy enables a separation of individuals by their ability, and in consequence, human capital in both industries is different. The heterogeneity in human capital can explain that despite an increase in human capital in both sectors there is still a gap in productivity and in wage premium. In other words, the productivity gap between sectors is fueled by the double duality in labor markets, leading to heterogeneity in human capital. In consequence, there is a contrast between on one hand, more mobility across countries, and on the other hand, less mobility between sectors.

Available at: <https://doi.org/10.1007/s11079-018-9487-y>

Title:

Brink, S., & Nissinen, K. (2018). *The challenge for equity and excellence in bilingual Finland: Evidence for future successful action*. Finnish Institute for Educational Research Reports No. 54. Jyväskylä: University of Jyväskylä, Finnish Institute for Educational Research. Retrieved February 15, 2019, from <http://urn.fi/URN:ISBN:978-951-39-7535-7>

Abstract:

In 2013, the authors prepared a report on educational excellence and equity in Finland based on PISA 2009 data and asked the question “Could Finland achieve both excellence and equality goals in the coming decade? Five years later, this report re-examines the challenge faced by Finland in light of recent PISA results. The Finnish school system, both the Finnish and Swedish speaking components, have consistently ranked at the top of the list of OECD countries. However, Finland’s performance has been dropping compared to previous years, while it failed to keep pace with performance improvements in other countries. Simply working harder along the same path will no longer work. Therefore, this report examines of evidence from PISA 2015 in context, to provide some insights for successful action by those involved in education in order to slow and eventually reverse the decline in student performance. The context in which Finland’s comprehensive schooling operates has changed: the numbers of students of school age are declining; there are more foreign language speakers than Swedish speakers in the population; and there have been Swedish school closures and amalgamations. There have been positive changes, too, such as the pioneering new curriculum. Suggestions are made for strategic action arising from analyses of PISA 2000 to 2015. A series of analyses on student performance over PISA cycles since 2000 in science, reading and mathematics show that there has been a decreasing gap between the average performance of students in Finnish speaking schools and students in Swedish speaking schools. The way this reduction was achieved is not sustainable because students in Finnish speaking schools declined in their performance and students in Swedish speaking schools who had a lower average to start with did not improve much. Thus, increased equality was gained at the expense of excellence. In general, science was the domain with the best performance and Swedish speaking students performed better in mathematics while Finnish speaking students had a higher average in reading in PISA 2015. It is time for Finland to compare performance with top performers wherever they may be and not just among OECD countries. In its heyday, Finland had scores that were similar to those of the top performer Singapore in 2015 and it should be able to achieve those scores again. Analyses of high and low performers, boys and girls and their social background also showed areas where steps can be taken to reduce risk of low scores, to respond early to low performance through monitoring and to provide both opportunities for academic and personal development. Suggestions were made for Finland to work at improving average scores all three domains to achieve higher average scores with less

difference between students and schools, particularly through individualized teaching and planning for effective use of additional resources when needed. There were positive signs that both Finnish and Swedish speaking students continue to learn into young adulthood after their comprehensive schooling. The importance of coordinated approaches involving the Ministry of education, municipalities, schools, teachers and parents were highlighted for optimum results. Both excellence and equity should be the goals of education in the coming decade without sacrificing one for the other.

Available at (open access): <http://urn.fi/URN:ISBN:978-951-39-7535-7>

Title:

Broecke, S., Quintini, G., & Vandeweyer, M. (2018). Wage inequality and cognitive skills: Reopening the debate. In *Education, Skills, and Technical Change: Implications for Future U.S. GDP Growth* (pp. 251-286). Chicago: University of Chicago Press.

Abstract:

Inequality in the United States is high by international standards, and keeps rising. This is likely to bring significant social as well as economic costs, including lower growth. In this paper, we use the Survey of Adult Skills (PIAAC) to revisit the debate on the relative importance of skills in explaining international differences in wage inequality. While simple decomposition exercises suggest that skills only play a minor role, demand and supply analysis indicates that the relatively low supply of, but high demand for, high-skilled workers in the United States compared to other countries could explain 29% of the higher top-end wage inequality observed in the United States.

Available at: <http://www.nber.org/chapters/c13703>

Title:

Brussevich, M., Dabla-Norris, M. E., Kamunge, C., Karnane, P., Khalid, S., & Kochhar, M. K. (2018). *Gender, technology, and the future of work*. Staff Discussion Notes No. 18/07. Washington: International Monetary Fund. Retrieved February 15, 2019, from <https://www.imf.org/~/media/Files/Publications/SDN/2018/SDN1807.ashx>

Abstract:

New technologies digitalization, artificial intelligence, and machine learning are changing the way work gets done at an unprecedented rate. Helping people adapt to a fast-changing world of work and ameliorating its deleterious impacts will be the defining challenge of our time. What are the gender implications of this changing nature of work? How vulnerable are women's jobs to risk of displacement by technology? What policies are needed to ensure that technological change supports a closing, and not a widening, of gender gaps? This SDN finds that women, on average, perform more routine tasks than men across all sectors and occupations tasks that are most prone to automation. Given the current state of technology, we estimate that 26 million female jobs in 30 countries (28 OECD member countries, Cyprus, and Singapore) are at a high risk of being displaced by technology (i.e., facing higher than 70 percent likelihood of being automated) within the next two decades. Female workers face a higher risk of automation compared to male workers (11 percent of the female workforce, relative to 9 percent of the male workforce), albeit with significant heterogeneity across sectors and countries. Less well-educated and older female workers (aged 40 and above), as well as those in low-skill clerical, service, and sales positions are disproportionately exposed to automation. Extrapolating our results, we find that around 180 million female jobs are at high risk of being displaced globally. Policies are needed to endow women with required skills; close gender gaps in leadership positions; bridge digital gender divide (as ongoing digital transformation could confer greater flexibility in work, benefiting women); ease transitions for older and low-skilled female workers.

Available at (open access): <https://www.imf.org/~/media/Files/Publications/SDN/2018/SDN1807.ashx>

Title:

Bulman, T., & Pisu, M. (2018). *Generating employment, raising incomes and addressing poverty in Greece*. OECD Economics Department Working Papers No. 1505. Paris: OECD Publishing. doi: 10.1787/8eec4ced-en

Abstract:

Employment is pivotal to strengthening Greece's economic recovery, increasing social welfare and redressing poverty. Jobs are returning, making inroads into high unemployment, but their wages and skill levels are lower than many that were lost during the crisis. Greece's hiring is benefiting from more flexible arrangements. Legislative amendments can maintain this flexibility, ensure wages align with productivity and better protect individuals from labour market risks. Ensuring that workers possess skills that match employers' needs will sustain employment and productivity growth. Improving the education system is a long-term mission and involves raising its pedagogical strength and orientation towards professional needs. A social welfare system dominated by pensions has not been able to prevent a steep hike in poverty among children and the young, risking long-term harm to well-being. Pursuing recent steps towards a better targeted social protection, accompanied by support programmes for jobseekers, will provide a reliable safety net and reduce poverty. This Working Paper relates to the 2018 OECD Economic Survey of Greece.

Available at (open access): <https://doi.org/10.1787/8eec4ced-en>

Title:

Burk, K. (2018). *Bildung oder Kompetenz?* [Education or competencies?] (Master's thesis). Humboldt-Universität zu Berlin. Retrieved February 15, 2019, from https://edoc.hu-berlin.de/bitstream/handle/18452/20191/EPR-Band-59_Katharina_Burk.pdf?sequence=1

Abstract:

The master's thesis deals with the question of the extent to which the competence paradigm has replaced the relevance of the education concept and, if so, what consequences this could have for the discipline. [Note from editors]

Available at: Library of Humboldt University of Berlin

Title:

Cai, J., & Gut, D. (2018). Literacy and digital problem-solving skills in the 21st century: What PIAAC says about educators in the United States, Canada, Finland, and Japan. *Teaching Education*, 1-32. doi: 10.1080/10476210.2018.1516747

Abstract:

The purpose of our study is to delve into the education gap between the United States and some countries by examining the literacy and digital problem-solving skills of American educators, and comparing their performance with that of their peers from Canada, Finland, and Japan. We use PIAAC data collected by the Organization for Economic Co-operation and Development (OECD), and define educators as professionals with the highest level of qualification in the area of teacher training and education science. Our findings show that, internationally, U.S. educators are at a great disadvantage vis a vis their peers in Finland and Japan in terms of literacy, and they rank the lowest in digital problem-solving skills among the four studied countries. Other key findings include (a) in Canada and Finland, educators perform significantly higher in literacy than non-educators in their respective countries; (b) young educators in the United States (under age 35) lag far behind the same

age group in Finland, Japan, and Canada; and (c) in all four countries, digital problem-solving skills of educators tend to decrease as their age increases. All statistical analyses are based on regression using sampling weights.

Available at: <https://doi.org/10.1080/10476210.2018.1516747>

Title:

Calvino, F., Criscuolo, C., Marcolin, L., & Squicciarini, M. (2018). *A taxonomy of digital intensive sectors*. OECD Science, Technology and Industry Working Papers No. 2018/14. Paris: OECD Publishing. doi: 10.1787/f404736a-en

Abstract:

This study proposes a taxonomy of sectors according to the extent to which they have gone digital. The taxonomy accounts for some of the key facets of the digital transformation, and recognises that sectors differ in their development and adoption of the most advanced “digital” technologies, in the human capital needed to embed them in production and in the extent to which digital tools are used to deal with clients and suppliers. The indicators used to classify 36 ISIC revision 4 sectors over the period 2001-15 are: share of ICT tangible and intangible (i.e. software) investment; share of purchases of intermediate ICT goods and services; stock of robots per hundreds of employees; share of ICT specialists in total employment; and the share of turnover from online sales. The study further proposes an overall summary indicator of the digital transformation in sectors which encompasses all the considered dimensions.

Available at (open access): <https://doi.org/10.1787/f404736a-en>

Title:

Castek, J., Gibbon, C., Jacobs, G., Frank, T., Honisett, A., & Anderson, J. (2018). *Blueprint for designing digital problem solving tasks*. PDXScholar Portland: Portland State University. Retrieved February 15, 2019, from <http://archives.pdx.edu/ds/psu/24579>

Abstract:

This document explains how the research team developed tasks and an observational protocol that allowed for the examination of individuals’ digital problem solving. These tasks, and the metacognitive scaffolding prompts and protocol associated with them, were developed and refined with the Multnomah County Library’s website resources in mind. Other libraries can adapt these tasks and protocol or develop a related observational protocol inspired by the design principles offered. This document suggests what libraries can do to support digital problem solving development.

Available at (open access): <http://archives.pdx.edu/ds/psu/24579>

Title:

Castek, J., Jacobs, G., Gibbon, C., Frank, T., Honisett, A., & Anderson, J. (2018). *Analyzing and interpreting data from PIAAC’s problem solving in technology rich environments (PSTRE) assessment and library use survey: quantitative results*. PDXScholar Portland: Portland State University. Retrieved February 15, 2019, from https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1002&context=digital_equity_summary

Abstract:

The research team administered the Problem Solving in Technology Rich Environments (PSTRE) assessment connected to the Program for the International Assessment of Adult Competencies (PIAAC) and accessed through Education and Skills Online (OECD, 2016). The PSTRE is a valid and

reliable scenario-based assessment made up of 9 multi-stem constructed response items that evaluate digital communication, use of networks to acquire and evaluate information and perform practical tasks in personal, work-related, and community contexts. Completing these tasks required basic digital navigation abilities and also required advanced knowledge to conduct and interpret searches, interact within databases, and make decision about competing information in order to solve problems.

Available at (open access): https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1002&context=digital_equity_summary

Title:

Castek, J., Jacobs, G., Gibbon, C., Frank, T., Honisett, A., & Anderson, J. (2018). *Defining digital problem solving*. PDXScholar Portland: Portland State University. Retrieved February 15, 2019, from <http://archives.pdx.edu/ds/psu/24580>

Abstract:

The definition of literacy itself is evolving due to the prevalence of digital texts, tools, and applications that are ubiquitous within our daily interactions. Literacy not only involves the ability to read the word, but also to read and interpret the world. Likewise, digital problem solving is broad in that it reflects an individual's ability to navigate and use multiple digital resources in order to accomplish one's goals in multiple domains including professional work, personal interests/hobbies, educational pursuits, social/professional networking, civic areas, and for future uses we have not yet conceptualized.

Available at (open access): <http://archives.pdx.edu/ds/psu/24580>

Title:

Castek, J., Jacobs, G., Gibbon, C., Frank, T., Honisett, A., & Anderson, J. (2018). *Documenting digital problem solving: Qualitative results*. PDXScholar Portland: Portland State University. Retrieved February 15, 2019, from <http://archives.pdx.edu/ds/psu/24572>

Abstract:

This mixed-methods research study examined digital problem solving strategies of 18 adults who ranged from novice to very experienced computer users. The research documented the digital problem solving strategies using a verbal protocol approach and analyzed to examine approaches. The tasks participants completed included the 9-item multi-stem PSTRE items from PIAAC and digital problem solving tasks in a library context the research team designed.

Available at (open access): <http://archives.pdx.edu/ds/psu/24572>

Title:

Cathles, A., Ou, D., Sasso, S., Setrana, M., & Veen, T. (2018). *Where do you come from, where do you go? Assessing skills gaps and labour market outcomes of young adults with different immigration backgrounds*. CESifo Working Paper Series No. 7157. München: CESifo Group Munich. Retrieved February 15, 2019, from http://www.cesifo-group.de/DocDL/cesifo1_wp7157.pdf

Abstract:

This paper analyzes numeracy and literacy skills of migrants, using PISA and PIAAC data from twelve OECD countries. Our results first show some convergence of the skills gap between the second generation immigrants and the natives over time. Second, the gap in literacy skills among the first-generation and natives and among first-generation and second-generation immigrants has increased

over time. Third, demographics and family background contribute to the achievement gaps between different groups. Fourth, school input variables do contribute to skills gaps of young adults with different immigrant backgrounds. Fifth, an immigrant background does not appear to affect the chances of studying in a STEM field.

Available at (open access): http://www.cesifo-group.de/DocDL/cesifo1_wp7157.pdf

Title:

Chelli, F. M., Ciommi, M., Mariani, F., & Recchioni, M. C. (2018). Opportunity and discrimination in tertiary education: A proposal of aggregation for some European countries. *Rivista Italiana di Economia Demografia e Statistica*, 72(2), 77-88. Retrieved February 15, 2019, from http://www.sieds.it/listing/RePEc/journal/2018LXXII_N2_RIEDS_07_59_Chelli_Ciommi_Mariani_Recchioni_ok.pdf

Abstract:

The paper deals with two aspects related to the possibility of reaching a given educational level conditioned on the educational level of the family: discrimination and opportunity. Ten European countries are ranked according to these indices, showing a different pattern. Consequently, a new index that takes into account the two aspects is proposed. The index proposed here can be used by policy makers to monitor and evaluate the effectiveness of public policies. In fact, in contrast to the unidimensional mobility indices, that take into account only one dimension, the new index is able to capture simultaneously two different information: on one hand the difference in the probability of getting tertiary education given the family status (i.e., the discrimination index, Δ) and, on the other hand, the probability for a child of not attaining tertiary education independently from the education level attained by his/her parents (i.e., the opportunity loss index, h). Thus, (Δ, h) is more informative than the unidimensional indices while preserving a simple functional form that requires an elementary computation. These are two key-properties necessary to define good composite indicators (OECD, 2008). However, our index is defined by assuming that the two dimensions are equally weighted. Therefore, further researches will be devoted to the analysis of how combining these two indices in a different way. For instance, a different system of weights or a different functional form can be used. [Source: From the conclusion, p. 86]

Available at (open access): <http://www.sieds.it/index.php/page-rivista/>

Title:

Chetty, K., Qigui, L., Gcora, N., Josie, J., Wenwei, L., & Fang, C. (2018). Bridging the digital divide: Measuring digital literacy. *Economics: The Open-Access, Open-Assessment E-Journal*, 12(23), 1-20. doi: 10.5018/economics-ejournal.ja.2018-23

Abstract:

To promote digital transformation, equal emphasis needs to be placed on digital skills development as to infrastructure development. Integral to investment in digital skills development is the subsequent management and evaluation of digital training programmes. This paper assesses mechanisms to ensure digital training programmes are adequately managed using a standardized data collection framework to measure an internationally accepted digital literacy index. Such an index must be defined by an agile definition of digital literacy responsive to the fluid nature of the digital economy. The paper also explores the extent to which a G20 advisory body may inform a nationally representative data collection strategy within the context of a data collection process that is cognizant of the evolving demands of businesses and users alike.

Available at (open access): <http://dx.doi.org/10.5018/economics-ejournal.ja.2018-23>

Title:

Chmielewski, A. K. (2018). *Can we close gaps in literacy by social background over the life course? Evidence from synthetic 1950-1980 birth cohorts*. OECD Education Working Papers No. 178. Paris: OECD Publishing. doi: 10.1787/c105422d-en

Abstract:

It is well-known that there are large disparities in academic achievement between children of different socio-economic status (SES) backgrounds. This study examines the evolution of disparities in literacy skills between adults of different SES backgrounds. It compares countries' patterns in the evolution of disparities in literacy by SES background as cohorts age and asks which patterns of educational and labour force participation predict a narrowing rather than a widening of these disparities. Since there is no international longitudinal study of skills across the entire adult life span, this study uses three cross-sectional international adult studies (International Adult Literacy Survey, Adult Literacy and Lifeskills and Programme for the International Assessment of Adult Competencies) and matches birth years to create synthetic cohorts. Results indicate that there is large cross-national variation in the evolution of skills disparities associated with SES background. Disparities in literacy proficiency tend to widen when SES disparities in high school completion, professional and blue-collar employment increase. Disparities narrow when workers exit the labour force, a finding that is explained by the large inequalities in the employment experiences of individuals from different SES backgrounds, measured by differences in use of literacy skills at work. These results help to explain cross-national variation in the evolution of skills disparities by SES background, which has implications for policies aimed at closing skills gaps over the life course.

Available at (open access): <https://doi.org/10.1787/c105422d-en>

Title:

Christl, M., Köppl-Turyna, M., & Gnan, P. (2018). Wage differences between immigrants and natives: The role of literacy skills. *Journal of Ethnic and Migration Studies*, 1-33. doi: 10.1080/1369183X.2018.1526062

Abstract:

This paper analyses the impact of literacy skills on wage differences between natives and immigrants, using Austria as a case study. We show that, for both groups, literacy skills are an important determinant of the hourly wage. In the second step, we show that differences in proficiency with respect to literacy can explain more than 30% of the total wage gap of 11 log points between natives and immigrants. When adding literacy skills to the wage decomposition, the unexplained part vanishes almost completely, suggesting that the wage difference between immigrants and natives can, to a large extent, be explained. The importance of literacy skills in explaining wage differences between natives and immigrants is robust across several sensitivity tests.

Available at: <https://doi.org/10.1080/1369183X.2018.1526062>

Title:

Coben, D., & Alkema, A. (2018). Scoping the development of a measure of adults' numeracy (and literacy) practices. In K. Safford-Ramus, J. Maaß, & E. Süß Stepancik (Eds.), *Contemporary Research in Adult and Lifelong Learning of Mathematics: International Perspectives* (pp. 75-92). Cham: Springer International Publishing. doi: 10.1007/978-3-319-96502-4_5

Abstract:

We describe our research scoping the development of a measure of adults' numeracy and literacy practices, focusing in particular on numeracy. Our ultimate aim is to develop a way of tracking

changes in how adults use numeracy and literacy in the workplace, community and at home, to inform educational efforts. This is particularly important for numeracy because there is often a gap between the numeracy adults use in their daily lives and their performance on proficiency tests designed to measure their progress and assess their suitability for work or further training. We treat numeracy and literacy as both social practices and technical skills, against prevailing polarized positions in the academic and policy literature, and present a conceptual framework encompassing numeracy, reading, writing, speaking and listening practices, in real and virtual (digital) environments.

Available at: https://doi.org/10.1007/978-3-319-96502-4_5

Title:

Connolly-Barker, M. (2018). Advanced automation technology, labor market insecurity, and collective joblessness: The determinants, constraints and employment effects of robots and artificial intelligence on the realm of work. *Psychosociological Issues in Human Resource Management*, 6(2), 92-97.

Abstract:

I draw on a substantial body of theoretical and empirical research on advanced automation technology, labor market insecurity, and collective joblessness, and using and replicating data from OECD/PIAAC, Pew Research Center, PwC, and The Economist, I performed analyses and made estimates regarding percentage who says automation will lead to new, better-paying jobs, jobs that will likely be eliminated by robots in the future, automation risk by job type (%), automation risk (50% or higher) and GDP per person (selected countries), and percentage of existing jobs at potential risk of automation.

Available at: <https://addletonacademicpublishers.com/psychosociological-issues-in-human-resource-management>

Title:

Cook, R. (2018). *Gender differences in adult numeracy: A comparative study* (Dissertation). University College London. Retrieved February 15, 2019, from http://discovery.ucl.ac.uk/10055384/1/Cook_10055384_thesis.pdf

Abstract:

This thesis presents a comparative study of gender differences in adult numeracy in 20 OECD countries. It explores the ways in which the widespread male advantage in adult numeracy is associated with gender relations. Gender relations are measured in terms of gender differences in power and status, the gender division of paid and unpaid labour, and gender culture. The thesis uses quantitative secondary analysis of data from the OECD's 2012 Programme for International Assessment of Adult Competencies (PIAAC), which provides direct measures of adults' numeracy skills. The analysis proceeds from an original theoretical framework which combines insights from life course research on the determinants of skills in adulthood, as well as integrating feminist theory of multidimensional gender relations. At the individual level, the results demonstrate that female advances in education do not necessarily equalise adult numeracy. Women's participation in the labour market is also not enough to guarantee equal levels of adult numeracy: women must also be able to access occupations that use numeracy skills. Cross-nationally, there is no obvious empirical relationship between gender inequality, conventionally conceived, and the gender difference in adult numeracy. Instead, paradoxically, gender differences in adult numeracy are larger in societies that combine egalitarianism with gender segregation in the labour market, and smaller in countries with relatively inequitable gender relations. Overall, there is little evidence that gender differences in

adult numeracy are associated with conventional indicators of gender inequality in this sample of countries. The thesis thereby questions the findings of previous research and suggests that instead of being framed as an outcome of female disempowerment, gender differences in adult numeracy should be understood in relation to the multidimensionality of gender relations in post-industrial societies.

Available at (open access): http://discovery.ucl.ac.uk/10055384/1/Cook_10055384_thesis.pdf

Title:

Cook, R. (2018). Gender differences in adult numeracy skills: What is the role of education? *Educational Research and Evaluation*, 1-24. doi: 10.1080/13803611.2018.1540992

Abstract:

Previous research suggests that as societies empower women educationally, gender differences in numeracy skills will decline. Using direct measures of 56,142 adults' numeracy skills from the Programme for International Assessment for Adult Competencies (PIAAC), this article studies whether this claim is evidenced across 20 Organisation for Economic Co-operation and Development (OECD) countries. Results show that in many countries, as education has equalised over generations, gender differences in adult numeracy skills have indeed declined. However, women's advances in education have not always been matched by a reduction in the gender difference in adult numeracy. Contrary to expectations, gender differences in fields of study in further and higher education cannot systematically explain gender differences in adult numeracy. This suggests that to achieve gender equality in numeracy skills, societies must do more than empower women educationally. More research is needed on the educational policies, contextual, and life course factors contributing to gender differences in adult numeracy in post-industrial societies.

Available at: <https://doi.org/10.1080/13803611.2018.1540992>

Title:

Cummins, P., Yamashita, T., & Arbogast, A. (2018). *An examination of PIAAC data for unemployed adults aged 45 to 74*. Commissioned Paper Washington: American Institutes for Research. Retrieved February 15, 2019, from https://piaac.squarespace.com/s/Cummins-Yamashita-Arbogast_2018.pdf

Abstract:

Middle aged and older workers constitute a growing segment of the U.S. labor force. These workers face considerable challenges in the wake of the Great Recession, which have important consequences for the sustainability of social safety net programs and the U.S. economy as a whole. Despite the policy implications of significant unemployment among middle aged and older workers, little is known about specific factors impacting labor market outcomes for this age group, including the role of adult education and training (AET) and literacy and numeracy skills. This study used data from the 2014 Program for the International Assessment of Adult Competencies (PIAAC) National Supplement to examine relationships among educational attainment, participation in AET, skill proficiencies, health, and economic outcomes for U.S. adults ages 45-74 who are unemployed or not in the labor force. Overall, employed adults ages 45 – 65 participate in lifelong learning activities significantly more than the unemployed and out of the labor force groups. On average, the unemployed and out of the labor force groups had significantly lower literacy skills than the employed group among those ages 45-65. There was a positive relationship between literacy skills and self-rated health in both the 45 – 65 and 66 – 74 age groups. Findings are discussed in view of labor, education and public health policies in order to enhance the well-being of middle-aged and older adults in the U.S.

Available at (open access): https://piaac.squarespace.com/s/Cummins-Yamashita-Arbogast_2018.pdf

Title:

Dämmrich, J., & Triventi, M. (2018). The dynamics of social inequalities in cognitive-related competencies along the early life course – a comparative study. *International Journal of Educational Research*, 88, 73-84. doi: 10.1016/j.ijer.2018.01.006

Abstract:

This paper investigates the development of social inequalities in cognitive-related competencies (mathematics and reading) from primary school to young adulthood among 15 OECD countries and examines whether patterns of development vary among countries and school tracking regimes. We use a pseudo-cohort approach by comparing data on individuals of approximately the same birth cohorts in primary school (TIMSS, PIRLS), secondary school (PISA) and young adulthood (PIAAC). We found that children from lower social background perform less well already in primary education (particularly in reading). Overall, social inequalities in competencies tend to persist (reading) or increase (mathematics) over the early life-course. Finally, we detected only some weak evidence of higher growth of social inequalities over the early life-course among highly tracked systems.

Available at: <https://doi.org/10.1016/j.ijer.2018.01.006>

Title:

Davier, M. (2018). Detecting and treating errors in tests and surveys. *Quality Assurance in Education*, 26(2), 243-262. doi: 10.1108/QAE-07-2017-0036

Abstract:

Purpose: Surveys that include skill measures may suffer from additional sources of error compared to those containing questionnaires alone. Examples are distractions such as noise or interruptions of testing sessions, as well as fatigue or lack of motivation to succeed. This paper aims to provide a review of statistical tools based on latent variable modeling approaches extended by explanatory variables that allow detection of survey errors in skill surveys. **Design/methodology/approach:** This paper reviews psychometric methods for detecting sources of error in cognitive assessments and questionnaires. Aside from traditional item responses, new sources of data in computer-based assessment are available – timing data from the Programme for the International Assessment of Adult Competencies (PIAAC) and data from questionnaires – to help detect survey errors. **Findings:** Some unexpected results are reported. Respondents who tend to use response sets have lower expected values on PIAAC literacy scales, even after controlling for scores on the skill-use scale that was used to derive the response tendency. **Originality/value:** The use of new sources of data, such as timing and log-file or process data information, provides new avenues to detect response errors. It demonstrates that large data collections need to better utilize available information and that integration of assessment, modeling and substantive theory needs to be taken more seriously.

Available at: <https://doi.org/10.1108/QAE-07-2017-0036>

Title:

Delmez, F., & Vandenberghe, V. (2018). Long working hours make us less productive but also less costly. *LABOUR*, 32(4), 259-287. doi: 10.1111/labr.12128

Abstract:

This paper develops and assesses empirically a simple model of firms' optimal decision regarding working hours, where productivity varies with hours and where the firm faces quasi-fixed labour costs. Using Belgian firm-level data on production, labour costs, workers, and hours, and focusing on the estimation of elasticities along the isoquant and the isocost, we find evidence of not only declining productivity of hours but also of quasi-fixed labour costs in the range of 20 per cent of total

labour costs. The tentative conclusion is that firms facing such costs are enticed to raise working hours, even if this results in lower productivity.

Available at: <https://doi.org/10.1111/labr.12128>

Title:

Desjardins, R. (2018). Economics and the political economy of adult education. In M. Milana, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The Palgrave International Handbook on Adult and Lifelong Education and Learning* (pp. 211-226). London: Palgrave Macmillan UK. doi: 10.1057/978-1-137-55783-4_12

Abstract:

This chapter provides a critical overview of the contribution of economics to research and policy on adult education. It discusses three distinct political economy perspectives and links these to the shifting policy agenda related to adult education at the OECD over the last five decades. This is done to reveal the link between different political economy perspectives and the implications for analytical as well as political perspectives when approaching the study and policy of adult education. Some implications and challenges for research on adult education are discussed.

Available at: https://doi.org/10.1057/978-1-137-55783-4_12

Title:

Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2018). On the relationship between cognitive ability and risk preference. *Journal of economic perspectives*, 32(2), 115-34. doi: 10.1257/jep.32.2.115

Abstract:

This paper will focus on the relationship between cognitive ability and decision-making under risk and uncertainty. Taken as a whole, this research indicates that cognitive ability is associated with risk-taking behavior in various contexts and life domains, including incentivized choices between lotteries in controlled environments, behavior in nonexperimental settings, and self-reported tendency to take risks. One pattern that emerges frequently in these studies is that cognitive ability tends to be positively correlated with avoidance of harmful risky situations, but it tends to be negatively correlated with risk aversion in advantageous situations. We conclude by discussing perspectives for future research, in particular the scope for the development of richer sets of elicitation instruments and measurement across a wider range of concepts.

Available at (open access): <https://www.aeaweb.org/articles/pdf/doi/10.1257/jep.32.2.115>

Title:

Dudaitė, J. (2018). Lifelong learning: Lithuania's case. *Social Work*, 16(2), 226-239. doi: 10.13165/SD-18-16-2-05

Abstract:

After the publication of the EU's Memorandum on Lifelong Learning, the relevance of lifelong learning became emphasised all over Europe including Lithuania. The Seimas of the Republic of Lithuania approved the National Progress Strategy "Lithuania 2030" where lifelong learning is mentioned as one of the key factors which will contribute to ensuring the creation of smart society in Lithuania. The National Progress Strategy states that it will be aimed at developing an effective framework of lifelong learning in Lithuania which would effectively apply information and communication technology and ensure acquisition and improvement of knowledge and skills necessary for the dynamic society. The idea of lifelong learning and conditions and possibility of implementation thereof is

important and relevant to both Lithuania and wider society. This raises the question of the extent to which the adult learning in non-formal education is popular in Lithuania and what social factors are connected with such learning. The purpose of the article is to analyse the extent of the adult lifelong learning in Lithuania and the factors which condition such learning. In order to achieve the set purpose, the survey data of the Programme for the International Assessment of Adult Competencies (PIAAC), commissioned by the Organisation for Economic Co-operation and Development (OECD), were used for the analysis. The data allow estimating the participation of persons aged 16–65 in the lifelong learning activities. According to the analysis of the results, the activity of Lithuania’s population in terms of participation in lifelong learning is one of the lowest compared with other countries. Over the last year, slightly more than a quarter of Lithuania’s adult population participated in various trainings. The most common type of learning is work-related training, the least common – private lessons. Persons with pedagogical background are the most active participants in any kind of training, followed by the representatives of medicine and social welfare, social sciences, business, law, humanities, languages and arts. The factors having significant influence on lifelong learning activity are gender, education, field of education, having children or having no children, earnings. Most of those who wish to improve their knowledge and skills find the opportunity to do so. Obstacles for participation in desired training are more often faced by women than men and by persons having children than those who have no children.

Available at (open access): <https://doi.org/10.13165/SD-18-16-2-05>

Title:

Eckert, T. (2018). Methoden und Ergebnisse der quantitativ orientierten Erwachsenenbildungsforschung [Methods and results of quantitative adult education research]. In R. Tippelt & A. v. Hippel (Eds.), *Handbuch Erwachsenenbildung/Weiterbildung* (pp. 375-396). Wiesbaden: Springer Fachmedien Wiesbaden. doi: 10.1007/978-3-531-19979-5_19

Abstract:

The contribution discusses approaches, research questions and results of empirical adult and continuing education research. Topics such as adult competencies and their development over the life span, self-directed (informal) learning, participation in and returns from continuing education are tackled. Focus on NEPS, AES and PIAAC, developments and progress in quantitatively oriented, empirical adult and continuing education research in recent decades will be presented and related problems will be discussed. [Note from editors]

Available at: https://doi.org/10.1007/978-3-531-19979-5_19

Title:

Esping-Andersen, G., & Cimentada, J. (2018). Ability and mobility: The relative influence of skills and social origin on social mobility. *Social Science Research*, 75, 13-31. doi: 10.1016/j.ssresearch.2018.06.003

Abstract:

The recent PIAAC data offer us the first ever opportunity to identify the relative salience of abilities versus social origin in comparative social mobility research. Sampling 21 countries, we identify the degree of meritocratic selection by estimating the relative influence of social origin versus individual cognitive and social skills. We pay particular attention to the possibility of skills combinations as regards both upward and downward mobility. Social skills may compensate for weak cognitive abilities, or vice-versa; and what are the added effects of commanding strong skills on both counts? This is, as far as we know, the first time that comparative mobility research has examined such skills-complementarities. As in previous research we, too, uncover a significantly more egalitarian

mobility pattern in the Nordic countries. This however obtains also for Canada and the Netherlands. A unique feature of Scandinavia is its asymmetric profile: significant upward mobility for those of low social origin, but surprisingly little downward mobility among those of privileged origins. Contrary to expectations, this cannot be ascribed to skills compensation. We find, however, that social skills play an important role for upward mobility among low-SES sons.

Available at: <https://doi.org/10.1016/j.ssresearch.2018.06.003>

Title:

Ferreira, M., Grip, A., & Velden, R. (2018). Does informal learning at work differ between temporary and permanent workers? Evidence from 20 OECD countries. *Labour Economics*, 55, 18-40. doi: 10.1016/j.labeco.2018.08.009

Abstract:

This paper analyses the relationship between temporary employment and the intensity of on-the-job informal learning across 20 developed countries. Using microdata from the OECD's PIAAC survey, we estimate an instrumented endogenous switching regression model and find that temporary employees engage in on-the-job learning more intensively than their counterparts in permanent employment. We show that this higher intensity of informal learning does not substitute for temporary workers' lower participation in formal training. Instead, both types of learning are complementary. Heterogeneous-effect analyses suggests that early career expectations of gaining a permanent contract could explain the higher informal learning investments of employees while in a temporary job.

Available at: <https://doi.org/10.1016/j.labeco.2018.08.009>

Title:

Ford, K. (2018). Persisting gaps: Labor market outcomes and numeracy skill levels of first-generation and multi-generation college graduates in the United States. *Research in Social Stratification and Mobility*, 56, 21-27. doi: 10.1016/j.rssm.2018.06.003

Abstract:

While empirical research on American first-generation college students has tracked how students move into and through institutions, researchers rarely report on post-graduation outcomes of first-generation students. This project tests the assumption that first-generation and multi-generation college graduates are indistinguishable across numeracy skill and labor market outcomes. We analysed a nationally representative survey collected by the Organisation for Economic Co-operation and Development (OECD) which includes a measure of numeracy skill as well as labor market outcomes. We find that first-generation college graduates enjoy access to many of the same labor market outcomes of their multi-generation college graduate peers. However, first-generation college graduates lag behind in measures of numeracy.

Available at: <https://doi.org/10.1016/j.rssm.2018.06.003>

Title:

Ford, K., & Choi, J. (2018). *The importance of skills and majors in determining future earnings*. Retrieved February 15, 2019, from <http://piaacgateway.com/researchpapers>

Abstract:

The purpose of this study is to better understand the relationship between majors and earnings, by examining within-major heterogeneity in earnings attributable to the role of general cognitive skills

and how cognitive skills interact with knowledge obtained from different majors to affect earnings. Among graduates of the same major, it is possible for earnings to vary according to differences in general cognitive skills. Our findings indicate that considering cognitive skills is useful when estimating the relationships between majors and earnings. That is, within each major, earnings varied by levels of cognitive skills. We understand this finding to support a human capital framing of labor market returns: skills and competencies, rather than credential alone, proved to be important in determining labor market returns. [Source: From the introduction and conclusion, p. 1; 25]

Available at (open access): <http://piaacgateway.com/researchpapers>

Title:

Fraillon, J. (2018). International large-scale computer-based studies on information technology literacy in education. In *Second Handbook of Information Technology in Primary and Secondary Education* (pp. 1-19). Cham: Springer International Publishing. doi: 10.1007/978-3-319-71054-9_80

Abstract:

The first international large-scale study in Information Technology (IT) literacy was conducted in 1987, and a broad range of studies that assess IT literacy and related areas of digital learning have followed. This chapter discusses recent developments in international large-scale studies of IT literacy-related achievement with a focus on their shared necessary attributes and the associated challenges with operationalizing these attributes in the test instruments. Two key attributes addressed are: (i) that the test contents reflect real-world use of Information and Communications Technology (ICT) and (ii) that the tests make use of the dynamic functionality and multimodal opportunities afforded by the computer-based environment. Challenges associated with these attributes include ensuring that the individual tasks within each assessment are independent of each other, maintaining a standardized test-taker experience, providing test-takers with plausible feedback from the computer-based environment, and maintaining construct validity. Examples are discussed of how the common challenges in creating the test instruments are addressed in the design of the instruments with some further discussion of possible future directions in large-scale international studies related to IT literacy.

Available at: https://doi.org/10.1007/978-3-319-71054-9_80

Title:

Fregin, M.-C., Bijlsma, I., & Velden, R. (2018). *Much ado about social outcomes? Effective skill, skill mismatch, and their relation with job satisfaction and other social outcomes*. ROA Research Memoranda No. 2. Maastricht: Maastricht University, Research Centre for Education and the Labour Market. Retrieved February 15, 2019, from https://cris.maastrichtuniversity.nl/portal/files/26163153/ROA_RM_2018_2.pdf

Abstract:

Skills and skill mismatches are claimed to have major consequences for societies and individuals, although convincing evidence mainly exists for wages. Our article examines the association between skill mismatch and job satisfaction as well as other social outcomes, such as political efficacy and social trust. Drawing on data from the OECD Programme for the International Assessment of Adult Competencies (PIAAC), we contribute to sociological research by applying the ‘effective skill’ concept, a new conceptual approach to measure skill mismatch. We relate this new concept to job satisfaction and other social outcomes, comparing our results with alternative skill mismatch indicators. Our findings provide empirical evidence for two important messages: First, we provide evidence that once we use objective indicators for the skill match – and we make use of all measures that we currently have – there is no association between skill mismatch and job satisfaction. In fact,

job satisfaction is driven by skill use, not by skill mismatches or skill proficiency. Second, we show that effective skill and skill mismatch are associated with other social outcomes, having quite considerable effects especially on political efficacy.

Available at (open access):

https://cris.maastrichtuniversity.nl/portal/files/26163153/ROA_RM_2018_2.pdf

Title:

Gal, I. (2018). *Developing a monitoring scheme for adult numeracy as part of SDG indicator 4.6. 1: Issues and options for discussion*. Discussion Paper for the UNESCO Expert Meeting on Adult Literacy and Numeracy Assessment Frameworks Paris: UNESCO. Retrieved February 15, 2019, from http://gaml.uis.unesco.org/wp-content/uploads/sites/2/2018/12/4.6.1_Developing-a-monitoring-scheme-for-adult-numeracy-as-part-of-SDG-indicator-4.6.1.pdf

Abstract:

This paper focuses on issues, dilemmas and options for assessment of the numeracy skills of adults, associated with Target 4.6.11 of the Sustainable Development Goals (SDGs). That target calls on countries to ‘ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy’ by 2030. The paper presents ideas for a monitoring and assessment strategy that can satisfy common criteria, i.e. policy relevance, credibility, comparability, feasibility in data collection, and so forth. 2. Methodologies developed for assessment of adult numeracy skills in high-income countries, e.g. as part of the Organisation for Economic Co-operation and Development’s Programme for International Assessment of Adult Competencies (PIAAC), are sometimes deemed inappropriate for lower-income countries, due to cost, necessary technical capacity, item content, and other factors. Hence, this paper assumes that countries interested in the numeracy monitoring process (hereafter, ‘target countries’) will be mainly those considered low- and middle-income, although some high-income countries may also be interested (according to the World Bank, at present there are 31 low-income, 53 lower-middle income and 56 upper-middle income countries, in addition to 78 high-income countries). Some of the same target countries may also opt to join PIAAC’s second cycle in 2021–2023.

Available at (open access): http://gaml.uis.unesco.org/wpcontent/uploads/sites/2/2018/12/4.6.1_Developing-a-monitoring-scheme-for-adult-numeracy-as-part-of-SDG-indicator-4.6.1.pdf

Title:

Galeshi, R., Sharman, J., & Cai, J. (2018). Influence of ethnicity, gender, and immigration status on millennials’ behavior related to seeking health information: Results from a national survey. *Equality, Diversity and Inclusion: An International Journal*, 37(6), 621-631. doi: 10.1108/EDI-05-2017-0102

Abstract:

Purpose: The purpose of this paper is to understand the behavior diversities that exist among young millennials’ subgroups in ways they seek health-related information. **Design/methodology/ approach:** The authors ran several sets of analyses on the 2012–2014 US Program for the International Assessment of Adult Competencies (PIAAC) Data using Stata. The population was stratified into four specific subgroups based on their gender, ethnicity—blacks, Hispanics and whites—immigration status, college status—whether they were enrolled in a program of study at the time of the survey. The outcome variables were sources of health information including print (books/magazines/brochures), traditional media (Radio/TV), internet, family/friends/co-workers and health professionals. The independent variables were gender, ethnicity, educational status and immigration status. The authors utilized the appropriate sample weight derived by Organization for Economic Cooperation and Development so the findings can be generalized to the populations. The analysis included

several descriptive statistics and χ^2 test of independence. Findings: Despite similarities, young adults' health seeking behavior is complex influenced by gender, ethnicity, immigration status and education. The results indicated that while the internet is the primary source of health-related information for all young adults, there are subtle differences in utilizing other available resources. For example while more educated young adults seek help from their family members, the less educated peers use the media to obtain health-related information. Ethnicity has also an effect on young adults' information seeking behavior. The number of Hispanics and blacks that obtain their information from traditional media is significantly higher than their white counterparts. Research limitations/implications: This study has several limitations. First, the authors did not consider the effect of young adults' digital literacy skills, problem solving skills and numeracy skills on their health seeking approach. Including these cognitive skills could reveal key information about young adults approach to information seeking that is not apparent by race, ethnicity and gender only. Another limitation of this study is the lack of the ability to claim causation, PIAAC data are designed strictly for cross-sectional analysis. Practical implications: Although, behaviors often do not change simply by presenting information, trying to change behavior without improving individuals' understanding of the issue by providing accurate information is likely to fail. Providing standardized health-related information sources that are accessible to all is vitally important. The results indicate that while the majority of young adults use the internet as their primary source of information only a few percentage of young adults seek information from health professional. Consequently, there is a need for an easily accessible and standardized online health-related source of information. Social implications Healthcare facilities and health related industries have the resources and the ability to develop a reliable infrastructure that could potentially provide reliable information that is easy to understand and navigate for adults with a variety of literacy and skills to use. Perhaps adopting the Universal Design for Learning approach and providing information that is accessible to a variety of individuals regardless of their education, learning skills and language skills. Flexible learning resources provided within a standard infrastructure accessible to all can help individuals find trustworthy and consistent information that they can trust. Originality/value Despite the unique characteristics of the millennials and the profound change in the way young adults seek information, there is a paucity of research on the ways young adults seek health-related information. Most existing literature is based on locally developed surveys and convenient sampling with limited reliability and validity information. Consequently making a sweeping statement based on their findings is considered as hasty generalization. The PIAAC, on the other hand, is a nationally representative data, extensively examined for its validity and reliability.

Available at: <https://doi.org/10.1108/EDI-05-2017-0102>

Title:

Ganzach, Y., & Patel, P. C. (2018). Wages, mental abilities and assessments in large scale international surveys: Still not much more than g. *Intelligence*, 69, 1-7. doi: 10.1016/j.intell.2018.03.014

Abstract:

We examine the role of General Mental Ability (GMA or g), versus specific abilities, in predicting wages among 69,901 participants from 19 countries in the Programme for International Assessment of Adult Competencies (PIAAC). We define GMA as the first principal component in a battery of three ability tests, and specific abilities as the low order components. Our initial results – a difference of 52%, between a g only model and a g + specific abilities model (R^2 s of 0.061 and 0.093, respectively) – is considerably different from earlier results suggesting that "there is not much more than g" in predicting performance. However, further analyses show that this difference is reduced to 0.5% when crucial non-cognitive individual differences (age and sex) are controlled for (R^2 s of 0.0763 and 0.0767, respectively). Path models of the relationships between individual differences, specific abilities, GMA and wage shed light on these results. Implications for the understanding of the

relationship between mental abilities and wage, and to the understanding of cognitive test scores as representing various skills versus general ability, are discussed.

Available at: <https://doi.org/10.1016/j.intell.2018.03.014>

Title:

Goncharenko, L., Sybachin, S., & Savchenko, I. (2018). The analysis of leadership in Russian scientific sphere. In W. Strielkowski & O. Chigisheva (Eds.), *Leadership for the Future Sustainable Development of Business and Education* (pp. 439-445). Cham: Springer International Publishing. doi: 10.1007/978-3-319-74216-8_43

Abstract:

The paper is dedicated to the analysis of the condition of the Russian scientific sphere. After the breakup of the Soviet Union, science was in stagnation because of numerous problems such as lack of systematization, bad conditions for scientists' work, and many others. To solve those problems nowadays, funding has been increased, additional motivational factors have been added, and measures have been implemented to decrease corruption in scientific sphere. According to forecast, in 2019–2020 condition of science will improve, and Russia will strengthen its positions in the global ratings. This article covers the issues of establishment of the Russian science and presents generalized data in graph forms. These data concern global rating, expenditure, budget, and position of Russia in comparison with other developed countries. The analysis is an inseparable part of a scientific article as it allows to follow the dynamics of the development of the Russian science. It is essential that this paper has a very clear focus and practical importance strengthened by target setting, analysis of the problem, and marked directions of its problem-solving in order to improve indicators of statistic data as well as indicators connected with leadership and dominance implied in real life.

Available at: https://doi.org/10.1007/978-3-319-74216-8_43

Title:

Grotlüschen, A. (2018). Literacy level 1 and below versus literacy level 4 and above-international results regarding participation in adult education. *Journal of Contemporary Educational Studies/Sodobna Pedagogika*, 69(2), 130-147.

Abstract:

Literacy, as specified in the Programme for the International Assessment of Adult Competencies (PIAAC) survey (OECD 2013), is separated into competence levels. This allows for a comparison of adults performing at literacy Level 1 and below versus those performing at Level 4 and above. The PIAAC survey also contains variables on participation in adult education. The findings show how type of seminar or training, type of employment (monotony) and type of learning (formal, non-formal, informal or mere readiness to learn) correlate with participation rates. Most findings confirm the 'Matthew Effect' for participation rates, but this is not true for training hours. More training hours are delivered to subpopulations with lower literacy levels than to those with higher levels. Barriers to training comprise costliness and lack of time, and many respondents indicated training they had wished to undertake but for some reason did not. Conclusions point at the paradoxon of need for employment being the most important reason for attending training and at the same time being the most important barrier to undertaking training. The learning strategies' indicator shows that the majority of the population is ready to learn but do not participate in adult education and training to do so. As a whole, roughly one-third of the low-literate subpopulations participate in adult education and training.

Available at (open access): <https://www.sodobna-pedagogika.net/en/archive/load-article/?id=1307>

Title:

Grotlüschen, A. (2018). Global competence – does the new OECD competence domain ignore the global South? *Studies in the Education of Adults*, 50(2), 185-202. doi: 10.1080/02660830.2018.1523100

Abstract:

Global Competence is a domain developed for PISA 2018. We ask whether it ignores voices from the Global South. Criteria are taken from Robertson, known for the theory of glocalisation as well as the educational scientist Seitz. Further criteria are added from a 21st century perspective. The discourse analysis uses documents available to the public since the PISA tender was launched by OECD in 2013. This includes minutes and drafts of an expert group, a webinar on the results of the consultation, held by Schleicher in 2015 and the final brochure on global competence. Results show that from the expert group towards the final brochure voices and theories from the Global South have been eliminated step by step during the procedure or are referred to in extra boxes (Ubuntu). Global competence levels are specified. Level one is described in a deficit-oriented terminology. Overall, the western, cognitive and rational, late modern discourse seems to be dominant while it silently disqualifies the areas ascribed as non-scientific, like religious, emotional, bodily issues (most of them being constructed as 'female' rather than 'male' and 'colored/south' than 'white/male'). This happens even though the earlier document interestingly does reference on postcolonial, queer, feminist and moral theory.

Available at: <https://doi.org/10.1080/02660830.2018.1523100>

Title:

Grotlüschen, A. (2018). The narrative of 'equality of chances' as an approach to interpreting PIAAC results on perceived political efficacy, social trust and volunteering and the quest for political literacy. *European Journal for Research on the Education and Learning of Adults*, 9(1), 109-125. doi: 10.3384/rela.2000-7426.rela0211

Abstract:

The article focuses on the theoretically and empirically addressed question of whether workforce literacy strategies in research and policies may tend to exclude relevant fields of literacy, which have emancipatory chances for participants, but which regularly fail to include low qualified or literate adults (Hufer, 2013), namely the area of basic civic education or political literacy. First, a theoretical discussion makes use of recent publications. The relevance of basic civic education will be discussed using contemporary theories, which point at a crisis of democracy and explain this by the spread of income and capital (Piketty, 2014) and its legitimation (Rosanvallon, 2013). Further detail is provided by using Rosanvallon's criticism of the term 'equality of chances'. The everyday unfairness, covered by the narrative of equal chances, leads to peoples' disengagement from reciprocal relations and disintegration of solidarity within a society. This theoretical approach will then be supplemented by empirical data. The empirical research question is: Do adults with low literacy skills agree less often on feelings of political efficacy and social trust than adults with high literacy skills? Do they engage less often in volunteering than adults with high literacy skills? This is based on the PIAAC 2012 dataset which relates literacy on the one hand with variables of political efficacy, social trust and volunteering on the other hand. Results will be compared with volunteer and youth surveys. Furthermore, the connection of a "Nouvelle Droite" (contemporary right-wing populism) and peoples' low feelings of political efficacy will be reflected in order to refute the stereotype that marginalized groups automatically become voters of right-wing populists. (DIPF/Orig.)

Available at (open access): <https://doi.org/10.3384/rela.2000-7426.rela0211>

Title:

Grundke, R., Marcolin, L., Squicciarini, M., & others. (2018). *Which skills for the digital era? Returns to skills analysis*. OECD Science, Technology and Industry Working Papers No. 9. Paris: OECD Publishing. doi: 10.1787/9a9479b5-en

Abstract:

This paper sheds light on the extent to which different types of skills are rewarded as industries go digital. It relies on information from the OECD Survey of Adult Skills on labour market participation and workers' skills for 31 countries as well as on a novel OECD index on the digital penetration of industries. It investigates how cognitive and non-cognitive skills are rewarded in digital vs. less digital intensive industries and assesses the extent to which skills bundles matter. The results indicate that digital intensive industries especially reward workers having relatively higher levels of self-organisation and advanced numeracy skills. Moreover, for workers in digital intensive industries, bundles of skills are particularly important: workers endowed with a high level of numeracy skills receive an additional wage premium, if they also show high levels of self-organisation or managing and communication skills.

Available at (open access): <https://doi.org/10.1787/9a9479b5-en>

Title:

Gustafsson, J.-E., & Blömeke, S. (2018). Development of school achievement in the Nordic countries during half a century. *Scandinavian Journal of Educational Research*, 62(3), 386-406. doi: 10.1080/00313831.2018.1434829

Abstract:

The aim is to describe the development of achievement in compulsory school in the Nordic countries from the 1960s. The study relies on published results concerning literacy and numeracy from the international large-scale assessments between 1964 and 2012. Among others, the following conclusions are drawn: (1) for most countries, a small but consistent increase in the level of achievement was observed from the mid-1970s to around 1990 for both literacy and numeracy; (2) Finland improved literacy performance dramatically between the mid-1980s and the mid-1990s, which is hypothesized to be associated with the introduction of part-time special education; (3) for all countries performance declined from the late-1990s/early-2000s, which is hypothesized to be due to different factors in different countries.

Available at (open access): <https://doi.org/10.1080/00313831.2018.1434829>

Title:

Hamilton, M. (2018). Contributing to the common good? Media coverage of the international largescale assessment of adult skills (PIAAC) in four national contexts. *Studies in the Education of Adults*, 50(2), 167-184. doi: 10.1080/02660830.2018.1523101

Abstract:

This paper focuses on the rapidly expanding field of largescale international assessment surveys and their impact on the field of adult education and learning. I take the case of OECD's survey assessing adult skills (PIAAC) and situate it within the wider context of the datification of educational policy and practice. The claims made for the policy effects of surveys like PIAAC are far-reaching and include the promotion of economic growth and more inclusive and equitable societies. I examine how these claims are translated into national contexts by examining documentary data collected from the OECDs publicity materials and media coverage of the second round PIAAC survey findings in 2016 in four of the nine countries that took part: Singapore, Greece, New Zealand and Slovenia.

Using a socio-material approach, I discuss how these discourses were managed by the OECD and national actors and show how the survey findings are framed and interpreted through existing public debates. The paper concludes that international assessments do not serve the goals of growth and equity in any straightforward way, since many interests and contextual factors may intervene to create a mismatch between the testers' intentions, media discourse and policy outcomes.

Available at: <https://doi.org/10.1080/02660830.2018.1523101>

Title:

Hamilton, M. (2018). Managing public reception of assessment results. In B. Maddox (Eds.), *International Large-Scale Assessments in Education: Insider Research Perspectives* (pp. 175-196). London: Bloomsbury Publishing.

Abstract:

The focus of this chapter is on how findings from ILSAs reach into national contexts and establish the public presence which enables them to intervene effectively in policy and practice as they are designed to do. In particular it examines how testing organizations and the media manage public and policy discourse on assessment results. It takes the example of the assessment of adult skills by the OECD which has already gone through several iterations and is currently embodied in the PIAAC. [Source: From the introduction, p. 175]

Available at:

<https://www.bloomsbury.com/uk/international-large-scale-assessments-in-education-9781350023628/>

Title:

Han, S. W., Borgonovi, F., & Guerriero, S. (2018). What motivates high school students to want to be teachers? The role of salary, working conditions, and societal evaluations about occupations in a comparative perspective. *American Educational Research Journal*, 55(1), 3-39. doi: 10.3102%2F0002831217729875

Abstract:

This study examines between-country differences in the degree to which teachers' working conditions, salaries, and societal evaluations about desirable job characteristics are associated with students' teaching career expectations. Three-level hierarchical generalized linear models are employed to analyze cross-national data from the Programme for International Student Assessment (PISA). Results reveal that teacher salaries and societal evaluations about the importance of job responsibility and respect are positively associated with teaching career expectations, while working hours are negatively associated with teaching career expectations. Analyses further reveal that the association between salaries and career expectations and societal evaluations and career expectations differ among students with different mathematics skills. We conclude by discussing policy initiatives that can encourage students with strong quantitative abilities to consider a career in teaching.

Available at (open access): <https://doi.org/10.3102%2F0002831217729875>

Title:

Hardy, W., Lewandowski, P., Park, A., & Yang, D. (2018). *The global distribution of routine and non-routine work: Findings from PIAAC, STEP and CULS*. IBS Working Paper No. 05. Warsaw: Institute for Structural Research. Retrieved February 15, 2019, from http://conference.iza.org/conference_files/WoLabConf_2018/lewandowski_p9882.pdf

Abstract:

The shift away from manual and routine cognitive task, and towards non-routine cognitive tasks changes the nature of work. Using the US PIAAC data, we develop measures of non-routine cognitive analytical and personal, routine cognitive and manual task content that are consistent with measures based on O*NET, but are country-specific and worker-specific. We apply them to 42 countries covered by PIAAC, STEP and CULS surveys. We find that the relationship between relative routine task intensity and development level is inverse-U shaped. Tertiary education, computer use, literacy skills, and work in professional or managerial jobs are negatively related to the routine task intensity. In most countries, structure of worker and job characteristics is more conducive to routine-intensive work than in the US, but these differences cannot fully explain cross-country differences in routine task intensity. The higher is the ICT capital stock per worker or the position in the global value chain, the lower is the routine task intensity, especially among, respectively, high-skilled and low-skilled occupations. The use of robots within an industry is negatively related to the routine task intensity, though it does not contribute much to the differences with regards to the US.

Available at (open access): http://conference.iza.org/conference_files/WoLabConf_2018/lewandowski_p9882.pdf

Title:

Heimisch, A., & Hampf, F. (2018). *Digitale Problemlösekompetenzen der Erwerbsbevölkerung und von Berufseinsteigern – Bayern im nationalen und internationalen Vergleich [Digital Problem-Solving Skills of the Workforce and Career Entrants – Bavaria by National and International Comparison]*. ifo-Studie München: ifo Institut für Wirtschaftsforschung. Retrieved February 15, 2019, from https://www.cesifogroup.de/DocDL/ifo_Studie_Problemloesungskompetenzen_IHK_Impulse.pdf

Abstract:

The study was conducted within a framework agreement with the Chamber of Commerce and Industry for Munich and Upper Bavaria to provide objective, scientifically-based economic advisory work. This study aims to thoroughly evaluate the digital skills of employees, especially among young professionals, in a national and international comparison, and to find out who, in terms of these skills, starts into an increasingly digital working environment under good or bad preconditions. The analysis employs data from PIAAC (Programme for the International Assessment of Adult Competencies) that includes the measured digital skills of adults in a number of OECD countries. The results show that Bavaria and Germany perform well by international comparison. Compared to other countries participating in PIAAC, the digital skills of the German workforce are similar to the international average; with Bavaria performing better than other German federal states. Restricting the sample to young professionals gives similar results. However, further analyses reveal strong heterogeneities in digital skills in terms of education and socio-economic background characteristics. Furthermore, digital skills are strongly correlated with occupations and sectors. In some occupations (such as service technicians, craftsmen, and office workers), only the top 25% of young professionals in Germany are digitally skilled to a similar extent as the average performers in top performing countries. Based on these differences and results, two main policy implications are derived: the education system should strengthen the development of digital skills and foster life-long learning, as well as training-on-the job.

Available at (open access): https://www.ifo.de/DocDL/ifo_Studie_Problemloesungskompetenzen_IHK_Impulse.pdf

Title:

Heisig, J. P. (2018). Measuring the signaling value of educational degrees: Secondary education systems and the internal homogeneity of educational groups. *Large-scale Assessments in Education*, 6(9), 1-35. doi: 10.1186/s40536-018-0062-1

Abstract:

Background: By providing high-quality, internationally comparable data on the cognitive skills of working-age adults, the Programme for the International Assessment of Adult Competencies (PIAAC) offers great potential for illuminating the complex interplay of formal qualifications and skills in shaping labor market attainment as well as social inequalities more broadly. I argue that PIAAC can be used to construct direct, country-level measures of the 'skill transparency' or 'signaling value' of formal qualifications, that is, of how informative the latter are about a person's actual skills. The primary goal of the analysis is to extend previous work on skills gaps by educational attainment and map cross-national variation in the internal skills homogeneity of educational groups as a second dimension shaping the signaling value of educational degrees. I also explore whether the internal homogeneity of educational groups is related to national (secondary) education systems. **Methods:** I use a sample of 30,646 20-to-34-year-olds in 21 countries that participated in the first round of PIAAC. The internal homogeneity of educational groups is measured using the residual standard deviation of literacy and numeracy skills after adjusting for sex, age, and foreign-birth/foreign-language status. Residual standard deviations for the different educational groups are subjected to a factor analysis to construct a one-dimensional measure of internal homogeneity for each country. This index of internal homogeneity is then related to education system characteristics in a series of country-level regressions. **Results:** The internal homogeneity of educational groups with respect to literacy and numeracy skills varies considerably across countries and is highly correlated across both skill domains and educational groups. Educational groups tend to be more homogeneous in countries with stronger (ability-related) tracking in secondary education. In addition, there is some evidence that internal homogeneity declines when instructional resources such as computer hardware and lab equipment are distributed more unequally across schools. An unexpected finding is that internal homogeneity is negatively associated with standardization of input (e.g., curricula, textbooks). **Conclusions:** The signaling value of educational degrees varies substantially across advanced economies, not only in terms of skills gaps among educational groups, but also in terms of their internal homogeneity. Some features of secondary education systems appear to be systematically related to the extent of internal homogeneity. The findings lend empirical support to so far untested assumptions about the relationship between formal qualifications and skills in cross-national research on labor market inequalities.

Available at (open access): <https://doi.org/10.1186/s40536-018-0062-1>

Title:

Hibben, K. C., Pennell, B.-E., & Scott, L. (2018). Interviewer effects in multicultural, multinational and multiregional surveys. *Quality Assurance in Education*, 26(2), 278-289. doi: 10.1108/QAE-06-2017-0032

Abstract:

Purpose: At the invitation of the Programme for the International Assessment of Adult Competencies (PIAAC), this paper aims to examine advances in survey interviewer monitoring and make recommendations on minimizing the effect of interviewers on survey results. **Design/methodology/approach:** The authors first provide an overview of the most recent literature on interviewer effects, quality assurance and quality control. Here, they draw upon recent publications such as the cross-cultural survey guidelines (www.ccsq.isr.umich.edu) and newly published or in-press material specifically addressing these issues in multicultural, multinational and multiregional (3MC) contexts.

Findings: The authors discuss trends and innovations in quality assurance and quality control in 3MC studies and draw upon examples from international surveys that are using cutting-edge and innovative approaches to monitor interviewer behavior and minimize interviewer effects. Originality/value: With a view to continuous quality improvement, the authors conclude with concrete recommendations for PIAAC to consider for the next cycle. Many of the recommendations have general relevance for other large-scale cross-national surveys.

Available at: <https://doi.org/10.1108/OAE-06-2017-0032>

Title:

Hinz, S. (2018). *Literacy and numeracy skills of U.S. men and women. Data point*. Data Point No. 164. Washington: National Center for Education Statistics. Retrieved February 15, 2019, from <https://files.eric.ed.gov/fulltext/ED586045.pdf>

Abstract:

This Data Point examines the literacy and numeracy skills of U.S. men and women ages 16-65. The data are from the Program for the International Assessment of Adult Competencies (PIAAC), which measures adults' skill levels in literacy and numeracy, as well as their ability to solve problems using computers. PIAAC literacy and numeracy scores range from 0 to 500, but they cannot be compared directly because each domain has a distinct framework, construct, set of items, and scale. This analysis uses PIAAC data from the U.S. Main Study of 2012 and the U.S. National Supplement of 2014, which together provide a nationally representative sample of about 8,000 adults ages 16-65.

Available at (open access): <https://files.eric.ed.gov/fulltext/ED586045.pdf>

Title:

Hoftijzer, M., & Gortazar, L. (2018). *Skills and Europe's labor market: How technological change and other drivers of skill demand and supply are shaping Europe's labor market*. World Bank Report on the European Union. Paris: World Bank. Retrieved February 15, 2019, from <https://openknowledge.worldbank.org/bitstream/handle/10986/29965/127183-WP-EU-P161873-GU-Skills-and-Labor-Markets-final-5-29-2018-PUBLIC.pdf?sequence=1>

Abstract:

This report examines recent trends and underlying causes in labor market outcomes, to assess how the importance of skills for productive employment has evolved. It serves as a background paper to the findings and analyses that are reflected in Chapter 2 of the Growing United report (Bodewig, C., Ridao-Cano, C, 2018), on "The Future of Work". It particularly reviews labor market outcomes and the demand and supply side factors that determine labor outcomes, with an emphasis on the extent to which technological change drives labor outcomes via its impact on the task content of jobs.

Available at (open access): <https://openknowledge.worldbank.org/bitstream/handle/10986/29965/127183-WP-EU-P161873-GU-Skills-and-Labor-Markets-final-5-29-2018-PUBLIC.pdf?sequence=1>

Title:

Hogg, S. (2018). *School's out for the summer: Slowing the growth of summer educational achievement gaps in British Columbia* (Master's thesis). Simon Fraser University. Retrieved February 15, 2019, from http://summit.sfu.ca/system/files/iritems1/17991/etd10578_SHogg.pdf

Abstract:

The summer reading setback is a major driver of educational inequality across British Columbia. This capstone research project examines educational inequality in the province and analyzes policy

options to reduce the growth of summer educational achievement gaps. The analysis focuses on three international case studies, with a literature review and interviews that confirm the results. The policy options considered include targeted summer programs in low-achieving schools, targeted summer programs across the province, and the expansion of existing summer reading programs in libraries.

Available at (open access): http://summit.sfu.ca/system/files/iritems1/17991/etd10578_SHogg.pdf

Title:

Hollinger, J. (2018). *Numeracy and adults' learning readiness and commitment: Results from a large national random sample of participants* (Dissertation). Youngstown State University. Retrieved February 15, 2019, from http://rave.ohiolink.edu/etdc/view?acc_num=ysu1522703981607228

Abstract:

The rapid changes in our society have amplified the need for adult learning opportunities. However, adults often make decisions not to persist in formal learning experiences in a smooth, linear fashion. The decision to pause or terminate formal learning is a complex behavioral decision that includes knowledge, the cognitive process, personal belief and environmental context. Since the construct of numeracy also necessitates the use of content, cognitive processes, dispositions, and context, this study examined the link between adults' numeracy abilities and learning readiness and commitment. This study analyzed the Programme for the International Assessment of Adult Competencies (PIAAC) Survey Adult Skills. The findings suggest numeracy abilities are positively related to readiness to learn and learning commitment. Further analysis demonstrated a relationship between parents' education level and learning commitment. Implications of the study suggest that social and cultural capital from family background impact adult learning persistence. Thus, multigenerational educational support must be considered in tandem with basic skill interventions for adult learners.

Available at (open access): http://rave.ohiolink.edu/etdc/view?acc_num=ysu1522703981607228

Title:

Hoogland, K., & Tout, D. (2018). Computer-based assessment of mathematics into the twenty-first century: Pressures and tensions. *ZDM Mathematics Education*, 50(4), 675-686. doi: 10.1007/s11858-018-0944-2

Abstract:

In recent decades, technology has influenced various aspects of assessment in mathematics education: (1) supporting the assessment of higher-order thinking skills in mathematics, (2) representing authentic problems from the world around us to use and apply mathematical knowledge and skills, and (3) making the delivery of tests and the analysis of results through psychometric analysis more sophisticated. We argue that these developments are not pushing mathematics education in the same direction, however, which creates tensions. Mathematics education—so essential for educating young people to be creative and problem solving agents in the twenty-first century—is at risk of focusing too much on assessment of lower order goals, such as the reproduction of procedural, calculation based, knowledge and skills. While there is an availability of an increasing amount of sophisticated technology, the related advances in measurement, creation and delivery of automated assessments of mathematics are however being based on sequences of atomised test items. In this article several aspects of the use of technology in the assessment of mathematics education are exemplified and discussed, including in relation to the aforementioned tension. A way forward is suggested by the introduction of a framework for the categorisation of mathematical problem situations with an increasing sophistication of representing the problem situation using various aspects

of technology. The framework could be used to reflect on and discuss mathematical assessment tasks, especially in relation to twenty-first century skills.

Available at: <https://doi.org/10.1007/s11858-018-0944-2>

Title:

Hovdhaugen, E., & Opheim, V. (2018). Participation in adult education and training in countries with high and low participation rates: Demand and barriers. *International Journal of Lifelong Education*, 37(5), 560-577. doi: 10.1080/02601370.2018.1554717

Abstract:

This paper explores patterns in participation in adult education and training (AET) by comparing five countries with high participation rates (the Nordic countries and the Netherlands) with three countries with significantly lower participation rates (France, Poland and the Slovak Republic). Using PIAAC data the paper examines differences in the levels of demand for AET as well as variations in barriers to AET participation between the two groups of countries. The demand for AET is higher than the actual participation rate since it includes those who do not participate although they wish to. The demand for AET is substantially higher in countries with high participation rates. Further, the structure and level of barriers is quite similar in the two groups of countries. Countries with low AET participation rate do not have a higher proportion of individuals reporting barriers to AET participation; that they do not participate in AET although they wish to. In both groups of countries demand for AET is strongly associated with the individuals' educational level. The findings are discussed by drawing on previous studies on drivers of and barriers to participation in AET.

Available at (open access): <https://doi.org/10.1080/02601370.2018.1554717>

Title:

Hutfilter, A. F., Lehmann, S., & Kim, E. J. (2018). *Improving skills and their use in Germany*. OECD Economics Department Working Papers No. 1516. Paris: OECD Publishing. doi: 10.1787/8a251b1f-en

Abstract:

Cognitive skills, such as reading and numeric skills, are key determinants of wages, employment and long-term economic growth. Good cognitive skills also reduce poverty risk and improve non-material wellbeing, such as health and social cohesion. Non-cognitive skills, such as skills to use information and communication technology as well as managerial skills, also help workers adapt to new technologies and globalisation. In Germany cognitive skills among adults are above OECD average, but weaker than in leading economies, especially among individuals with low and middle qualifications. Much progress has been made to improve learning outcomes of youth with disadvantaged socio-economic background. Nonetheless, high-quality childcare, early childhood and full-day primary education still need to expand. The vocational education system is very successful in integrating young people well in the labour market. Strengthening general education within the successful vocational education and training system could help ensure the capacity of graduates to adapt to technological change at higher age in the future. Participation in life-long learning could be encouraged by better addressing individual training needs. This could improve prospects for adults without professional qualifications. Women's skills are used less well than men's, calling for policies to address gender imbalances in the labour market. This Working Paper relates to the 2018 OECD Economic Survey of Germany.

Available at (open access): <https://doi.org/10.1787/8a251b1f-en>

Title:

Jiao, H., Lissitz, R. W., & Wie, A. V. (2018). *Data analytics and psychometrics: Informing assessment practices*. Charlotte: Information Age Publishing.

Abstract:

The general theme of this book is to encourage the use of relevant methodology in data mining which is or could be applied to the interplay of education, statistics and computer science to solve psychometric issues and challenges in the new generation of assessments. In addition to item response data, other data collected in the process of assessment and learning will be utilized to help solve psychometric challenges and facilitate learning and other educational applications. Process data include those collected or available for collection during the process of assessment and instructional phase such as responding sequence data, log files, the use of help features, the content of web searches, etc. Some book chapters present the general exploration of process data in large-scale assessment. Further, other chapters also address how to integrate psychometrics and learning analytics in assessment and survey, how to use data mining techniques for security and cheating detection, how to use more assessment results to facilitate student's learning and guide teacher's instructional efforts. The book includes both theoretical and methodological presentations that might guide the future in this area, as well as illustrations of efforts to implement big data analytics that might be instructive to those in the field of learning and psychometrics. The context of the effort is diverse, including K-12, higher education, financial planning, and survey utilization. It is hoped that readers can learn from different disciplines, especially those who are specialized in assessment, would be critical to expand the ideas of what we can do with data analytics for informing assessment practices.

Available at: <https://www.infoagepub.com/products/Data-Analytics-and-Psychometrics>

Title:

Jolita, D. (2018). Literacy change as a result of the education reform: Lithuanian population literacy comparison against other post-soviet countries population literacy. *Social Work, 16*(1), 92-105. doi: 10.13165/SD-18-16-1-07

Abstract:

The dissolution of the Soviet Union in 1989–1991 allowed structural changes in the educational systems in 28 new countries which were under control of the Soviet government for a long time. Almost three decades have passed and several generations have been raised within the reformed educational systems. Therefore, it is important to assess the results of these reforms. One, yet not the only, of the main units of measurement for the assessment of the results of the educational system or education reform refers to population literacy and competencies gained through certain educational systems. The purpose of the article is to compare the results of the education reforms in Lithuania and other post-communist countries based on the population literacy as the expression of learning achievements. Data of the survey of adult skills under the Programme for the International Assessment of Adult Competencies (PIAAC) organized by the OECD (The Organisation for Economic Co-operation and Development) were used for comparison of the learning achievements. The OECD PIAAC survey databases of Lithuania, Estonia, Russian Federation, Poland, the Czech Republic, Slovakia and Slovenia were used for comparison of the results of the reforms carried out in the post-Soviet countries. 5093 participants from Lithuania participated in the OECD PIAAC survey. Accordingly, 7632 participants participated in Estonia, 3892 in Russian Federation, 9366 in Poland, 6102 in Check Republic, 5723 in Slovakia, and 5331 in Slovenia. The total number of respondents in the seven analyzed countries is 43139. Analysis of the data of the said countries showed that in the education reform context the lowest value added generated by the secondary school was observed in Lithuania. The most positive results of the education reform at vocational education level were

recorded in Estonia, at secondary education level – in Estonia and the Czech Republic, at lower secondary education level – in Lithuania. At secondary education level, the most considerable deterioration of the results was recorded for Russia, at lower secondary education level – for Russia and Slovakia. The most moderate change in the results at vocational education level was observed in Lithuania, at secondary and lower secondary education levels – in Poland.

Available at: <https://doi.org/10.13165/SD-18-16-1-07>

Title:

Jonas, N. (2018). *Numeracy practices and numeracy skills among adults*. OECD Education Working Papers No. 177. Paris: OECD Publishing. doi: 10.1787/8f19fc9f-en

Abstract:

We assess the relationship between numeracy skills and numeracy practices among adults in everyday life and at work from the Survey of Adult Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC), an international survey of about 250 000 adults aged 16-65 years old conducted by the OECD in 33 countries/economies. The level of proficiency and the intensity of engagement in numeracy practices are two embedded aspects of numeracy. Proficient adults use numeracy frequently and adults who regularly engage in numeracy practices improve their performance. Individual and contextual factors influence, in different ways across countries, the strength of these links. The intensity of the use of numeracy in everyday life decreases as the lapse of time since a person's studies increases. Moreover, employed people engage in mathematical activities less in the private setting if they do not do so intensively in the workplace.

Available at (open access): <https://doi.org/10.1787/8f19fc9f-en>

Title:

Jonas, N. (2018). *Students' numeracy skills and practices*. Adult Skills in Focus No. 8. Paris: OECD Publishing. doi: 10.1787/b6ce23eb-en

Abstract:

The results of the Survey of Adult Skills confirm that there is a strong link between the level of numeracy performance and the use of these skills in practice. In view of these findings, countries could further encourage the teaching of numeracy-related disciplines in a wider variety of higher education pathways. Such a measure is particularly important as numeracy skills and practices play a crucial role in many dimensions of individual well-being.

Available at (open access): <https://doi.org/10.1787/b6ce23eb-en>

Title:

Jonas, N. (2018). *Teenage parenthood*. Adult Skills in Focus No. 9. Paris: OECD Publishing. doi: 10.1787/de7859a0-en

Abstract:

The results of the Adult Skills Assessment confirm that there is a strong link between the level of literacy proficiency and the rate of teenage motherhood. Countries where this link is strongest could further encourage the prevention of and support with pregnancies before the age of 20 in the groups at highest risk. These measures are all the more crucial as they are about protecting not just the most vulnerable teenagers but also their prospective children against the long-term consequences of these early births.

Available at (open access): <https://doi.org/10.1787/de7859a0-en>

Title:

Jonas, N., & Thorn, W. (2018). *Literacy skills and family configurations*. OECD Education Working Papers No. 192. Paris: OECD Publishing. doi: 10.1787/19939019

Abstract:

We study the links between family configuration and formation on the one hand and adult literacy skills on the other by analysing data from the Programme for the International Assessment of Adult Competencies (PIAAC), a survey of 250 000 people aged 16 to 65 conducted by the OECD in 33 countries and economies. Literacy proficiency has an effect on many aspects of the formation and development of families, such as age of parents at birth of first child, or age of partners at cohabitation, even when educational attainment and age are taken into account. Moreover, having children and living with a partner have consequences for adults' job opportunities and participation in the labour market, which can be particularly negative for the women with the highest literacy proficiency.

Available at (open access): <https://doi.org/10.1787/19939019>

Title:

Kahn, L. M. (2018). Permanent jobs, employment protection, and job content. *Industrial Relations: A Journal of Economy and Society*, 57(3), 469-538. doi: 10.1111/irel.12209

Abstract:

Using Programme for the International Assessment of Adult Competencies (PIAAC) data for twenty-one countries, I study the impact of employment protection laws (EPL) on job content. I find that workers' use of influence, reading, writing, planning, numeracy and information and computer technology skills, and their task discretion, were higher in permanent than in temporary jobs. Moreover, stricter EPL on permanent jobs raised the gap in job content for influence, reading, writing, and planning skills used in permanent jobs versus temporary jobs.

Available at: <https://doi.org/10.1111/irel.12209>

Title:

Kakarmath, S., Denis, V., Encinas-Martin, M., Borgonovi, F., & Subramanian, S. V. (2018). *Association between literacy and self-rated poor health in 33 high-and upper-middle-income countries*. OECD Education Working Papers No. 165. Paris: OECD Publishing. doi: 10.1787/7aaeac27-en

Abstract:

We assess the relationship between general literacy skills and health status by analysing data from the Programme for the International Assessment of Adult Competencies (PIAAC), an international survey of about 250 000 adults aged 16-65 years conducted by the Organisation for Economic Co-operation and Development (OECD) from 2011-15 in 33 countries/national sub-regions. Across countries, there seems to be a strong and consistent association between general literacy proficiency and self-rated poor health, independent of prior socio-economic status and income. General literacy proficiency also appears to be a mediator of the association between self-education and self-rated poor health. While the literacy-health association is robust over time, it varies in magnitude across countries. It is strongest for those with a tertiary or higher degree and does not appear to exist among young adults (ages 25 to 34 years). Future studies are required to understand the contextual factors that modify the general literacy proficiency-health association.

Available at (open access): <https://doi.org/10.1787/7aaeac27-en>

Title:

Kawaguchi, D., & Toriyabe, T. (2018). *Parental leaves and female skill utilization: Evidence from PIAAC*. RIETI Discussion Paper Series No. 18003. Tokyo: Research Institute of Economy, Trade and Industry (RIETI). Retrieved February 15, 2019, from <https://www.rieti.go.jp/jp/publications/dp/18e003.pdf>

Abstract:

Most developed countries adopt parental leave policies to promote women's labor force participation without sacrificing family formation. Studies find that short-term parental leaves for women increase the time spent at home and promote their return to the labor force after childbearing, but some studies point out that long-term parental leaves hinder the career advancement of high-skilled women. This paper analyzes heterogeneous impacts of parental leave policies on women's skill-use intensity by skill level, drawing on rich information on individual skill and skill-use intensity available from the micro data of the Programme for the International Assessment of Adult Competencies (PIAAC), which covers 30 countries. The results show that longer parental leaves narrow the gender gap in skill-use intensity among low-skilled workers but widen it among high-skilled workers. This finding is robust after controlling for international differences in gender norms and labor market institutions and allowing for country fixed effects. The findings corroborate with the claim that a longer parental leave period suppresses the career advancement of high-skilled women.

Available at (open access): <https://www.rieti.go.jp/jp/publications/dp/18e003.pdf>

Title:

Keslair, F. (2018). *Interviewers, test-taking conditions and the quality of the PIAAC assessment*. OECD Education Working Papers No. 191. Paris: OECD Publishing. doi: 10.1787/5babb087-en

Abstract:

This paper explores the impact of test-taking conditions on the quality of the Programme for the International Assessment of Adult Competencies (PIAAC) assessment. Interviewers record information about the room of assessment and interruptions that occurred during each interview. These observations, along with information on interviewer assignment size and a careful look at interviewer effects, provide insights into the quality of the assessment. This working paper first describes the variations in test-taking conditions among participating countries. Second, it examines interviewer assignment sizes and the frequency of interruptions, finding that both vary markedly among countries (contrary to the room of assessment). The paper then looks at the relationship between these variations and response rates and engagement measures. While neither the room of assessment nor the recorded interruptions impact quality differences among countries, interviewer assignment size and interviewer effects may have a mild impact on results.

Available at (open access): <https://doi.org/10.1787/5babb087-en>

Title:

Killian, M. R. (2018). *The mediated relationship between everyday literacy skills and adult literacy scores by vocabulary proficiency* (Dissertation). Tennessee Technological University. Retrieved March 5, 2020, from <https://pqdtopen.proquest.com/pubnum/10979453.html>

Abstract:

This study is an ex post facto correlational study that analyzed the mediated relationship between everyday adult literacy practices (directions or instructions; letters, memos, or mail; newspapers or magazines; professional journals or publications; books, manuals or reference materials; financial statements; diagrams, maps, or schematics) and literacy scores, using vocabulary scores as the mediator while controlling for educational attainment, current educational practices, age, and number

of books at home. This study used the Program of International Assessment of Adult Competency (PIAAC) 2012/2014 public use household dataset which includes data from over 8,000 participants. This dataset contains information about participants' background, daily lives, and reading practices as well as literacy, numeracy, and informational technology skills. Analyses were completed using the IDB analyzer to complete regression analyses on the final sample which included 1,599 participants who had taken both the literacy and print vocabulary assessment. The Sobel process was used to determine mediation. According to the Sobel test, the vocabulary score mediated the relationship between reading letters, memos, or mail ($b = 4.18$, $SE = 0.23$, $p < .001$) and newspapers or magazines ($b = 2.55$, $SE = 0.29$, $p < .05$) and the combined plausible literacy score. This showed that a portion of the ability to predict adult literacy scores from the frequency of reading letters, memos, or mail and newspapers or magazines could be due to vocabulary proficiency.

Available at (open access): <https://pqdtopen.proquest.com/pubnum/10979453.html>

Title:

Kim, S. (2018). Literacy skills gaps: A cross-level analysis on international and intergenerational variations. *International Review of Education*, 64(1), 85-110. doi: 10.1007/s11159-018-9703-4

Abstract:

The global agenda for sustainable development has centred lifelong learning on UNESCO's Education 2030 Framework for Action. The study described in this article aimed to examine international and intergenerational variations in literacy skills gaps within the context of the United Nations Sustainable Development Goals (SDGs). For this purpose, the author examined the trend of literacy gaps in different countries using multilevel and multisource data from the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) and UNESCO Institute for Lifelong Learning survey data from the third edition of the Global Report on Adult Learning and Education (GRALE III). In this article, particular attention is paid to exploring the specific effects of education systems on literacy skills gaps among different age groups. Key findings of this study indicate substantial intergenerational literacy gaps within countries as well as different patterns of literacy gaps across countries. Young generations generally outscore older adults in literacy skills, but feature bigger gaps when examined by gender and social origin. In addition, this study finds an interesting tendency for young generations to benefit from a system of Recognition, Validation and Accreditation (RVA) in closing literacy gaps by formal schooling at country level. This implies the potential of an RVA system for tackling educational inequality in initial schooling. The article concludes with suggestions for integrating literacy skills as a foundation of lifelong learning into national RVA frameworks and mechanisms at system level.

Available at: <https://doi.org/10.1007/s11159-018-9703-4>

Title:

Kónya, I. (2018). Labor input and labor income. In *Economic Growth in Small Open Economies: Lessons from the Visegrad Countries* (pp. 29-45). Cham: Springer International Publishing. doi: 10.1007/978-3-319-69317-0_3

Abstract:

This chapter discusses the measurement of labor input in the eight countries. Labor input is a combination of employment, hours per worker, and human capital per worker. Detailed data on the school attainment of the employed and their full-time/part-time status is used to construct more precise measures of total labor input than what is typically found in the literature. The chapter finishes with a comparison of total labor input and its components across the two country groups.

Available at: https://doi.org/10.1007/978-3-319-69317-0_3

Title:

Koutná, M., & Janíčko, M. (2018). Trajectories in the Czech labour market: The role of information-processing skills and education. *Ekonomicky Casopis*, 66(1), 3-27.

Abstract:

The article assesses the role of information-processing skills and education in people's labour market trajectories in the Czech Republic in the period of economic recovery from 2011/2012 to 2015. We examine the extent to which literacy and numeracy and formal and informal education influenced changes in the stability of individuals' employment and their income mobility, incorporating polarisation and segmentation perspectives. The analysis is conducted using a unique combination of Czech PIAAC data and a follow-up survey. The findings show that formal education compared to information-processing skills and further education is by far the most important factor of change in a person's position in the labour market while the role of skills is only limited.

Available at (open access): <https://www.sav.sk/journals/uploads/0125125201%2018%20KoutnaJanicko%20+%20RS.pdf>

Title:

Krieger-Boden, C., & Sorgner, A. (2018). Labor market opportunities for women in the digital age. *Economics: The Open-Access, Open-Assessment E-Journal*, 12(2018-28), 1-8. doi: 10.5018/economics-ejournal.ja.2018-28

Abstract:

Digitalization offers a variety of opportunities for female empowerment and for a more equal female participation in labor markets, financial markets, and entrepreneurship. Currently, digitalization seems to favor female labor force, since women face on average lower risk of being replaced by machines, as compared to men. Women's often superior social skills represent a comparative advantage in the digital age, and this is particularly so when social skills are complemented with higher education and advanced digital literacy. However, the same barriers and deficits that obstruct women's current advancement in many countries may deprive them from many beneficial opportunities in the digital age, including new entrepreneurial opportunities. Major efforts by policy makers are required to invalidate these barriers. New digital technologies should be used more decisively to achieve the goal of gender equality.

Available at (open access): <http://dx.doi.org/10.5018/economics-ejournal.ja.2018-28>

Title:

Lassnigg, L., Bock-Schappelwein, J., & Stöger, E. (2018). Berufsbildung in Österreich: Strukturanalysen, Formalqualifikationen und Grundkompetenzen [Vocational training in Austria: Structural analysis, formal qualifications and basic skills]. In B. Hanfstingl, K. Krainer, K.-D. Marlies, E. Messner, J. Thonhauser, & H. Altrichter (Eds.), *Baustellen in der österreichischen Bildungslandschaft: Zum 80. Geburtstag von Peter Posch* (pp. 91-112). Münster: Waxmann.

Abstract:

This chapter reflects today's findings (e.g., using Austrian PIAAC data) and perspectives on Austrian vocational training in the light of earlier analyzes. If for instance the current situation and expected developments in Austria are compared with the assessments and proposals thirty years ago, there is a striking discrepancy between the foresight of the requirements on the one hand and the persistence of the educational structures on the other. [Note from editors]

Available at: <https://irihs.ihs.ac.at/id/eprint/4841>

Title:

Lauttamäki, H. M. (2018). *The relationship between cognitive skills and earnings inequality* (Master's thesis). University of Helsinki. Retrieved February 15, 2019, from <http://hdl.handle.net/10138/235910>

Abstract:

In this thesis the relationship between cognitive skills and earnings inequality is analyzed using a decomposition method on the dataset of PIAAC. The implementation of this thesis is sort of a replication of a study by Blau and Kahn (2005). The core of their study was to investigate if cognitive skills explain the higher wage inequality in the US compared to other countries. This thesis studies the relationship between earnings and skills inequality and analyzes if cognitive skills explain higher wage inequality in the UK compared to other countries. Due to country specific restrictions in the earning variables, some of the countries could not be included into my sample, for instance the US is missing. The UK is thus set as the base country in the country-specific comparisons of differences in wage inequality. The model used for these comparisons is a full distributional accounting method, also known as a decomposition method, which was originally created by Juhn, Murphy and Pierce (1993). The advantage of the decomposition method is that it enables the differences in wage inequality to be decomposed into different components at any desired point of the wage distribution. Under examination in this thesis are the 90-10, 90-50 and 50-10 wage gaps across countries by gender. The final sample comprises 21 countries and includes part- and full-time workers aged 16 to 65.

The main question in this thesis is partly to replicate the study of Blau and Kahn (2005) and to see if the results on returns to skills and the decomposition model are similar to the results of Blau and Kahn (2005). Based on the results, some of the findings are surprisingly close to the findings of Blau and Kahn and some of the results quite different.

Available at: <http://hdl.handle.net/10138/235910>

Title:

Leckelt, M., Richter, D., Schröder, C., Küfner, A. C. P., Grabka, M. M., & Back, M. D. (2018). The rich are different: Unravelling the perceived and self-reported personality profiles of high-net-worth individuals. *British Journal of Psychology*, 1-21. doi: 10.1111/bjop.12360

Abstract:

Beyond money and possessions, how are the rich different from the general population? Drawing on a unique sample of high-net-worth individuals from Germany (≥ 1 million Euro in financial assets; $N = 130$), nationally representative data ($N = 22,981$), and an additional online panel ($N = 690$), we provide the first direct investigation of the stereotypically perceived and self-reported personality profiles of high-net-worth individuals. Investigating the broad personality traits of the Big Five and the more specific traits of narcissism and locus of control, we find that stereotypes about wealthy people's personality are accurate albeit somewhat exaggerated and that wealthy people can be characterized as stable, flexible, and agentic individuals who are focused more on themselves than on others.

Available at: <https://doi.org/10.1111/bjop.12360>

Title:

Lee, J. (2018). Conceptual foundations for understanding inequality in participation in adult learning and education (ALE) for international comparisons. *International Journal of Lifelong Education*, 37(3), 297-314. doi: 10.1080/02601370.2018.1462265

Abstract:

Inequality in adult learning and education (ALE) participation has been reported by previous comparative studies. In doing so, however, most of efforts have been made to understand such patterns of inequality in ALE participation at the micro-level using a conceptual approach based on human capital theory. While the micro-level approach offers an individualistic and economic perspective on learning, macro-level structural conditions play an important role in creating the circumstances faced by individuals. By performing a critical literature review, this paper intends to build conceptual foundations conducive to understand both micro- and macro-level dimensions implicitly and/or explicitly linked to inequality in ALE participation. Specifically, this paper takes a brief look into social origins as a micro-level factor, and takes an in-depth look into social inequality (i.e. education, economic and skill inequality) and institutional settings (i.e. active labour market policies and strictness of employment protection,) as macro-level factors. These conceptual foundations can be used as a conceptual framework for a cross-country empirical analysis of the degree of inequality in ALE participation.

Available at: <https://doi.org/10.1080/02601370.2018.1462265>

Title:

Lee, J.-H., Jeong, H., & Hong, S. C. (2018). *Human capital and development: Lessons and insights from Korea's transformation*. Cheltenham: Edward Elgar Publishing. doi: 10.4337/9781786436979

Abstract:

Over the last 70 years, Korea has experienced a rapid and remarkable transformation from a devastatingly poor nation to one of the world's leading advanced economies, achieving both sustained economic growth and a successful democracy. This pioneering work focuses on the key role of sustained investment in human capital behind Korea's phenomenal success. *Human Capital and Development* analyzes the importance of balancing diverse aspects of the educational system at different stages of development. The need to balance general and vocational education, top-down and bottom-up reform, as well as qualitative and quantitative expansion are highlighted. Adapting Korea's development experience to general principles shows that rather than seeking universal strategies and rules, the key to successful transformation is the provision of educational systems that can evolve over time depending on socio-economic and technological conditions for both developing and advanced countries. For researchers and students of economic development, education, and Asian development, this book is an excellent tool to discover possible ways for developing countries to initiate and accelerate their paths of economic growth and development. This book also provides a useful reference for policy makers of advanced as well as developing countries in designing their education systems and policies.

Available at: <https://doi.org/10.4337/9781786436979>

Title:

Lee, R., Kim, J., & others (2018). Women and/or immigrants: a feminist reading on the marginalised adult learners in Korean lifelong learning policy and practice. *Australian Journal of Adult Learning*, 58(2), 184-208.

Abstract:

This paper aims to analyse the policy and practice of lifelong learning (LLL), particularly adult education and learning (ALE) for women, immigrants, and women/immigrants in South Korea. An international as well as national policy document analysis was conducted to explore the impact of Korea's policy and practice of LLL for these groups of learners. Findings reveal that they are situated in the middle of gendered and/or racialised trends in ALE within an intensifying neoliberal context

where learning is mainly utilised as a tool for employment in contemporary Korean society. Possible implications from the analysis were addressed to suggest policy updates and better practices.

Available at: <https://www.ajal.net.au/downloads/women-and-or-immigrants-a-feminist-reading-on-the-marginalised-adult-learners-in-korean-lifelong-learning-policy-and-practice/>

Title:

Lewandowski, P. (2018). *How does technology change the nature of work? Poland vs. the EU*. IBS Policy Papers No. 02/2018. Warszawa: Instytut Badan Strukturalnych. Retrieved February 15, 2019, from http://ibs.org.pl/app/uploads/2018/06/IBS_Policy_Paper_02_2018_en.pdf

Abstract:

Recent technological progress speeds up changes in the nature of work. The tasks that we perform at work have changed, and they require different skills. The consequences of the accelerated changes in the nature of work affect employers, who introduce new technologies, and workers, who have to adapt to the new demands. The effects are also felt by governments whose role is to support the absorption of new technologies, on the one hand, and to mitigate the negative consequences of rapid changes in the labour market, on the other hand. Therefore, it is important to understand how technological progress impacts changes in the nature of work.

Available at (open access): http://ibs.org.pl/app/uploads/2018/06/IBS_Policy_Paper_02_2018_en.pdf

Title:

Lim, D. H., Hee Jeong, S., Yoo, S., & Yoo, M. H. (2018). Older workers' education and earnings among OECD countries. *European Journal of Training and Development*, 42(3/4), 170-190. doi: 10.1108/EJTD-08-2017-0069

Abstract:

Purpose: The purpose of this study is to identify to what extent individual-level factors (age, gender, participation in formal and non-formal education and levels of skills use at work) and country-level factors (social capital factors, national competitiveness and gross domestic product [GDP]) have contributed to older generations' earnings in developed countries. **Design/methodology/approach:** Utilizing the data from the Organizational Economic Co-operation and Development Skills Outlook 2013 survey, GDP and the World Economic Forum's annual Global Competitiveness Report, this study adopted a multilevel path analysis method to measure cross-country-level effect of the study variables on older workers' earnings. **Findings:** Study results indicated that age, gender, non-formal education, use of influencing and task discretion skills at work at the individual level, and GDP, social trust, and higher education and training at the country level were identified as influential factors for older workers' monthly earnings. **Originality/value:** With more aging societies worldwide, the traditional view of the aging workforce has been affected by the desires and needs of the elderly. This study contributes to the literature by identifying what individual- and country-level factors should be considered for policymakers to improve the economic benefits of older generations living in developed countries.

Available at: <https://doi.org/10.1108/EJTD-08-2017-0069>

Title:

Lindberg, M., & Silvennoinen, H. (2018). Assessing the basic skills of the highly educated in 21 OECD countries: An international benchmark study of graduates' proficiency in literacy and numeracy using the PIAAC 2012 data. *Comparative Education*, 54(3), 325-351. doi: 10.1080/03050068.2017.1403676

Abstract:

This study compares the literacy and numeracy proficiencies of higher education (HE) degree holders in 21 OECD countries based on primary analysis of the national data sets collected via the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) 2012 study. The differences in the graduates' average literacy and numeracy proficiencies amongst the OECD countries are substantial. Depending on the country, a smaller or greater proportion of a young highly educated age group does not have sufficient skills in literacy or numeracy to cope with many of the everyday tasks requiring the use of that skill. The PIAAC study challenges existing evaluation practices of the effectiveness of HE in fostering individual skills and puts into perspective the attempts to lift national average skill levels by increasing the HE sector's intake.

Available at: <https://doi.org/10.1080/03050068.2017.1403676>

Title:

Liu, H. (2018). *Education systems, education reforms, and adult skills in the Survey of Adult Skills (PIAAC)*. OECD Education Working Papers No. 182. Paris: OECD Publishing. doi: 10.1787/bef85c7d-en

Abstract:

This study uses the PIAAC data to examine the relationships between education system characteristics (e.g. early tracking and vocational education orientation) and distributions of adult numeracy skills. It also investigates the effects of postponing the tracking age and easing university access for students on a vocational track on the average skills and different percentiles of the skills distribution. Correlational analysis suggests that education systems with more students enrolled in vocational tracks have on average higher levels of numeracy skills and more compressed skills distributions between the 50th and 90th percentiles. Further analysis suggests that postponing the tracking age among 14 European countries does not have a significant effect on the average skills of the population. However, it increases skills for individuals at the 10th, 20th, and 30th percentiles of the skill distribution. Expanding university access is associated with an increase in numeracy skills, particularly for individuals at the bottom three deciles of the distribution.

Available at (open access): <https://doi.org/10.1787/bef85c7d-en>

Title:

Liu, H., & Fernandez, F. (2018). *Examining the ways that numeracy skills and soft skills are related to occupational status: The case of US workers*. Commissioned Paper Washington: American Institutes for Research. Retrieved February 15, 2019, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5b50a5d21ae6cfa99e6e444c/1532011986927/Liu_Fndz_Soft_Skills_Report_2018_Final.pdf

Abstract:

Policymakers are increasingly concerned that employees need both foundational skills, such as numeracy, and soft skills to be successful in the 21st century economy. However, there is little empirical research that examines whether foundational skills and soft skills have independent or interactive relationships with occupational outcomes. Based on our analysis of PIAAC data, we find that four self-reported measures of the use of soft skills at work have statistically significant, positive relationships with an employee's occupational status—and that these relationships are independent of numeracy skill. The soft skills measures that are positively correlated with occupational status are (a) Readiness to Learn; (b) Influence; (c) Planning; and (d) Task Discretion. We also estimate interaction effects between numeracy skill proficiency and all four aspects of soft skills. The result indicate that the relationships between occupational status and two soft skill types (planning and influence) are significantly different between workers with low and high numeracy proficiency. That

is, workers with low-numeracy skills tend to benefit more from exercising planning or influence skills at work than workers with high numeracy proficiency. Independent of soft skills, workers with higher levels of numeracy skills also tend to have higher occupational status.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5b50a5d21ae6cfa99e6e444c/1532011986927/Liu_Fndz_Soft_Skills_Report_2018_Final.pdf

Title:

Liu, Q. (2018). *On-job learning and human capital accumulation* (Dissertation). Georgia Institute of Technology. Retrieved February 15, 2019, from <http://hdl.handle.net/1853/60218>

Abstract:

The dissertation investigates the human capital accumulation through on-job learning. It has three empirical studies. The first two essays investigate skill accumulation through performing job tasks. The third one analyzes the labor market effect of tertiary education for full time workers. Using the data from the Programme for the International Assessment of Adult Competencies (PIAAC) for USA, the first essay investigates whether cognitive skills, including literacy and numeracy skills, can be improved through on-the-job learning, especially via tasks at work. With rich information on job tasks performed at individual level, we construct different job complexity measures: a general job complexity measure, and two specific complexity measures of interactive and analytical tasks. The results show that workers can accumulate cognitive skills through solving complex problems. Additionally, analytical tasks play an important role on cognitive skills, while interactive tasks at work do not show a significant effect. The second essay investigates whether tasks performed at work contribute to the improvement of a worker's problem-solving skills. Based on two datasets for Germany, the Programme for the International Assessment of Adult Competencies (PIAAC) and "LLLight'in'Europe" project (LLL), we analyze on problem-solving skills at different levels, general problem-solving skills and complex problem-solving skills. The results of two problem-solving skill measures show workers benefit from doing a complex job, and task complexity improves complex problem-solving skills with a much smaller xi magnitude. In addition, analytical tasks at work play a more important role than interactive tasks. The third essay investigates the difference in effects of tertiary education between full-time workers and full-time students, based on data from the Chinese Household Income Project (1995, 2002, 2007, and 2013). We find that the schooling returns to a college and a graduate degree earned by full-time workers are significantly lower than the returns on corresponding degrees earned via full-time studies, however, there is a much smaller or no significant gap for junior college degrees for those two groups. The results are quite robust with different model specifications and estimation methods. Our further investigation shows that school quality or aging cannot explain the gap fully.

Available at (open access): <http://hdl.handle.net/1853/60218>

Title:

Lopez-Fogues, A., & Scandurra, R. (2018). Analyzing PIAAC through the vapability approach. In S. McGrath, M. Mulder, J. Papier, & R. Stuart (Eds.), *Handbook of Vocational Education and Training: Developments in the Changing World of Work* (pp. 1-21). Cham: Springer International Publishing. doi: 10.1007/978-3-319-49789-1_3-1

Abstract:

The purpose of this chapter is to evidence the shortcomings of large-scale assessments and the new shift toward capability-oriented indicators. Focusing on the international data on adult skills (PIAAC) and its impact in forging VET (vocational education and training) policies, we assume that current VET systems are confronted with many challenges that arise from the interaction of two

sources. On one hand, VET policy focuses mainly on employability which is insufficient to grasp wider benefits that education entails – as postulated by many educational (i.e., Nussbaum, *Creating capabilities: The human development approach*. Harvard University Press, Cambridge, MA, 2011; Boni and Walker, *Universities and global human development: Theoretical and empirical insights for social change*. Routledge, London, 2016) and a considerable smaller education and work scholars (i.e., McGrath and Powell, *Int J Educ Dev* 50:12–19, 2016; Egdell and McQuaid, *Soc Policy Adm* 50:1–18, 2016). On the other hand, the underpinnings of the objectives and designs of VET should adapt to the socioeconomic consequences of the Great Recession. The chapter focuses on the PIAAC and most concretely to the Spanish case as an example of how the Great Recession becomes an open license to fast- and short-term strategies that favors employment regardless of its quality and long-term consequences and values education and youth role in society in relation to their contribution to boost the economy. The chapter recognizes the urge for seeking fast solutions that shift the unemployment rates but alerts to the overlooked aspects with some of those measures in relation to VET. In fact, this chapter is a call to policy-makers and academics toward the importance of rethinking education on the basis of new information basis of judgment that are human-centered.

Available at: https://doi.org/10.1007/978-3-319-49789-1_3-1

Title:

Lorenz, H., & Stephany, F. (2018). *Back to the future: changing job profiles in the digital age*. Agenda Austria Working Paper No. 13. Wien: Agenda Austria. Retrieved February 15, 2019, from <https://www.agenda-austria.at/wp-content/uploads/2018/04/aa-wp13-changing-job-profiles.pdf>

Abstract:

In light of increasingly "smarter" technologies, the future of (human) labour is questioned on a daily basis. A study by Frey and Osborne (2013), one of the most recognised contributions in this domain, estimated that half of the US labour force is highly susceptible to computerisation in the near future. Their findings have been applied for several follow-up investigations in other countries. However, the transferability of the results is limited by the set-up of the study. In contrast to previous investigations, our approach tries to overcome past shortcomings by collecting assessments on the susceptibility to digital technologies for the Austrian labour market by Austrian experts. We show that the diversity of previous findings regarding the degree of job automatization is to a large extent driven by model selection and not by controlling for personal characteristics or tasks. Our results indicate that while clerical computer-based routine jobs are likely to change in the next decade, professional activities, e.g., the processing of complex information, are prone to digital change.

Available at (open access): <https://www.agenda-austria.at/wp-content/uploads/2018/04/aa-wp13-changing-job-profiles.pdf>

Title:

Lyberg, L., Hibben, K. C., & Pennell, B.-E. (2018). Applying the total survey error framework to PIAAC. *Quality Assurance in Education*, 26(2), 153-168. doi: 10.1108/QAE-07-2017-0035

Abstract:

Purpose: Surveys in multinational, multiregional and multicultural contexts (or "3MC" surveys) are becoming increasingly important to global and regional decision-making and theory building. To serve this purpose, the surveys need to be well managed, with an awareness of key sources of survey error and how to minimize them, mechanisms in place to control the implementation process and an ability to intervene in that process when necessary in a spirit of continuous improvement (Pennell et al., 2017). One key approach for managing and assessing the quality of 3MC surveys is the total survey error (TSE) framework and associated survey process quality. This paper aims to

examine the application of the TSE framework and survey process quality to the Programme for the International Assessment of Adult Competencies (PIAAC). Design/methodology/approach: The authors begin with a background on TSE and discuss recent adaptations of TSE and survey process quality for 3MC surveys. They then presents a TSE framework tailored with examples of potential contributions to error for PIAAC and ways to address those through effective quality assurance (QA) and quality control (QC) approaches. Findings: Overall, the authors find that the design and implementation of the first cycle of PIAAC largely reflect the current best practice for 3MC surveys. However, the authors identify several potential contributions to error that may threaten comparability in PIAAC and ways these could be addressed in the upcoming cycle. Originality/value: With a view toward continuous improvement, the final section draws on the survey process quality approach adapted from Hansen et al.'s study (2016) to summarize the recommendations in terms of additional QA elements (inputs and activities) and associated QC elements (measures and reports) for PIAAC's consideration in the next cycle.

Available at: <https://doi.org/10.1108/QAE-07-2017-0035>

Title:

Maddox, B. (2018). Interviewer-respondent interaction and rapport in PIAAC. *Quality Assurance in Education*, 26(2), 182-195. doi: 10.1108/QAE-05-2017-0022

Abstract:

Purpose: This paper aims to investigate small-scale, qualitative observations of interviewer-respondent interaction in the Organisation for Economic Co-operation and Development's Programme for the International Assessment of Adult Competencies (PIAAC). Design/methodology/approach: The paper uses video-ethnographic methods to document talk and gesture in assessment in Slovenian household settings. It presents an in-depth case study of interaction in a single testing situation. Findings: Observing interaction in assessment captures data on assessment performance that is not available in quantitative analysis of assessment response processes. The character of interviewer-respondent interaction and rapport is shaped by the cognitive demands of assessment and the distinctive ecological setting of the household. Research limitations/implications: Observational data on assessment response processes and interaction in real-life assessments can be integrated into and synthesized with other sources of "process data". Practical implications Assessment programs such as PIAAC should consider the significance of the household setting on assessment quality and observations of interaction in assessment as a valid source of paradata. Social implications There is a place for small-scale observational studies of assessment to inform public understanding of assessment quality and validity. Originality/value: The paper provides qualitative insights into the significance of interaction and "interviewer effects" in household assessment settings.

Available at: <https://doi.org/10.1108/QAE-05-2017-0022>

Title:

Maddox, B., Bayliss, A. P., Fleming, P., Engelhardt, P. E., Edwards, S. G., & Borgonovi, F. (2018). Observing response processes with eye tracking in international large-scale assessments: Evidence from the OECD PIAAC assessment. *European Journal of Psychology of Education*, 33(3), 543-558. doi: 10.1007/s10212-018-0380-2

Abstract:

This paper reports on a pilot study that used eye tracking techniques to make detailed observations of item response processes in the OECD Programme for the International Assessment of Adult Competencies (PIAAC). The lab-based study also recorded physiological responses using measures of

pupil diameter and electrodermal activity. The study tested 14 adult respondents as they individually completed the PIAAC computer-based assessment. The eye tracking observations help to fill an 'explanatory gap' by providing data on variation in item response processes that are not captured by other sources of process data such as think aloud protocols or computer-generated log files. The data on fixations and saccades provided detailed information on test item response strategies, enabling profiling of respondent engagement and response processes associated with successful performance. Much of that activity does not include the use of the keyboard and mouse, and involves 'off-screen' use of pen and paper (and calculator) that are not captured by assessment log-files. In conclusion, this paper points toward an important application of eye tracking in large-scale assessments. This includes insights into response processes in new domains such as adaptive problem-solving that aim to identify individuals' ability to select and combine resources from the digital and physical environment.

Available at (open access): <https://doi.org/10.1007/s10212-018-0380-2>

Title:

Maehler, D. B., Bibow, S., & Konradt, I. (2018). *PIAAC Bibliography - 2008-2017*. GESIS Papers No. 2018/03. Köln: GESIS - Leibniz-Institut für Sozialwissenschaften. Retrieved May 5, 2019, from <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-56014-4>

Abstract: The bibliography provides an English and German literature overview of the Programme for the International Assessment of Adult Competencies (PIAAC). The PIAAC bibliography aims to gather the different research undertaken with PIAAC and sums up all contributions including publications of (a) the theoretical conception of the assessed skill domains, (b) research results based on PIAAC data, (c) the technical conception of the study (as well as follow-up studies) and (d) PIAAC data files.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-56014-4>

Title:

Mandrone, E. (2018). *Economic literacy financial costs and social implications*. Social Science Research Network. doi: 10.2139/ssrn.3124793

Abstract:

What is the ability of Italians to understand wider economic and financial dimensions? Do they know what they do when they invest their savings, use credit cards or gamble with their money? Knowing how to handle the numbers, terms, and norms that we use is a major issue for the ever-increasing implications that financial capacity will have on our lives. Not only consumption or savings, but also insurance, housing and employment choices, public services and school choices along with democratic participation require a good level of economic literacy. This article seeks to identify cognitive and regulatory limits and both individual and collective tools to defend from so many occasions where the economic dimension involves the possibility of financial loss or cost-opportunity and the implications that an improvement in economic literacy may lead to the interpretation of one's own situation.

Available at (open access): <https://dx.doi.org/10.2139/ssrn.3124793>

Title:

Manuela, B., & Simona, M. (2018). Social integration dynamics for migrants: PIAAC to measure skill and qualification mismatch. *Universal Journal of Educational Research*, 6, 970-982. doi: 10.13189/ujer.2018.060518

Abstract:

This paper aims at highlighting the overlapping between the qualification mismatch and the skill mismatch, using a specific Italian data set drawn from PIAAC survey (2012). The main concern, regarding skills and competences, is that they may be gathered and accumulated, but also potentially become obsolete, thus, qualifications (formally recognized) do not necessarily correspond to used skills and competences. Measuring skill mismatch is evidently problematic as there are not many direct information regarding skills at the workplace. Usually information comes from self-reported measures (correspondence of tasks performed at work) or comparing indicators of proficiency and use at work, methodologies prone to bias. Skill mismatch arises from several structural modifications in countries economy and social demographic events such as migration. And skill mismatch and qualification mismatch are a common phenomenon among foreign workers. The levels of both their qualifications and the skills used at work are rarely well-match among this particular target group. Besides, the Italian system not always is able to adequately assess, recognize and validate qualifications and/or skills and competences possessed by immigrants who are applying for working positions. PIAAC makes it possible to compare qualifications, information processing skills (literacy and numeracy) and skills required on the job, for specific target groups. The Survey of Adult Skills provides a measure of skill mismatch: it arises when workers have higher or lower skills proficiency (measured) than that required by their jobs (self-reported information). The relationship between skill mismatch and labour market outcomes involves different approaches and implications at policy level in inclusive societies, especially considering economic and socio-demographic factors. Among the three proficiency cognitive domains of PIAAC, we focused on literacy mismatch as (compared to numeracy) is a parameter of high relevance for the chosen target group (migrants). In fact it indicates the adaptability in the host working context due to language difficulties. Findings in PIAAC show that foreign workers are three times more likely than natives to be under-skilled in literacy. And the difference arises if we consider the time parameter ("since how long they have been living in Italy"): less than 5 years residents are even more under-skilled (more than 30%). Besides, foreign workers are overqualified (26.5%) much more than Italians (12.4%) and also two times more likely to be over-qualified than natives. But it is worth noting that among overqualified workers (with a higher qualification than the one needed to carry out the specific job), foreign workers seem to lack the necessary skills. This discrepancy is an important element to understand social integration dynamics and thus orientate policies.

Available at (open access): <https://doi.org/10.13189/ujer.2018.060518>

Title:

Marcolin, L., & Squicciarini, M. (2018). Investing in innovation and skills: Thriving through global value chains. *Review of Economics and Institutions*, 9(1), 1-33. doi: 10.5202/rei.v9i1.272

Abstract:

This paper investigates empirically the interplay between participation and positioning in global value chains (GVCs), employment demand and supply and workforce's skills endowment. Results touch upon the way innovation, technology and participation in GVCs shape employment in routine intensive and non-routine jobs; the relationship between participation in GVCs and polarisation of employment; the way the skill composition of a country's workforce – both the type of skills and their distribution - shapes specialisation and positioning along GVCs; and the complementarities emerging between GVC participation and investment in knowledge-based capital, especially organisational capital and ICT.

Available at (open access): <https://doi.org/10.5202/rei.v9i1.272>

Title:

Marguerit, D., Cohen, G., & Exton, C. (2018). *Child well-being and the sustainable development goals*. OECD Statistics Working Papers No. 92. Paris: OECD Publishing. doi: 10.1787/5e53b12f-en

Abstract:

This paper summarises available evidence on the distance that OECD countries need to travel in order to reach the Sustainable Development Goal (SDG) targets for children and young people. More than 50 indicators are included in this analysis, covering 43 of the 169 targets, and 11 of the 17 Goals. The analysis finds that, on average, OECD countries are still far from reaching the targets pertaining to Goals 4 “Quality education”, and 8 “Decent work and economic growth”. Goals 1 “No poverty”, 2 “Zero hunger” and 16 “Peace, justice and strong institutions” are also highlighted as priority areas. However, the results vary widely across OECD countries, and among specific targets within each of the goals. Yet, all of these findings need to be considered in light of what it is not currently possible to measure. In particular, there are large data gaps for Goals 1 (“No poverty”), 5 (“Gender equality”), 11 (“Sustainable cities and communities”), and 16 (“Peace, justice and strong institutions”).

Available at (open access): <https://doi.org/10.1787/5e53b12f-en>

Title:

Martin, A. (2018). *Bildungspolitische Steuerungspotentiale im Feld der Weiterbildung [Potentials for educational governance in continuing education]*. (Dissertation) Jacobs University Bremen. Retrieved February 15, 2019, from <http://nbn-resolving.org/urn:nbn:de:gbv:579-opus-1008042>

Abstract:

Education is one of the most important factors for the cultural, economic, political, and social development of modern societies. Consequently, all areas of education are increasingly moving into the focus of political governance demands of actors on both national and supranational levels. The achievement of such political objectives, however, poses major challenges for the actors. Especially the area of continuing education is characterized by a high degree of heterogeneity on all levels of action. Therefore, continuing education often resists direct interventions of political actors. The present cumulative thesis presents four studies that examined the political governance potentials in the area of continuing education for actors on the national and the supranational levels. The chances of successful interventions concerning the typical functions of the education system in modern society and the corresponding political objectives were analyzed on different levels of action. It was of special interest, which level of action is most suitable for political governance and what mode of coordinated social action is particularly effective. A multi-level model of continuing education was used as the basis for this research. The results show that the national framework represents a highly relevant context of continuing education behavior. Furthermore, public spending on education increases the participation of the adult residential population, with low-skilled persons especially benefitting from these expenditures. Public spending on education was used as a proxy for the degree of decommodification of the education system. Regional and local contexts, however, turn out to be less important contexts of continuing education behavior. The strongest effect on the continuing education behavior can be seen for the context of counties and cities. In addition, these administrative spatial divisions are of particular importance as coordination frameworks of regional continuing education landscapes at the level of the institutional environment of continuing education organizations. Here, the effects of politically initiated education networks on the continuing education behavior of the entire population as well as for educationally disadvantaged subpopulations were examined. The analyses identified a small but significant effect only for low-skilled males. At the level of action of the further education organizations, it was examined to what extent cooperation between continuing education centers and other institutions, as laid down in the further education laws of most federal states in Germany, are suitable for implementing

additional participations and for opening up previously inaccessible participation potentials. The results show that cooperation allows for additional course offerings, which are accompanied by additional participation. Furthermore, cooperation provides a chance for adult education centers to gain new groups of participants in the long term.

Available at (open access): <http://nbn-resolving.org/urn:nbn:de:gbv:579-opus-1008042>

Title:

Martin, J. P. (2018). *Skills for the 21st century: Findings and policy lessons from the OECD survey of adult skills*. OECD Education Working Papers No. 166. Paris: OECD Publishing. doi: 10.1787/96e69229-en

Abstract:

The OECD Survey of Adult Skills is the jewel in the crown of its Programme for the International Assessment of Adult Competencies (PIAAC). This paper argues that the findings and policy lessons from the project to date justify the high hopes which were placed in PIAAC when detailed planning for the project began in 2003. First, it presents a brief recap of PIAAC and its two predecessor international skills surveys. Second, it outlines the main themes which have been investigated to date using data from PIAAC. Third, the main findings and policy lessons drawn from PIAAC are highlighted. Finally, looking forward to the second cycle of PIAAC, for which planning is now underway, the paper suggests some priority areas for improvement to the survey design in order to add to its analytical usefulness and enhance its utility to policy makers.

Available at (open access): <https://doi.org/10.1787/96e69229-en>

Title:

Mateos-Romero, L., & Salinas-Jiménez, M. d. M. (2018). Labor mismatches: Effects on wages and on job satisfaction in 17 OECD countries. *Social Indicators Research*, 140(1), 369-391. doi: 10.1007/s11205-017-1830-y

Abstract:

This study analyzes the effects of labor mismatches on wages and on job satisfaction in seventeen OECD countries by distinguishing between educational mismatch and skills mismatch. Using data from PIAAC, the results suggest that whereas educational mismatch shows greater effects on wages, the effects of labor mismatch on job satisfaction are generally better explained by skills mismatches. Both phenomena appear to be relevant for understanding the economic effects of labor mismatch and suggest that educational mismatch is not an accurate proxy for skills mismatch, mainly when the non-monetary effects of labor mismatch are addressed.

Available at: <https://doi.org/10.1007/s11205-017-1830-y>

Title:

Mazar, Y. (2018). *Differences in skill levels of educated workers between the public and private sectors, the return to skills and the connection between them: Evidence from the PIAAC surveys*. Bank of Israel Working Papers No. 2018.01. Jerusalem: Bank of Israel. Retrieved February 15, 2019, from ftp://repec-boi.northeurope.cloudapp.azure.com/RePEc/boi/wpaper/WP_2018.01.pdf

Abstract:

This study relates to a series of countries, and examines how the private sector differs from the public sector in the distribution of cognitive skills that characterize educated workers, and what variables are correlated with these differences. We find that in almost all countries, the return on skills is

higher in the private sector, but there is a high level of variance between countries. The gap in returns in Israel is similar to the average of the other countries among men, and relatively high among women. The wider the gap is, the higher the skills of workers in the private sector are relative to the skills of those employed in the public sector. It was also found that the higher the country's per capita GDP is, the higher the skills of educated men in the public sector are relative to the skills of educated men in the private sector.

Available at (open access): ftp://repec-boi.northeurope.cloudapp.azure.com/RePEc/boi/wpaper/WP_2018.01.pdf

Title:

McQuay, L. (2018). Will robots duplicate or surpass us? The impact of job automation on tasks, productivity, and work. *Psychosociological Issues in Human Resource Management*, 6(2), 86-91. doi: 10.22381/PIHRM6220189

Abstract:

This article reviews recent literature concerning the impact of job automation on tasks, productivity, and work. Building my argument by drawing on data collected from Atlas, Autonomous Research, McKinsey Global Institute, OECD/PIAAC, Pew Research Center, PwC, and U.S. Bureau of Labor Statistics, I performed analyses and made estimates regarding percentage of adults who think it is likely that people would have a hard time finding jobs/the inequality between the rich and poor would be much worse than it is today/ economy would be more efficient/there would be new, better-paying jobs if robots and computers were able to do much of the work currently being done by humans, time spent in U.S. occupations and ability to automate, percentage of EU jobs at high risk of automation by 2030s (by sector), percentage of adults who say that in the next 50 years robots and computers will do much of the work currently done by humans, and percentage of workers who say the jobs/professions they work in now will/will not exist in 50 years.

Available at: <https://doi.org/10.22381/PIHRM6220189>

Title:

Medrano-Adan, L., Salas-Fumás, V., & Sanchez-Asin, J. (2018). *Does the dispersion of skills explain inequality in market labor income? An analysis from occupational choice models*. Social Science Research Network. doi: 10.2139/ssrn.3271577

Abstract:

This paper examines the relationship between the dispersion of general skills in the working population, and inequality in the distribution of labor income that arises from the market equilibrium from occupational choices. In general, more skilled individuals earn higher labor income in the equilibrium, and the relationship between skills and income is proportional in the occupational group of employees, but labor income increases more than proportionately with skills in the groups of solo self-employed and entrepreneur-managers. Labor income inequality at the economy level is then the result of combining the distribution of skills with the sizes of occupational groups. This paper helps to explain some apparent contradictions between the theory, which predicts a close association between dispersion of skills and labor income inequality, and the empirical evidence, using data from the PIAAC project, of no correlation between dispersion of skills and wage inequality in cross-country data.

Available at (open access): <https://dx.doi.org/10.2139/ssrn.3271577>

Title:

Mohadjer, L., & Edwards, B. (2018). Paradata and dashboards in PIAAC. *Quality Assurance in Education*, 26(2), 263-277. doi: 10.1108/QAE-06-2017-0031

Abstract:

Purpose: This paper aims to provide a brief review of the dashboard literature, an account of the development of performance dashboards for field data collection at Westat, and more specifically for the first cycle of the Programme for the International Assessment of Adult Competencies (PIAAC). A brief concluding section offers suggestions for improvements in survey dashboards for PIAAC's next cycle. **Design/methodology/approach:** To manage field work at Westat, the authors create views into various paradata databases and present them in a dashboard, showing key performance indicators at a glance. Users can drill down from the dashboard into underlying databases to investigate potential problems. The US PIAAC dashboard is a monitoring system that supports daily review of many activities. For example, it provides overnight alerts to the field supervisor when global positioning system (GPS) data from an interviewer's smartphone shows the interview occurred far from the respondent's home. **Findings:** Performance dashboards may represent best practice for monitoring field activities. Paradata sources and systems vary greatly across the PIAAC countries, but a multitude of process data exists in every country and can be used to create quality indicators and a monitoring system. PIAAC can establish standards/guidelines to improve visualization of quality metrics and management data, regardless of the local survey infrastructure. **Originality/value:** The core of the paper is a case study of the experiences on the US PIAAC implementation of dashboards to monitor survey quality, production and costs, with special attention to the issue of fabrication.

Available at: <https://doi.org/10.1108/QAE-06-2017-0031>

Title:

Molina-Domene, M. (2018). *Specialization matters in the firm size-wage gap*. CEP Discussion Papers No. 1545. London: Centre for Economic Performance, LSE. Retrieved February 15, 2019, from <http://cep.lse.ac.uk/pubs/download/dp1545.pdf>

Abstract:

This study applies the O-ring theory to explain the firm-size wage premium. It focuses on the joint role of the division of labor and employee characteristics. Including the firm heterogeneity of occupations in a standard wage regression with individual fixed effect shrinks the size coefficient by a third. Labor productivity follows a similar pattern as wages. The intuition is that individuals who work for large firms focus on a limited number of tasks become more efficient and productive, and earn higher wages. Additional predictions originating from the labor specialization hypothesis receive support from the data.

Available at (open access): <http://cep.lse.ac.uk/pubs/download/dp1545.pdf>

Title:

Moreira, L. (2018). *Health literacy for people-centred care*. OECD Health Working Papers No. 107. Paris: OECD Publishing. doi: 10.1787/d8494d3a-en

Abstract:

In the 21st century care, the old paradigm “because the doctor said so” no longer holds. Individuals are now seeking ways to understand their health options and take more control over their health decisions. But this is not an easy task. Professionals continue to use medical jargon, drug instructions are not always clear, and health information in clinical settings continue to be complex and

challenging to navigate. Widespread access to digital technologies offset some of these barriers by democratising access to health information, providing new ways to improve health knowledge and support self care. Nonetheless, when health information is misused or misinterpreted, it can wrongly influence individuals' preferences and behaviour, jeopardise their health, or put unreasonable demands on health systems.

Available at (open access): <https://doi.org/10.1787/d8494d3a-en>

Title:

Mueller, R. E., Truong, N. K., & Smoke, W. (2018). Underrepresentation of women in Canada's information and communication technology sector: What can we learn from a Canadian survey of adult skills? *Canadian Public Policy*, 44(1), 73-90. doi: 10.3138/cpp.2017-073

Abstract:

The proportion of women in Canada's information and communication technology (ICT) sector is well below their proportion in other fields. One hypothesis for this phenomenon is that women may not have the "right stuff" to be heavily involved in ICT. We use basic ICT scores derived from Statistics Canada's 2012 Survey of Adult Skills, which is the Canadian portion of the 2012 Organisation for Economic Co-operation and Development Programme for the International Assessment of Adult Competencies as a proxy for the "right stuff." We find that, after controlling for appropriate covariates, Canadian women score higher than men on basic ICT skills. However, women with the same ICT test scores are much less likely than men to be employed in ICT occupations. We also find that hourly wages in ICT occupations are lower for women, but this wage gap is no greater than that in the general labour market. Given the current and projected shortages of ICT professionals, women represent a large, yet untapped, pool of talent for this sector.

Available at (open access): <https://doi.org/10.3138/cpp.2017-073>

Title:

Muñoz de Bustillo Llorente, R., Sarkar, S., Sebastian, R., & Antón, J.-I. (2018). Educational mismatch in Europe at the turn of the century: Measurement, intensity and evolution. *International Journal of Manpower*, 39(8), 977-995. doi: 10.1108/IJM-10-2018-0327

Abstract:

Purpose: The purpose of this paper is to present the stylized facts of over-education among European graduates over time (1998-2013), paying special attention to the measurement issues. **Design/methodology/approach:** The authors use two different sources, the Programme for the International Assessment of Adult Competencies 2012, and the European Union Labour Force Survey 1998-2013, with two different aims. We employ the first one to make a detailed analysis of the different forms of measuring over-education and its implications in terms of the result obtained. The analysis of the second one responds to study the evolution and characteristics of over-education in Europe. **Findings:** In first place, the paper provides evidence of the high level of sensitivity of the level of measured over-education to the type of methodology used. Such difference is even higher when we focus on skills versus educational mismatch. The work also shows how with all their shortcomings, the measures of over-education used in the analysis point to the existence of convergence in over-education levels among the European countries of the sample (only interrupted by the crisis), in a context of reduction of over-education rates in many countries. **Practical implications.** Researchers should be particularly careful when estimating over-education, because of the strong implications in terms of the so different results obtained when choosing between competing methods. **Originality/value:** The analysis abound in the implications of the use of different methodologies of estimating over-education in terms of both size and ranking among European countries. The

production of long-run and updated estimates of overeducation for a large sample of countries using a homogenous database and different estimation methods.

Available at: <https://doi.org/10.1108/IJM-10-2018-0327>

Title:

Naval Navarro, J., Silva Becerra, J. I., & Vázquez Grenno, J. (2018). *Employment effects of on-the-job human capital acquisition*. IEB Working Paper No. 05. Barcelona: Institut d'Economia de Barcelona. Retrieved February 15, 2019, from <http://hdl.handle.net/2445/121339>

Abstract:

This paper quantifies the joint effect of on-the-job training and workers' on-the-job learning decisions on aggregate employment. We present an Index of On-the-job Human Capital Acquisition (OJHCA), based on data from the OECD Program for the International Assessment of Adult Competencies. The objective of the index is to capture both formal and informal learning in the workplace. We document a strong positive association between the two components of our index, i.e., on-the-job training and on-the-job learning. We also show that the index is positively correlated with employment across OECD economies. To explain these stylized facts, we build a search and matching model with on-the-job human capital acquisition that depends on both on-the-job training provided by firms and on the workers' level of on-the-job learning. We calibrate the model to the Canadian economy and adjust the learning and training marginal costs to match cross-country levels in the human capital index. We compare the model's predictions with the data and we conclude that differences in marginal costs are necessary to match the differences observed in employment rates across countries. We also extend the model including payroll taxes and education. The model is able to reproduce the observed differences in employment rates between countries with the highest and the lowest level of OJHCA.

Available at (open access): <http://hdl.handle.net/2445/121339>

Title:

Nedelkoska, L., & Quintini, G. (2018). *Automation, skills use and training*. OECD Social, Employment and Migration Working Papers No. 202. Paris: OECD Publishing. doi: 10.1787/2e2f4eea-en

Abstract:

This study focuses on the risk of automation and its interaction with training and the use of skills at work. Building on the expert assessment carried out by Carl Frey and Michael Osborne in 2013, the paper estimates the risk of automation for individual jobs based on the Survey of Adult Skills (PIAAC). The analysis improves on other international estimates of the individual risk of automation by using a more disaggregated occupational classification and identifying the same automation bottlenecks emerging from the experts' discussion. Hence, it more closely aligns to the initial assessment of the potential automation deriving from the development of Machine Learning. Furthermore, this study investigates the same methodology using national data from Germany and United Kingdom, providing insights into the robustness of the results. The risk of automation is estimated for the 32 OECD countries that have participated in the Survey of Adult Skills (PIAAC) so far. Beyond the share of jobs likely to be significantly disrupted by automation of production and services, the accent is put on characteristics of these jobs and the characteristics of the workers who hold them. The risk is also assessed against the use of ICT at work and the role of training in helping workers transit to new career opportunities.

Available at (open access): <https://doi.org/10.1787/2e2f4eea-en>

Title:

Nyström, K. (2018). *Job displacement and skill mismatch*. Ratio Working Paper No. 312. Stockholm: The Ratio Institute. Retrieved February 15, 2019, from http://ratio.se/app/uploads/2018/10/kn_job_displacement_and_skill_mismatch_312.pdf

Abstract:

Because of structural and technological changes, millions of employees experience job displacement every year (OECD, 2013a). Concurrently, a substantial proportion of employees can be defined as skill mismatched (OECD, 2013b). This paper explores the relationship between skill mismatch and job displacements. Are employees who are skill mismatched at their job more likely to become displaced? To explore the relationship between skill mismatch and job displacements, a dataset collected by the Programme for the International Assessment of Adult Competencies (PIAAC) from 27 countries is used. This dataset enables the identification of skill mismatch. Three measures that reflect skill mismatch in the domains of literacy, numeracy, and problem solving are used. The empirical findings suggest that overskilled employees are less likely to be displaced, while under-skilled employees are more likely to be displaced. These findings are valid for all three skill domains.

Available at (open access): http://ratio.se/app/uploads/2018/10/kn_job_displacement_and_skill_mismatch_312.pdf

Title:

O'Leary, M., Scully, D., Karakolidis, A., & Pitsia, V. (2018). The state-of-the-art in digital technology-based assessment. *European Journal of Education*, 53(2), 160-175. doi: 10.1111/ejed.12271

Abstract:

The role of digital technology in assessment has received a great deal of attention in recent years. Naturally, technology offers many practical benefits, such as increased efficiency with regard to the design, implementation and scoring of existing assessments. More importantly, it also has the potential to have profound, transformative effects on the field of assessment by facilitating the integration of formative activities with accountability requirements and broadening the range of abilities and the scope of constructs that can be assessed. This article provides an overview of the current state-of-the-art in digital technology-based assessment, with particular reference to advances in the automated scoring of constructed responses, the assessment of complex 21st century skills in large-scale assessments and innovations involving high fidelity virtual reality simulations. Key challenges with respect to each are highlighted before the extent to which digital technology is truly transforming assessment is considered.

Available at: <https://doi.org/10.1111/ejed.12271>

Title:

Obiols-Homs, F., & Sánchez-Marcos, V. (2018). Education outcomes and the labor market. *Labour Economics*, 54, 14-28. doi: 10.1016/j.labeco.2018.06.001

Abstract:

The quality of education appears to be negatively correlated with both the overeducation of workers at the tasks they perform and the unemployment rate across EU-15 countries, and positively correlated with the wage premium associated to tertiary education. We develop a model of the labor market with frictions to quantitatively investigate the impact of the education outcomes on the labor market. We show that both the ability of educated and non-educated workers have sizable effects on the incentives of firms regarding the type of vacancies they open and also regarding the incentives of educated workers as of where to search for a job. Therefore education outcomes are

relevant to understand the overeducation phenomena observed in the labor market. According to our quantitative analysis had the quality of education observed in Spain been similar to the European average then the overeducation rate would have been between 5 and 10 percentage points lower and the unemployment rate of the two types of workers would be reduced by 40%, but the tertiary education wage premium would be slightly smaller than in the benchmark economy.

Available at: <https://doi.org/10.1016/j.labeco.2018.06.001>

Title:

Organisation for Economic Cooperation and Development (OECD) (2018). *OECD economic surveys: Israel*. OECD Economic Surveys Paris: OECD Publishing. doi: 10.1787/eco_surveys-isr-2018-en

Abstract:

Israel's economy continues to register remarkable macroeconomic and fiscal performance. Growth is strong and unemployment is low. The external surplus is comfortable, and the public debt-to-GDP ratio, already well below the OECD average, is still falling. However, Israeli society remains marked by weak social cohesion and significant disparities, which penalise parts of the population and threaten the longer-term sustainability of these good results. Despite better employment outcomes among Israeli-Arabs and the Haredim, workers from these communities are often trapped in low-paid jobs due to their weak skill sets, implying persistent poverty and weak aggregate productivity. Moreover, low social transfers imply that the often large families in these communities face deprivation that contributes to child poverty. High cost of living and house prices also weigh on the social situation and well-being, and public transport deficiencies are detrimental to work-life balance and cause urban congestion and poor air quality. The authorities have continued their reform process over the last few years to address these issues. Making growth stronger, more inclusive and more sustainable will require further action and more public investment in education to improve the skills of Israeli-Arabs and Haredim together with additional product market reforms and better transport infrastructure.

Available at (open access): https://doi.org/10.1787/eco_surveys-isr-2018-en

Title:

Olsen, D. S., & Tikkanen, T. (2018). The developing field of workplace learning and the contribution of PIAAC. *International Journal of Lifelong Education*, 37(5), 546-559. doi: 10.1080/02601370.2018.1497720

Abstract:

There has been a prolific production of research papers on workplace learning (WPL) during the last two decades. Several reviews of the field discuss the development of themes, the use of foundational terms and some different models and frameworks have been developed. The purpose of this article is to analyse the recent development of the field of WPL, as presented in research literature, and to evaluate the potential of international survey data from the Programme for the International Assessment of Adult Competencies (PIAAC) to contribute to this development. Our study is organised in three stages. Firstly, we summarise the main topics and trends emerging from recent literature on WPL. Secondly, we analyse how peer-reviewed publications using data from the OECD PIAAC survey have contributed to WPL. Thirdly, we compare and discuss the different contributions and make some suggestions as to how PIAAC survey data might be used to further develop our understanding of WPL.

Available at (open access): <https://doi.org/10.1080/02601370.2018.1497720>

Title:

Oughton, H. M. (2018). Disrupting dominant discourses: A (re) introduction to social practice theories of adult numeracy. *Numeracy*, 11(1), 20. doi: 10.5038/1936-4660.11.1.2

Abstract:

The role of dominant discourse in constructing a deficit view of adult numeracy is examined, using reports from recent international surveys of adult skills as illustrative examples. Social practice theory is introduced as an alternative perspective for examining the ways adults actually use numeracy in their daily lives and work. This perspective suggests the test items used by large-scale surveys such as PIAAC are only proxies for real-life numeracy skills, and that performance in such tests may misrepresent the numeracy skills of adults. Instead, social practice theory suggests that adults may have informal, situated numeracy practices that serve them adequately in their daily lives. However, it also draws attention to the difficulty of transferring mathematics from the classroom to everyday numeracy situations, while it recognizes that adult numeracy learners may be motivated by other goals than functional numeracy, such as personal fulfillment or a gateway qualification. Alternative approaches to classroom teaching for adult students are suggested which acknowledge and draw on adults' rich and varied experiences; the challenges and tensions of such approaches are explored.

Available at (open access): <https://doi.org/10.5038/1936-4660.11.1.2>

Title:

Palczynska, M. (2018). *Wage premia for skills: The complementarity of cognitive and non-cognitive skills*. IBS Working Papers No. 09. Warszawa: Instytut Badan Strukturalnych. Retrieved February 15, 2019, from http://ibs.org.pl/app/uploads/2018/12/IBS_Working_Paper_09_2018.pdf

Abstract:

This paper provides evidence on the association between individuals' cognitive abilities, personality traits, and earnings. I find that cognitive skills and certain personality traits are complements. In particular, I find that cognitive skills and emotional stability are complementary, with neurotic individuals having significantly lower returns to their cognitive skills. Furthermore, my results indicate that agreeableness, neuroticism, and – surprisingly – grit are penalised significantly in the labour market; and that there is a positive relationship between conscientiousness and wages. Finally, I observe that, contrary to previous findings, women and men have similar returns to personality traits. I use well-established measures of cognitive skills and personality: namely, competence tests from the PIAAC survey to assess cognitive skills, as well as the Big Five inventory and the Grit scale to assess personality traits.

Available at (open access): http://ibs.org.pl/app/uploads/2018/12/IBS_Working_Paper_09_2018.pdf

Title:

Palczyńska, M. (2018). *Does personality impact the returns to cognitive skills?* Warsaw: Institute for Structural Research, Warsaw School of Economics. Retrieved February 15, 2019, from http://conference.iza.org/conference_files/WoLabConf_2018/palczynska_m26767.pdf

Abstract:

This paper provides evidence on the relationship between individuals' cognitive abilities, their personality measured by the Big Five inventory and earnings. Using data from the Polish Follow-up Study to the Programme for International Assessment of Adult Competencies (postPIAAC) I find that the returns to cognitive skills depend on the personality of an individual: neurotic individuals experience significantly lower returns to their cognitive skills. Results also indicate that agreeableness

and neuroticism are penalized significantly in the Polish labour market and that there is a positive relationship between conscientiousness and wages. Moreover, unlike previous literature, I find no substantial gender discrepancies in the personality associations with wages.

Available at (open access): http://conference.iza.org/conference_files/WoLabConf_2018/palczynska_m26767.pdf

Title:

Palczyńska, M., & K. (2018). Personality, cognitive skills and life outcomes: Evidence from the Polish follow-up study to PIAAC. *Large-scale Assessments in Education*, 6(2), 1-23. doi: 10.1186/s40536-018-0056-z

Abstract:

Background: There is a growing literature providing evidence on the importance of non-cognitive skills for life outcomes. However, to date there is limited evidence on the gains from incorporating such measures into large-scale competence surveys. Methods: We investigate the relationship between personality traits and eight important life outcomes: educational attainment, labour market participation, employability, wages, job satisfaction, health, trust and life satisfaction measured in the Polish follow-up study to PIAAC. The study assesses two short scales: the Big Five Inventory and Grit. First, we compare explanatory power of personality traits to that of cognitive skills measured by PIAAC. Second, an incremental validity of Grit after controlling for the Big Five dimensions is assessed. Results: The analyses show that differences in personality traits are important in explaining differences in life outcomes. Educational attainment is more strongly related to cognitive skills, while for wages, the explanatory power of personality and cognitive skills is similar. For most of the subjective outcomes, the Big Five traits outperform cognitive skills in predictive power. Conscientiousness is positively related to most of the outcomes analysed while Neuroticism has a negative relationship. After controlling for sociodemographic characteristics and cognitive skills, Big Five traits add explanatory power to all models except for employability. Grit explains some additional variation in educational attainment and in a number of subjective outcomes: health, trust, job and life satisfaction, even after adjusting for the effects of cognitive skills and Big Five traits. Conclusions: Given the potential benefits and relatively small burden on respondents in terms of required time it seems advisable to incorporate measures of personality traits into competence surveys as they contribute to explaining the variability in policy-relevant outcomes. The use of the Big Five Inventory seems preferable to Grit when a broad range of life outcomes is of interest, as the former covers multiple aspects of personality. However, using both scales offers an improvement in explanatory power.

Available at (open access): <https://doi.org/10.1186/s40536-018-0056-z>

Title:

Pareliussen, J., & Hwang, H. (2018). *Benefit reform for employment and equal opportunity in Finland*. OECD Economics Department Working Papers, No. 1467. Paris: OECD Publishing. doi: 10.1787/26e12903-en

Abstract:

The combination of different working-age benefits, childcare costs and income taxation creates complexity, reduces work incentives and holds back employment. Major disincentives in Finland are related to tapering rules for unemployment benefits, social assistance and the housing benefit, the extended unemployment benefit for older workers, the childcare fee structure and the homecare allowance. Improved benefit design combined with efficient activation policies can reduce complexity and remove the strongest disincentives while minimising adverse fiscal and social impacts.

Replacing current benefits with a basic income would improve incentives for many, but with a drastic redistribution of income and likely increasing poverty as a result. Merging working-age benefits with similar aims and coordinating their tapering against earnings would on the other hand consistently improve work incentives and transparency, while preserving social protection. Once the new income registry comes online, linking benefit payments to real-time incomes, combined with strengthened work incentives, would make for a truly efficient and inclusive benefit system, fit for the future of work. This Working Paper relates to the 2018 OECD Economic Survey of Finland (www.oecd.org/eco/surveys/economic-survey-finland.htm).

Available at: <https://doi.org/10.1787/26e12903-en>

Title:

Parteka, A., Wolszczak-Derlacz, J., & others (2018). *Wage response to global production links - evidence for workers from 28 European countries (2005-2014)*. Working Paper Series A No. 5. Gdansk: Faculty of Management and Economics, Gdansk University of Technology. Retrieved February 15, 2019, from <http://hdl.handle.net/10419/202499>

Abstract:

By using very rich individual-level data on workers from 28 European countries, we provide the first so extensive cross-country assessment of wage response to global production links within global value chains (GVCs) in the period 2005–2014. Unlike the other studies, we (i) address the importance of backward links in globally integrated production structures (capturing imports of goods and services required in any stage of the production of the final product); (ii) measure the occupational task profile of workers with new country-specific indices of routinisation; (iii) compare the impact of global production links on wages between workers from Western, Central–Eastern, and Southern Europe employed in manufacturing and non-manufacturing sectors; and (iv) account for direct and indirect dependence on GVC imports from developing and high-income countries. We consider the potential endogeneity problems. Our results suggest that global import intensity of production exhibits negative pressure on wages in Europe. This effect mainly concerns workers from Western Europe employed in manufacturing and is driven by production links with non-high-income countries. Our counterfactual estimates suggest that the effect for all of Europe is small, but the pressure of GVC imports on wages in Western Europe is not economically negligible, in particular when inputs are from less developed countries including China.

Available at (open access): <http://hdl.handle.net/10419/202499>

Title:

Patterson, M. B. (2018). *Incarcerated adults with low skills: Findings from the 2014 PIAAC Prison study*. Vienna: Research Allies for Lifelong Learning. Retrieved February 15, 2019, from http://researchallies.org/wp-content/uploads/2018/08/2018_Patterson_Incarcerated-Adults-with-Low-Skills_Final.pdf

Abstract:

Incarcerated men and women in state and federal prisons face multiple educational and economic challenges. Disabilities and health concerns of incarcerated adults exceed that of the general population. Despite widespread availability of correctional education programs in prisons, only a small proportion of prisoners completes them. Employing quantitative data from the Programme for the International Assessment of Adult Competencies (PIAAC) Prison Study (2014), this paper investigates the characteristics and assessed skill levels of incarcerated adults with less than high school education attainment. It considers how characteristics and assessed skill levels differ by gender and from the general population, as well as the role of current and future learning in the lives of

incarcerated adults with low skills. Findings include educational and health vulnerabilities for men and women that may be heightened in already-stressed, impoverished communities. Adults in correctional education programs cite future jobs after release and gaining knowledge as reasons to attend; the same reasons are prominent as motivations for future learning. Even so, the proportion of adults completing these programs and gaining credentials is even lower than earlier research reported.

Available at (open access): http://researchallies.org/wpcontent/uploads/2018/08/2018_Patterson_Incarcerated-Adults-with-Low-Skills_Final.pdf

Title:

Patterson, M. B., & Song, W. (2018). *Critiquing adult participation in education, report 1: Deterrents and solutions*. Vienna: Research Allies for Lifelong Learning. Retrieved February 15, 2019, from <https://static1.squarespace.com/static/560d5789e4b015789104a87e/t/5b0836968a922dcd7645c2b8/1527264943963/CAPE-Report-1-Deterrents-and-Solutions.pdf>

Abstract:

A recent report, *The Forgotten 90%*, revealed that only 10% of adults who need basic skills participate in the U.S. adult education system (Patterson, 2018). Educators and policymakers might ask the following important questions: What about the other 90%? Which deterrents do these nonparticipants face—and what might engage them to participate in adult education? VALUEUSA, a national non-profit organization committed to adult learner involvement and leadership, believed adults themselves could best answer questions on nonparticipation. VALUEUSA partnered with Research Allies for Lifelong Learning on the Critiquing Adult Participation in Education (CAPE) project to identify deterrents and seek solutions. CAPE researchers conducted 25 group interviews with 125 adults in Florida, Kansas, Louisiana, Ohio, and Virginia. Interview sites included employment agencies and workforce and community service non-profits. None of the interviewees were currently engaged in adult education and three-fourths had never been. Adults identified and prioritized deterrents and solutions with researchers. The findings of this first in a series of CAPE reports are intended to inform policymakers and adult educators as they seek to engage more of the forgotten 90% in adult education. Before interviews, adults took brief surveys. Survey and interviews yielded findings on value of education and access to technology by nonparticipants. Adults had high rates of agreement with positive survey statements on value of education. During interviews, however, adults expressed more nuanced opinions, with many valuing education positively and others neutral or unsure. Technology access is an indicator of whether adults can access solutions for learning when they cannot get to adult education in person. Surveys revealed most adults were currently online, and nearly all with access did so by smartphone.

Available at (open access): <https://static1.squarespace.com/static/560d5789e4b015789104a87e/t/5b0836968a922dcd7645c2b8/1527264943963/CAPE-Report-1-Deterrents-and-Solutions.pdf>

Title:

Pena, A. A. (2018). Skills and economic inequality across race and ethnicity in the United States: New evidence on wage discrimination using PIAAC. *The Review of Black Political Economy*, 45(1), 40-68. doi: 10.1177/0034644618770834

Abstract:

Using skill and earnings data from the OECD's newly released Programme for the International Assessment of Adult Competencies (PIAAC) and decomposition methodology from literature on economic distributions across countries, this research provides new evidence about the limited extent to which levels of and rates of return to skills explain unequal wage distributions in subgroups

defined by race and ethnicity in the United States. The specific importance of PIAAC skill levels and of rates of return to skill varies substantially between racial and ethnic minorities relative to Whites and across the upper and lower parts of the wage distribution, while unobservables remain critical. These findings about differential characteristics of wage spreads are in contrast to relatively high correlations between the means of wage distributions and the more comprehensively defined skill measures observed in PIAAC (in comparison to those that have been examined in past literature), and are robust to the inclusion of other observable human capital and socioeconomic determinants. Results have implications for understanding how formal and informal institutions, discrimination, and labor market compensation practices may translate differentially across racial and ethnic groups and into observed variation in earnings.

Available at (open access): <https://doi.org/10.1177/0034644618770834>

Title:

Pensiero, N., & Green, A. (2018). The effects of post-compulsory education and training systems on literacy and numeracy skills: A comparative analysis using PISA 2000 and the 2011 survey of adult skills. *European Journal of Education*, 53(2), 238-253. doi: 10.1111/ejed.12268

Abstract:

This article analyses the contribution of post-compulsory education and training systems to the development of literacy and numeracy skills across OECD countries. While there is extensive cross-country comparative research on the effects of primary and lower secondary education systems on aggregate skills levels, there has been little comparative analysis of system effects after the end of lower secondary education. This article uses a quasi-cohort analysis of the tested literacy and numeracy skills of 15-year-olds in PISA 2000 and 27-year-olds in the 2011 OECD Survey of Adult Skills (SAS) to estimate the gains in different countries in mean levels of competence in literacy and numeracy. We found that Nordic countries (Norway and Sweden) with comprehensive upper secondary education and training systems and German-speaking countries (Austria and Germany) with dual systems of apprenticeship were particularly effective, whilst countries with mixed systems (England, Ireland, Northern Ireland and Spain) showed a relative decline in both literacy and numeracy. The education system characteristics that account for these differences are (a) the inclusiveness – as proxied by high rates of participation at 17/18 and low social gradients of level 3 completion; (b) the esteem of vocational programmes; and (c) curriculum standardisation with regard to the study of maths and the national language.

Available at (open access): <https://doi.org/10.1111/ejed.12268>

Title:

Perry, A., Maehler, D. B., & Rammstedt, B. (2018). Introduction to the special issue on results, methodological aspects, and advancements of the Programme for the International Assessment of Adult Competencies (PIAAC). *Large-scale Assessments in Education*, 6(14), 1-6. doi: 10.1186/s40536-018-0066-x

Abstract:

The interdisciplinary contributions in this special issue on Results, Methodological Aspects and Advancements of the Programme for the International Assessment of Adult Competencies (PIAAC) in Large-Scale Assessments in Education present innovative findings and contribute to the theoretical development of competence assessment in adulthood, support the better dissemination of the PIAAC data, and aim to further methodological developments in large-scale assessment in education.

Available at (open access): <https://doi.org/10.1186/s40536-018-0066-x>

Title:

Perry, K. H., Shaw, D. M., Ivanyuk, L., & Tham, Y. S. S. (2018). The “ofcourseness” of functional literacy: Ideologies in adult literacy. *Journal of Literacy Research, 50*(1), 74-96. doi: 10.1177%2F1086296X17753262

Abstract:

We used metastudy and metasynthesis techniques to conduct a discursive review of 101 recent publications on the topic of adult functional literacy (FL). Our purpose was to understand the ideologies shaping current definitions and conceptualizations of FL, as well as how and why FL is researched and assessed as it is. Using discursive review techniques, we analyzed instances of legitimation, dissimulation, reification, and “ofcourseness” to explore the ideological underpinnings of the field. Close analysis of three passages related to theory, research, and assessment illustrates ideological patterns in what “counts” as FL. These patterns are grounded in ideological divisions between cognitive and sociocultural perspectives on FL—the effects of which we traced through our findings on what “counts” as FL, the logics of inquiry that undergird the field, and the ways in which these ideologies shape adult literacy assessment. Our discussion considers the larger implications of these ideologies: What is legitimated or reified, and what is ignored, dismissed, or subsumed, by these ways of conceptualizing FL? We offer future directions and raise important questions that arise from these conclusions.

Available at (open access): <https://doi.org/10.1177%2F1086296X17753262>

Title:

Popescu, G. H., Petrescu, I. E., Sabie, O. M., & Musat, M. (2018). Labor-displacing technological change and worldwide economic insecurity: How automation and the creation of innovative tasks shape inequality. *Psychosociological Issues in Human Resource Management, 6*(2), 80-85. doi: 10.22381/PIHRM6220188

Abstract:

Research evidence suggests that automation and the creation of innovative tasks shape inequality, generating labor-displacing technological change and worldwide economic insecurity. Using and replicating data from Frey and Osborne (2013), McKinsey Global Institute, OECD PIAAC, Pew Research Center, PwC, Statista, U.S. Bureau of Labor Statistics, we performed analyses and made estimates regarding percentage of workers in each group who say that in 50 years robots and computers will do much of the work currently done by humans, percentage within each group who think their current jobs will definitely/probably exist in 50 years, probability of job automation by education, potential jobs at high risk of automation, and percentage of existing jobs at potential risk of automation.

Available at: <https://doi.org/10.22381/PIHRM6220188>

Title:

Popov, D., & Strelnikova, A. (2018). The problem of the discrepancy between work, education, and literacy in Russia. *Russian Education & Society, 60*(6), 520-535. doi: 10.1080/10609393.2018.1527130

Abstract:

This article studies the problem of the discrepancy between attained education and employment in Russia. Our research relies on the results of an international study of adult competencies (Programme for the International Assessment of Adult Competencies, or PIAAC) that measured the reading literacy and numeracy of working-age people using representative national samples. The test results of OECD countries demonstrate that there is a connection with the level of formal education.

However, we observed several deviations from this general trend in Russia. An analysis has allowed us to identify three types of discrepancies. We discovered that there is no linear relationship between the level of formal education and measured literacy in Russia. Gains in competency slow down at the higher education level in Russia. At the same time, the literacy level that was observed at the lower educational stages was in line with what was observed in leading countries from around the world. It was discovered that a larger share of people with a low level of literacy occupy high-skilled jobs in Russia than in developed countries. When we assess the distribution of people with a particular formal education on the labor market in Russia, we see a picture that is very similar to what we can observe in the OECD countries. Apparently, this discrepancy has remained hidden because of the unreliability of the educational indicator of possessing a higher education degree. This indicator has been used as the main (and in most cases the only) factor in both sociological and economic studies that have been conducted in Russia. The third empirical finding of our study indicates that there is a correspondence between the importance assigned to measured literacy and possessing a higher education degree in the job placement process. In Russia, both factors seem to be significant, but measured literacy is more strongly correlated with the likelihood of being employed than possessing a formal degree. At the same time, the difference in income level among respondents with low and high rates of literacy in Russia is much less than in the OECD countries. We interpret the quantitative measurements in light of qualitative data from a research project that studied life trajectories.

Available at: <https://doi.org/10.1080/10609393.2018.1527130>

Title:

Provasnik, S. (2018). *Analyzing U.S. young adults' skills by student and employment status: Methodology for a new PIAAC variable with initial results*. No. 122. Washington: National Center for Education Statistics. Retrieved February 15, 2019, from <https://nces.ed.gov/pubs2018/2018122.pdf>

Abstract:

The Program for the International Assessment of Adult Competencies (PIAAC) is a cyclical, large-scale study of adult cognitive skills and life experiences. The study focuses on cognitive skills in three domains: literacy, numeracy, and problem solving in technology-rich environments. The purpose of this report is to provide researchers a simple and efficient way of investigating policy issues related to young adults (age 16-34) and their transition into the labor force using PIAAC data. In particular, the report introduces a student-and-employment status variable, explains how this variable was developed, and illustrates the use of the variable, reporting skills by student and employment status. The initial PIAAC 2012/2014 First Look report was released in 2016.

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2018122>

Title:

Rasmusson, M., Albæk, K., Lind, P., & Myrberg, M. (2018). Cognitive foundation skills following vocational versus general upper-secondary education: A long-term perspective. *Scandinavian Journal of Educational Research*, 1-22. doi: 10.1080/00313831.2018.1466361

Abstract:

The present study aims at investigating the long-term cognitive effects of vocational education and training (VET) in Sweden and Denmark using data from the PIAAC Survey of Adult Skills. While Sweden has moved towards a more academic vocational education, Denmark has kept the apprenticeship system. Using multiple regression analysis we estimate the contribution of VET versus general upper-secondary education to the proficiency in literacy. The results show a higher literacy performance in those Swedish age groups in more academic VET programmes compared to the older

Swedish age groups and to all the Danish age groups. A reasonable interpretation is that the amount of cognitively challenging subjects at the upper-secondary level gives a lasting imprint on literacy proficiency later in life.

Available at (open access): <https://doi.org/10.1080/00313831.2018.1466361>

Title:

Redmer, A., Heilmann, L., & Grotlüschen, A. (2018). Grundkompetenzen und Hochschulzugang. Zur Rolle von Literalität und Numeralität beim Zugang zur Hochschule [Basic competences and access to higher education. On the role of literacy and numeracy in access to higher education]. *Magazin Erwachsenenbildung.at*, 34, 10. Retrieved February 15, 2019, from <http://nbn-resolving.org/urn:nbn:de:0111-pedocs-157364>

Abstract:

Do basic competences determine access to tertiary education? Can significant differences in reading competence and basic math competence be detected between children from non-academic households who have gained access to higher education and children from academic households with access to higher education? Based on a secondary analysis of PIAAC data from 2011/2012, the article describes what significance basic competences may have during the transition to university. It examines the literacy and basic math competences of a small test group from Austria and Germany composed of people who obtained access to higher education less than five years ago. The result of the investigation: the transition from being admitted to a university to attending university is influenced by neither basic competences nor parental educational background if admission has already been granted. The mechanisms of exclusion due to the educational background of the parents seem to have an effect before admission to a university is granted. (DIPF/Orig.)

Available at (open access): <http://nbn-resolving.org/urn:nbn:de:0111-pedocs-157364>

Title:

Ridao-Cano, C., & Bodewig, C. (2018). *Growing united: Upgrading Europe's convergence machine*. World Bank Report on the European Union Washington: World Bank. doi: 10.1596/29448

Abstract:

Since its foundation over sixty years ago, the European Union (EU) has become the modern world's greatest "convergence machine", propelling poorer, and newer, member states to become high-income economies, and delivering to its citizens some of the highest living standards and lowest levels of income inequality in the world. But today, Europeans are increasingly recognizing that convergence is not automatic. Inequality among people has been mounting in many parts of the EU since the 1990s, as low-income Europeans are falling behind in the labor market. And the productivity gap between Southern and Northern member states has been widening since the early 2000s. The EU is growing, but Europeans are not "growing united". Why? *Growing United* argues that technological change, by revolutionizing product and labor markets, is slowing down the old convergence machine: technology offers ever richer opportunities for well-skilled workers and frontier firms, while low-skilled workers and less productive firms risk falling behind. As a result, countries that provide less opportunities for people to build relevant skills and a less supportive environment for firms to thrive are losing ground. This calls for an upgrade to Europe's convergence machine, to seize the benefits of technological change for all Europeans. *Growing United* argues that the convergence machine, version 2.0, should focus on the convergence of opportunities for people and firms across the Union. It should support the capabilities of people (skills) and firms (innovation), and provide a level-playing field for people and firms through "flexicure" labor markets and an enabling business environment.

Available at (open access): <https://doi.org/10.1596/29448>

Title:

Romero, L. M., & Mar Salinas-Jiménez, M. (2018). Skills use in the workplace and its effects on wages and on job satisfaction: An application to the Spanish case. *Personnel Review*, 47(2), 494-516. doi: 10.1108/PR-03-2017-0088

Abstract:

The purpose of this paper is to analyze the effects of labor mismatches on wages and on job satisfaction for the Spanish case, with a distinction been made between educational and skills-related measures of mismatch. Design/methodology/approach: The focus is placed on the usage that the individuals do of their skills in the workplace and different measures of skills use are considered to check the robustness of the results. Findings: Using data from PIAAC, the results suggest that whereas educational mismatch shows greater effects on wages, the effects of labor mismatch on job satisfaction are better explained by the relative use of individual skills in the workplace. Research limitations/implications: Both educational and skills mismatches are relevant for understanding the economic effects of labor mismatch. Nevertheless, it should be taken into account that educational mismatch is not an accurate proxy for skills mismatch, mainly when the non-monetary effects of labor mismatch are addressed. Practical implications There is room to increase workers' skills utilization in the workplace, which, in turn, would contribute to enhance individual job satisfaction and, consequently, workers productivity. Social implications A process of upgrading in the Spanish labor market would allow to take full advantage of recent investments in education and skills formation done in the country in the last decades. Originality/value: This study contributes to the literature on labor mismatch by explicitly considering that educational and skills mismatch might reflect different phenomena and by analyzing the effects of both types of mismatches on different labor market outcomes.

Available at: <https://doi.org/10.1108/PR-03-2017-0088>

Title:

Rubenson, K. (2018). Conceptualizing participation in adult learning and education: Equity issues. In M. Milana, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The Palgrave International Handbook on Adult and Lifelong Education and Learning* (pp. 337-357). London: Palgrave Macmillan UK. doi: 10.1057/978-1-137-55783-4_18

Abstract:

The policy interest in adult learning and education raises issues not only about the extent of participation but also more fundamentally about who participates and the social construction of inequalities in adult learning and education. However, to judge participation is not a straightforward task as the figures are highly dependent on how adult learning and education is being understood. The purpose of this chapter is to explore rates and inequalities in participation in a comparative perspective, while at the same time being mindful of how adult learning and education is being conceptualized and measured. The examination of what understanding of adult learning and education is driving the collection of information on participation points to fundamental shortcomings in the way the data have been classified. There exists a noticeable job-related bias, particularly in the PIAAC survey and forms of adult learning and education that may be important for fostering democratic traditions to become marginalized. Looking at trends in participation, two broad interrelated trends are evident, rising participation rates and a dramatic increase in employer-supported learning activities. The analyses reveal major inequalities in participation in all countries, but it should

be noted that they are more severe in some countries than others which can be explained by differences in welfare state regime.

Available at: https://doi.org/10.1057/978-1-137-55783-4_18

Title:

Rüber, I. E., Rees, S.-L., & Schmidt-Hertha, B. (2018). Lifelong learning - lifelong returns? A new theoretical framework for the analysis of civic returns on adult learning. *International Review of Education*, 64(5), 543-562. doi: 10.1007/s11159-018-9738-6

Abstract:

Education is associated with a wide range of positive outcomes such as higher wages and employability, but also with increased well-being or volunteering. While previous research focused mainly on returns on formal education in schools or universities, there has been a notable shift in recent years towards the analysis of returns on adult learning. While research has established theory-driven empirical evidence concerning labour market-related outcomes, it fails to identify and coherently explain non-monetary outcomes. The authors of this article review 13 empirical studies on different forms of civic participation as a return on engagement in adult learning. Individuals' civic participation is one precondition to social cohesion and functioning citizenship at a societal level and thus a factor of high political and societal relevance. All the studies reviewed in this article suggest a positive association between adult learning and civic engagement. To what extent this association is causal, however, remains an open question. The authors argue that any efforts to identify such causality must begin with a number of theoretical assumptions about the mechanisms through which learning may influence civic participation. By linking the theoretical ideas of the studies reviewed with the literature on volunteering, the authors suggest a new theoretical framework, which may guide further research.

Available at: <https://doi.org/10.1007/s11159-018-9738-6>

Title:

Ryu, K. (2018). Labor market dualism and the wage penalty for temporary employment: Evidence on the interplay of employment protection legislation and labor market institutions from PIAAC data. *Development and Society*, 47(4), 535-562.

Abstract:

This paper analyzes how employment protection legislation (EPL) shapes wage gaps by labor contract status among 19 countries. Drawing on the Survey of Adult Skills (PIAAC), it attempts to delineate whether the effects of overall EPL and EPL by contract status have the inequality enhancing or reducing effects for employees on fixed-term contract with other labor market institutions taken into account. The results suggest that strict overall employment protection works to the disadvantage of temporary employees and that employment protection dualism by contract status has a further negative effect on wages gaps. Finally, implications regarding labor market reform have been suggested.

Available at: <https://www.jstor.org/stable/26554717>

Title:

Saal, L. K., Gholson, M., Machtmes, K., & Machtmes, R. (2018). *Associations between adults' numeracy skills and employment status: An analysis of PIAAC's US dataset*. Commissioned Paper Washington: American Institutes for Research. Retrieved February 15, 2019, from <https://static1.>

squarespace.com/static/51bb74b8e4b0139570ddf020/t/5be486bcf950b74caa092c42/1541703356167/2018_Saal_Gholson_Machtmes_Machtmes_Numeracy_EmploymentStatus.pdf

Abstract:

While many U.S. adult education programs and policies (including the Workforce Innovation and Opportunity Act (WIOA)) focus on low literacy skill as a barrier to employment, this study recognizes the role of increasing numeracy skill as critical in reducing the probability of unemployment. This study used a series of regression analyses to examine the relationship between numeracy skills and practices and employment status across four categories (currently employed, no experience with paid work, short-term unemployment, and long-term unemployment). Variables investigated included: participants' scale scores on literacy, numeracy, and PS-TRE assessments and selected demographic characteristics. Methods and Data Source: We ran several sets of analyses on the 2012/14 PIAAC U.S. public use data files using Stata 13. In order to answer our research questions, descriptive statistics for all variables as well as a series of multinomial logistic regression models were run utilizing numeracy, literacy, and problem solving in technology-rich environments as the independent variables and employment status/work history as the dependent variable. The initial logistic regression model was first run using only the independent and dependent variables. Next, a model was run including additional control variables with the exception of the six numeracy skill use in everyday life variables. Finally, a model isolating numeracy skill as assessed by PIAAC, the six numeracy skill use in everyday life variables, employment status, and all control variables was run. Key Results: Only increases in numeracy skills were protective of the (un)employment categories of no experience with paid work and long-term unemployment after all variables were added to the model. The study's results point to the centrality of advanced numeracy skills as protective of continued employment for marginalized groups in the U.S. like women, older adults, and some people of color. Further, some numeracy related everyday life skills were related to employment status.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5be486bcf950b74caa092c42/1541703356167/2018_Saal_Gholson_Machtmes_Machtmes_Numeracy_EmploymentStatus.pdf

Title:

Salvatori, E. (2018). *Data analytics for educational processes: assessing basic skills of adult students* (Dissertation). Università di Pisa. Retrieved February 15, 2019, from <https://etd.adm.unipi.it/theses/available/etd-10082018-110643/unrestricted/TesiElenaSalvatori.pdf>

Abstract:

The EC publication "Horizon Report Europe: 2014 Schools Edition", analyzed the emerging technologies and their impact on education. The report identified a number of trends and challenges to be faced by educational institutions in the near future. The educational data, made available thanks to the introduction of web-based learning systems and the large scale adoption of ICT in education, allows the analysis of the named trends and challenges through different types of analytics. These include Educational Data Mining, Learning Analytics and Academic Analytics. At the same time, the contemporary information society is mostly grounded on text-based technologies where reading, writing and numeracy skills play a fundamental role. International, European and national organizations, recognizing the strategic importance of human capital for economic growth, have placed a lot of efforts in defining core skills. OECD developed a strategy called "Better skills. Better jobs. Better lives" to help countries analyze their national skills systems. The most relevant program launched by OECD has been the Survey PIAAC which started in 2012 and was later on supported by a tool called EsOnline. Furthermore, in Italy, the national school reform identified the certification of basic skills as one of the priorities to be implemented. This research intends to investigate the possible use of EsOnline precisely to respond to this need. Two case studies were developed, the

first intended to test EsOnline in a real adult education setting, in Grosseto, Italy. A second case study was based on the data available through the 2012 PIAAC Survey covering more than 30 countries including Italy.

Available at (open access): <https://etd.adm.unipi.it/theses/available/etd-10082018-110643/unrestricted/TesiElenaSalvatori.pdf>

Title:

Schmidt-Hertha, B. (2018). Kompetenzerwerb im Lebenslauf: Ergebnisse aus PIAAC und CiLL [Acquiring competences through life: Results based on PIAAC and CiLL]. In C. Hof & H. Rosenberg (Eds.), *Lernen im Lebenslauf: Theoretische Perspektiven und empirische Zugänge* (pp. 121-37). Wiesbaden: Springer Fachmedien. doi: 10.1007/978-3-658-19953-1_7

Abstract:

The article focuses on competence development from a lifespan perspective and uses data from PIAAC and CiLL studies. Literacy is much more pronounced with younger adults than with older ones, although cross-sectional data age or cohort effects could not be distinguished. At the same time, literacy is associated with further training behavior, even if controlled for school and vocational training. Finally, qualitative studies have shown, e.g. on media skills development in old age, that competence development is also likely in older adulthood. [Note from editors]

Available at: https://doi.org/10.1007/978-3-658-19953-1_7

Title:

Schneider, S. (2018). Education in OECD's PIAAC study: How well do different harmonized measures predict skills? *methods, data, analyses*, 12(1), 26. doi: 10.12758/mda.2017.15

Abstract:

The comparable measurement of educational attainment is a challenge for all comparative surveys and cross-national data analyses. While education is an important predictor or control variable in many research contexts, it is particularly important when studying education and education-related outcomes such as skills or labor market chances. This study evaluates the cross-nationally comparable measurement of education in OECD's Programme for the International Assessment of Adult Competencies, PIAAC, in terms of its construct validity when predicting general basic skills. In order to do so, the predictive power of country-specific (i.e. non-comparable) education variables is compared to the predictive power of different cross-nationally harmonized variables, namely the detailed ISCED-based coding scheme used in PIAAC, ISCED 2011 and 1997 levels, the broad education levels 'low, medium, high', ES-ISCED, as well as years of education. The analyses consist in sets of country-wise linear regressions, taking PIAAC's plausible values and complex sampling into account, and use adjusted R² as the indicator for predictive power and validity. The results show that while harmonization into a detailed coding scheme such as the most detailed comparable variable available in PIAAC does not entail large losses of information, the way this variable is further simplified plays a major role for validity. The paper also highlights shortcomings of the detailed variable from a theoretical point of view, such as the lack of differentiation of vocational and general education and other markers of educational content and quality, which are important aspects both for skill development as well as the labor market outcomes of education, and of the country-specific measures of education, which may make the detailed PIAAC education variable look better than it actually is.

Available at (open access): <https://doi.org/10.12758/mda.2017.15>

Title:

Schramek, R., Kricheldorf, C., Schmidt-Hertha, B., & Steinfurt-Diedenhofen, J. (2018). *Alter (n)-Lernen-Bildung: Ein Handbuch [Age – Learning - Education: A Handbook]*. Stuttgart: Kohlhammer Verlag.

Abstract:

The Handbook Age - Learning - Education links these scientific discourses together and for the first time offers a common conceptual foundation for a comprehensive theory of learning and education in and for age (s). It enables quick orientation to the "state of the art" in research, unfolds the broad spectrum of innovative concepts and approaches of learning and educational processes for the second half of life and concretizes them with a view to practice.

Available at: <https://www.kohlhammer.de/wms/instances/KOB/appDE/Paedagogik/Allgemein/Altern-Lernen-Bildung-978-3-17-032751-1>

Title:

Schwellnus, C., Pak, M., Pionnier, P.-A., & Crivellaro, E. (2018). *Labour share developments over the past two decades*. OECD Economics Department Working Papers No. 1503. Paris: OECD Publishing. doi: 10.1787/3eb9f9ed-en

Abstract:

Over the past two decades, real median wage growth in many OECD countries has decoupled from labour productivity growth, partly reflecting declines in labour income shares. This paper analyses the drivers of labour share developments using a combination of industry- and firm-level data. Technological change in the investment goods-producing sector and greater global value chain participation have compressed labour shares, but the effect of technological change has been significantly less pronounced for high-skilled workers. Countries with falling labour shares have witnessed both a decline at the technological frontier and a reallocation of market shares toward "superstar" firms with low labour shares ("winner-takes-most" dynamics). The decline at the technological frontier mainly reflects the entry of firms with low labour shares into the frontier rather than a decline of labour shares in incumbent frontier firms, suggesting that thus far this process is mainly explained by technological dynamism rather than anti-competitive forces.

Available at (open access): <https://doi.org/10.1787/3eb9f9ed-en>

Title:

Sgobbi, F. (2018). The skills of European ICT specialists. In M. Khosrow-Pour (Eds.), *Encyclopedia of Information Science and Technology* (pp. 4785-4796). Pennsylvania: IGI Global. doi: 10.4018/978-1-5225-2255-3.ch415

Abstract:

After a brief survey of the international literature on skill-related issues that may either support or threaten the further development of ICT-based applications this article provides a picture of the state-of-the-art of the professional skills supplied by ICT specialists in 11 EU countries based on data from the OECD Survey of Adult Skills. The first part of the empirical analysis focuses on the skills profile of ICT personnel from EU countries and examines to what extent the higher skills displayed by ICT specialists depend on a different distribution of demographic characteristics and job characteristics compared to the rest of the workforce. The second part of the empirical analysis focuses on the relationship between skills and wages and tests whether employers recognize an occupation-specific wage premium to ICT specialists. The results of the proposed empirical analyses confirm the existence of significant differences between skill profiles and earnings determinants of ICT specialists compared to other workers.

Available at: <https://doi.org/10.4018/978-1-5225-2255-3.ch415>

Title:

Siebig, S. (2018). *Determinanten beruflicher Selbstständigkeit – eine empirische Analyse für Deutschland [Determinants of self-employment - an empirical analysis for Germany]*. (Master's Thesis). Ludwig-Maximilians-Universität München.

Abstract:

Based on the German PIAAC data (Rammstedt et al., 2016) the master thesis investigates the correlation between individual cognitive and non-cognitive skills with the probability of self-employment. [Note from editors]

Available at: Library of Ludwig-Maximilians-Universität München

Title:

Singer, J. D., & Braun, H. I. (2018). Testing international education assessments. *Science*, 360(6384), 38-40. doi: 10.1126/science.aar4952

Abstract:

News stories on international large-scale education assessments (ILSAs) tend to highlight the performance of the media outlet's home country in comparison with the highest-scoring nations (in recent years, typically located in East Asia). Low (or declining) rankings can be so alarming that policy-makers leap to remedies—often ill-founded—on the basis of what they conclude is the “secret sauce” behind the top performers' scores. As statisticians studying the methods and policy uses of ILSAs (1), we believe the obsession with rankings—and the inevitable attempts to mimic specific features of the top performing systems—not only misleads, it diverts attention from more constructive uses of ILSA data. We highlight below the perils of drawing strong policy inferences from such highly aggregated data, illustrate benefits of conducting more nuanced analyses of ILSA data both within and across countries, and offer concrete suggestions for improving future ILSAs.

Available at: <https://doi.org/10.1126/science.aar4952>

Title:

Smith, M. L., Anýžová, P., & Matějů, P. (2018). Returns to cognitive skills: New evidence from 14 nations. *Innovation: The European Journal of Social Science Research*, 1-23. doi: 10.1080/13511610.2018.1508335

Abstract:

This study examines the role of cognitive skills on labor market outcomes in 14 developed countries. In contrast to standard Mincer-type regressions, we utilize a structural modeling approach that can take into account different types of skills on different economic outcomes. The results, based on data from the OECD PIAAC project, provide strong evidence that the income returns to adult cognitive skills are substantially large across the OECD, net of education, occupational status, gender and family background. However, the size of these effects, particularly in comparison with returns to education, vary greatly across countries. While in all countries examined education is strongly associated with cognitive skills, those skills translate into more prestigious occupations and higher incomes in countries that can be tentatively described as more innovative, as well as have less stratified educational systems. We discuss potential explanations for this, which can serve as a basis for further research.

Available at: <https://doi.org/10.1080/13511610.2018.1508335>

Title:

Solheim, O. J., & Lundetræ, K. (2018). Can test construction account for varying gender differences in international reading achievement tests of children, adolescents and young adults? – A study based on Nordic results in PIRLS, PISA and PIAAC. *Assessment in Education: Principles, Policy & Practice*, 25(1), 107-126. doi: 10.1080/0969594X.2016.1239612

Abstract:

Gender differences in reading seem to increase throughout schooling and then decrease or even disappear with age, but the reasons for this are unclear. In this study, we explore whether differences in the way 'reading literacy' is operationalised can add to our understanding of varying gender differences in international large-scale surveys. We first compare the impact of gender on reading literacy in PIRLS 2011 (10-year-olds), Programme for International Student Assessment (PISA) 2009 (15-year-olds) and Programme for the International Assessment of Adult Competencies (PIAAC) 2012 (16–24-year-olds), respectively, across the Nordic countries. Then we compare how reading literacy is operationalised in those surveys. We find similar patterns of gender differences across the Nordic countries, with the largest effect sizes in PISA and the smallest in PIAAC. Further, even though the three surveys define reading literacy in similar ways, they operationalise and assess that construct differently. The magnitude of the observed gender differences appears to be associated with certain assessment features including text type, item format, aspects of reading and implementation.

Available at (open access): <https://doi.org/10.1080/0969594X.2016.1239612>

Title:

Spörlein, C. (2018). How educational systems structure ethnic inequality among young labour market participants in Europe: Occupational placement and variation in the occupational status distribution. *Research in Social Stratification and Mobility*, 55, 109-119. doi: 10.1016/j.rssm.2018.04.006

Abstract:

Prior research as demonstrated that patterns of early labour market careers vary considerably across European societies. However, little research investigated how these patterns differ between immigrants and majority youth and whether the extent of ethnic inequality varies with educational system characteristics. Using the 2009 European Labour Force Survey data for 18 countries on the early careers of non-tertiary educated labour market participants, the results of this study show that immigrants work in lower-status jobs more frequently than majority youth do. In addition and conditional on these mean differences, immigrant's status distributions are more dispersed suggesting more erratic early career patterns. Educational systems characteristics moderate these differences: the occupational status difference between immigrants and majority youth is considerably larger in countries with strongly differentiated, specifically highly tracked educational systems. In addition, ethnic disadvantages are even more severe in differentiated educational systems when central exams are present. The findings further show that educational tracking is associated with less variation in a country's occupational status distribution, thus shaping ethnic inequality beyond its relationship with mean differences. Ethnic penalties are estimated to be considerably more severe in highly differentiated countries due to their lower baseline variability in the occupational status distribution.

Available at: <https://doi.org/10.1016/j.rssm.2018.04.006>

Title:

Stijepic, D. (2018). *Skills, job mobility and productive efficiency*. No. 3040285. Social Science Research Network (SSRN). doi: 10.2139/ssrn.3040285

Abstract:

Making use of a survey that directly assesses the participants' cognitive skills, I study the relation between skills and job mobility in a large international comparison of 32 countries. Motivated by the canonical on-the-job search model, I measure job mobility by the ratio of the job-finding rate on the job to the transition rate into unemployment. A higher ratio of these rates induces, ceteris paribus, first-order stochastic dominance in the distribution of workers over jobs, indicating a more efficient allocation of resources across firms. On average across the 32 countries, a one-standard-deviation increase in numeracy skills is estimated to double the ratio of the job-finding rate on the job to the transition rate into unemployment. The positive association between skills and job mobility is statistically significant in a majority of countries. Furthermore, countries with a higher average level of skills tend to exhibit a higher degree of job mobility. The robust positive association between skills and job mobility suggests that skills contribute to a country's productive efficiency by limiting the misallocation of resources across firms.

Available at: <http://dx.doi.org/10.2139/ssrn.3040285>

Title:

Støren, L. A., & Børing, P. (2018). Immigrants' participation in non-formal job-related training. *International Journal of Lifelong Education*, 37(5), 598-614. doi: 10.1080/02601370.2018.1554719

Abstract:

Participation in job-related training among immigrants is becoming more important in Europe in view of large immigration inflows. This paper considers differences in training participation rates by immigrant background including by whether they are from Western or non-Western origins. Also considered is whether differences by immigrant background depend on whether the training was supported by employers. The analyses are based on individual-level data from the PIAAC database. Four countries are included in the analysis: Denmark, Finland, the Netherlands and Norway, countries that feature a highly educated labour force and social policies designed to support and incentivise skill development over the life span including disadvantaged groups. The analyses reveal that the differences in participation rate according to immigrant backgrounds are relatively small, in all countries except Finland. Still, the immigrants receive less employer-sponsored training than non-immigrants. The results indicate a high demand for training among immigrants.

Available at (open access): <https://doi.org/10.1080/02601370.2018.1554719>

Title:

Støren, L. A., & Børing, P. (2018). Training of various durations: Do we find the same social predictors as for training participation rates. *International Journal of Lifelong Education*, 37(5), 527-545. doi: 10.1080/02601370.2018.1490933

Abstract:

Most studies on participation in training focus on participation versus non-participation. The individual's participation varies, however, very much in terms of the duration of training, from until a few days to intensive participation. This study examines participation in non-formal training by the total amount of training during a year. In the analysis, we use PIAAC data for eight European countries, of which half represents a group of countries with high participation rates in non-formal training and the other half have lower participation rates. One purpose is to examine whether the duration of training varies between these groups of countries. We expected that countries which score high on training rates are characterised by high proportions participating in short courses. Another purpose is to examine the relationship between duration of training and educational levels and immigrant backgrounds. We expected that the relationship that is normally found between training

rates and social background variables would be reversed when it comes to duration of training. In the analyses, controls are applied for several individual and workplace characteristics, including skills level, firm size, occupational level, and industrial sector. The estimation results indicate that overall, our expectations are not supported.

Available at (open access): <https://doi.org/10.1080/02601370.2018.1490933>

Title:

Støren, L. A., Lundetræ, K., & Børing, P. (2018). Country differences in numeracy skills: How do they vary by job characteristics and education levels? *International Journal of Lifelong Education*, 37(5), 578-597. doi: 10.1080/02601370.2018.1554718

Abstract:

To what extent do favourable job characteristics contribute to the variation in numeracy skills between countries? Based on theory of maintenance and further development of pre-existing skills, this is explored by applying data on numeracy skills among employed persons in seven European countries participating in the Survey of Adult Skills (PIAAC). Regression analyses are used to examine the extent to which numeracy skills vary with job characteristics and education levels across the seven countries, when controlling for industrial sector, work hours, demographic variables (gender, age, Western and Non-Western immigrant background), cultural capital (books at home and parental education level). The findings indicate that job characteristics and the individuals' educational level have large and equal statistical impact on the total skills variation in the seven countries. However, regarding the country- differences, variations in education level play a lesser role than job characteristics.

Available at (open access): <https://doi.org/10.1080/02601370.2018.1554718>

Title:

Sulkunen, S., & Malin, A. (2018). Literacy, age and recentness of education among Nordic adults. *Scandinavian Journal of Educational Research*, 62(6), 929-948. doi: 10.1080/00313831.2017.1324898

Abstract:

The purpose of the present study was to examine the relationship between reading literacy and age in an adult population aged 25 to 65 in Nordic countries using PIAAC 2012 data. More specifically, the study examined to what extent variations in the literacy proficiency of adults are explained by age and the recentness of qualifications when variables related to education, occupation, and skill use are controlled. The statistical method was regression analysis. The recentness of education explained only a part of the performance gap between the oldest adults and others. The significance of the length and scope of initial education in developing literacy proficiency overall, is difficult to compensate. There were insignificant differences between the Nordic countries.

Available at (open access): <https://doi.org/10.1080/00313831.2017.1324898>

Title:

Sweetman, A., & Truong, K. (2018). The United States and Canada: Intergenerational social mobility among immigrants and their native-born children. In Organisation for Economic Cooperation and Development (OECD) (Eds.), *Catching Up? Country Studies on Intergenerational Mobility and Children of Immigrants* (pp. 169-202). Paris: OECD Publishing. doi: 10.1787/9789264301030-9-en

Abstract:

This chapter reviews the academic literature on new immigrants' intergenerational educational and

labour market integration in the United States and Canada, and presents new findings. It begins with a discussion of American and Canadian immigration history, and then addresses the intergenerational transmission of educational outcomes. Particular attention is paid to students from disadvantaged backgrounds, especially minority ethnic-group students. The discussion points to language deficiencies as a major drawback, and outlines possible reasons for the relatively slow integration of the Hispanic community into higher levels of education in the United States. The chapter then turns to labour market outcomes in both countries, examining participation rates and earnings gaps for adult immigrants, immigrants who arrived as children, the children of immigrants and, as a comparison group, children with two native-born parents.

Available at: <https://doi.org/10.1787/9789264301030-9-en>

Title:

Tamilina, L., & Tamilina, N. (2018). Explaining the impact of formal institutions on social trust: A psychological approach. *Journal of Interdisciplinary Economics*, 30(2), 164-190. doi: 10.1177%2F0260107917742743

Abstract:

By drawing on psychological models of action choice, this study distinguishes between four key factors that determine trust building: (a) knowledge to trust, (b) others-regarding, (c) cognition and (d) contexts. These four factors are combined into a single analytical framework that is used for establishing channels through which the institutional context impacts social trust formation. Our theoretical and empirical evidence suggests that context is the strongest determinant of trust, with its overall effect being, however, modified by the degree to which the individual's knowledge of trusting, cognition and others-regarding is developed. The Programme for the International Assessment of Adult Competencies (PIAAC) data from the year 2012 are utilized for testing our propositions.

Available at: <https://doi.org/10.1177%2F0260107917742743>

Title:

Tamilina, L., & Tamilina, N. (2018). Trust as a skill: Applying psychological models of skill acquisition to explain the social trust formation process. *Psychology and Developing Societies*, 30(1), 44-80. doi: 10.1177%2F0971333617747344

Abstract:

A growing body of research is considering how social trust is built at the individual and societal levels. This study introduces a new conceptual framework of trust formation by uniting dispositional and experiential determinants into a single analytical framework. By drawing on psychological theories of skill acquisition, we describe trust as shaped by four factors: crystallised, cognitive, contact and context. We combine these four factors into a 4C-component analytical model by establishing links between them and explaining the rationale behind their individual and joint effects on trust. The proposed model is tested with the Programme for the International Assessment of Adult Competencies (PIAAC) public-use data. Both theoretical and empirical elaborations suggest that context is the strongest driver of trust formation. Good contexts also spur more trust when individuals already possess crystallised knowledge and can display faith in others. Such knowledge can be learned if it is missing, but how efficiently depends on the quality of one's cognitive system, frequency of contacts with others and the distance between one's actual knowledge of trust and the optimal level of trust knowledge for the given context.

Available at (open access): <https://doi.org/10.1177%2F0971333617747344>

Title:

Tausendpfund, M. (2018). Primär- und Sekundäranalyse [Primary and secondary analysis]. In *Quantitative Methoden in der Politikwissenschaft: Eine Einführung* (pp. 139-166). Wiesbaden: Springer Fachmedien. doi: 10.1007/978-3-658-20698-7_8

Abstract:

In this chapter the terms primary and secondary analysis are explained and the advantages and disadvantages of these research strategies are showed. Most research projects do not collect own data, rather existing data is used to test the hypotheses. For this reason, this chapter also presents central data sets (e.g. PIAAC) or institutions that provide social science data sets. The chapter closes with information on researching social science data sets.

Available at: https://doi.org/10.1007/978-3-658-20698-7_8

Title:

Tikkanen, T., & Nissinen, K. (2018). Drivers of job-related learning among low-educated employees in the Nordic countries. *International Journal of Lifelong Education*, 37(5), 615-632. doi: 10.1080/02601370.2018.1554720

Abstract:

This study explored drivers of participation in job-related lifelong learning (LLL) among low-educated mature-aged employees and compared them across four Nordic countries. Workplaces can be low-threshold, effective arenas for development of their skills in work and learning. The paper builds on the Bounded Agency Model and theories of learning motivation, human capital, and workplace learning. We used data from the Survey of Adult Skills (Programme for the International Assessment of Adult Competencies) by Organisation for Economic Co-operation and Development. The average participation rate was 36%. Results of the logistic regression analyses showed that income, skills use at work, sector and gender were significant drivers of participation in all countries. Additionally, being under-skilled was significant in Finland and parents' education in Sweden. Totally, these variables explained a quarter of the variation in participation. Thus, the drivers of participation appeared more similar than different across the countries. Implications of the findings are discussed in relation to how to support skills development among low-educated older workers, and to some challenges in cross-country comparative research.

Available at: <https://doi.org/10.1080/02601370.2018.1554720>

Title:

Tippelt, R. (2018). Lebenslanges Lernen als Kompetenzentwicklung [Lifelong learning as skills development]. In C. Hof & H. Rosenberg (Eds.), *Lernen im Lebenslauf: Theoretische Perspektiven und empirische Zugänge* (pp. 105-120). Wiesbaden: Springer.

Abstract:

The challenging topic is processed in the form of a thesis and at the same time taking empirical evidence into account: First, the educational process across the lifespan and concepts for lifelong learning are dealt with, and then various competence models are presented in contrast. This is followed by a brief and very selective overview of the development of competencies in the sub-areas of the education system, whereby the trends shown in the national education report (authors' group Education Reporting 2014) are discussed, along with early childhood education, school education, vocational education and the university and continuing education are taken into account. The education of older people in connection with lifelong learning should be considered specifically and in depth as a development of competences. Therefore, some empirical results on the competence

development of older adults from large scale assessments are shown, with findings from the PIAAC and CiLL study are being discussed in particular (Rammstedt 2013; Friebe / Schmidt / Tippelt 2014). Finally, it is pointed out in a summary that lifelong learning and education are based on professional competence, but at the same time it is always more than the imparting of pure specialist competences.

Available at: https://doi.org/10.1007/978-3-658-19953-1_6

Title:

Truong, N. K., & Sweetman, A. (2018). Basic information and communication technology skills among Canadian immigrants and non-immigrants. *Canadian Public Policy*, 44(1), 91-112. doi: 10.3138/cpp.2017-032

Abstract:

Male immigrants are disproportionately employed in information and communication technology (ICT) industries and occupations in Canada. The authors use a measure of basic ICT skills to document differences in skill levels, and those skills' relationship with labour market earnings, across immigration classes and categories of Canadians at birth. Adult immigrants, including those assessed by Canada's points system, have lower average ICT scores than Canadians at birth, although the rate of return to ICT skills is not statistically different between them. Immigrants who arrive as children and the Canadian-born children of immigrants have similar outcomes as the Canadian-born children of Canadian-born parents.

Available at (open access): <https://doi.org/10.3138/cpp.2017-032>

Title:

Tverdostup, M., & Paas, T. (2018). Skills heterogeneity and immigrant-native wage gap in the European countries. *International Journal of Economic Sciences*, 7(2), 119-142. doi: 10.20472/ES.2018.7.2.007

Abstract:

The paper analyses individual human capital, measured by the education, literacy and numeracy skills, and explores to what extent immigrants employ their cognitive skills at work. Based on the Program of International Assessment of Adult Competencies (PIAAC) data for 15 European countries, we document that, on average, foreign-born respondents achieve substantially worse scores in literacy and numeracy test domains in majority of analysed countries. Only immigrants in the Nordic countries reveal skill improvement over immigration tenure. Once we account for both skill levels and use of skills at work in wage regressions, no statistically significant gap in earnings across immigrants and natives remains. Although, once immigrants attain comparable to natives' skill use frequency, their pay disadvantage turns statistically insignificant in all countries, except Estonia and Ireland. The results are leading us to the conclusion that potential for development and utilization of immigrants' skills in the European labour markets is still underused. Immigrants are not yet sufficiently well integrated in labour markets in most of the European countries.

Available at (open access): <https://doi.org/10.20472/ES.2018.7.2.007>

Title:

Upsing, B., & Rittberger, M. (2018). The translator's perspective on translation quality control processes for international large-scale assessment studies. *Translation & Interpreting*, 10(2), 55-72. doi: 10.12807/ti.110202.2018.a05

Abstract:

International Large-Scale Assessment studies (iLSAs) like PISA (the Programme for International Student Assessment) and PIAAC (the Programme for the International Assessment of Adult Competencies) employ stringent quality control procedures for the translation of their test items. The translations are crucial: a test item should not become more or less difficult because of its translation, given that test results are used to assess and compare the competency levels of different populations across countries. This article discusses how PISA and PIAAC translation procedures have evolved from earlier translation quality processes, and the underlying assumptions about translation that have shaped this evolution. We then report on findings from a qualitative interview study with translators, reviewers, and translation managers who have been involved in PISA or PIAAC translation processes. The objective of the interview study is to analyse the quality control procedures from the perspective of translation players. How do translators prepare for and perform translations for iLSA studies, and how does this process compare with other translation assignments they receive? This comparison will give an understanding of whether translators, in general, believe the iLSA translation process and its quality control procedures provide adequate guidance for performing these translations. We finish by proposing recommendations for future iLSA translation processes.

Available at (open access): <https://doi.org/10.12807/ti.110202.2018.a05>

Title:

Urlick, A. (2018). Secondary data analysis in the field of educational leadership and policy studies. In C. R. Lochmiller (Eds.), *Complementary Research Methods for Educational Leadership and Policy Studies* (pp. 143-171). Cham: Springer International Publishing. doi: 10.1007/978-3-319-93539-3_8

Abstract:

This chapter discusses secondary data analysis and identifies several of the most prominent data sets used in education policy and leadership research. Existing, generalizable data allow researchers to address pressing national and systemic issues in educational leadership and policy. These common data sets provide an opportunity for comparison and replication of findings across studies. These data sets also provide more options for advanced statistical analysis. Indeed, once researchers learn how to analyze one of these main data sets, this knowledge can be applied across additional years of the same data set, extended to other available national/international surveys, and can provide an example of how future original data collections may be shared with other researchers.

Available at: https://doi.org/10.1007/978-3-319-93539-3_8

Title:

Velden, R., & Bijlsma, I. (2018). Effective skill: A new theoretical perspective on the relation between skills, skill use, mismatches, and wages. *Oxford Economic Papers*, 71(1), 145-165. doi: 10.1093/oep/gpy028

Abstract:

Skills and skill mismatches affect workers' productivity. However, current approaches to measuring this problem fail to specify the underlying mechanism. In this paper, we develop a new perspective by integrating skill proficiency and skill use into a new concept called 'effective skill'. Effective skill is defined as a multiplicative function of skill proficiency and skill use. The intuitive understanding of this concept is that a skill can have no effect on productivity if it is not used and, vice versa, the effect of using skills is moderated by the skill proficiency level. We develop a skill matching model using data from the OECD PIAAC Survey. We show that there is no effect of numeracy on wages,

other than through the use of numeracy skills. Moreover, we show that a skill mismatch model based on this concept is superior to alternative skill mismatch models in explaining wage differences.

Available at: <https://doi.org/10.1093/oep/gpy028>

Title:

Verhaest, D., Lavrijsen, J., Omev, E., Van Trier, W., & Nicaise, I. (2018). General education, vocational education and skill mismatches: Short-run versus long-run effects. *Oxford Economic Papers*, 70(4), 974-993. doi: 10.1093/oep/gpy026

Abstract:

Earlier research showed that obtaining a vocational instead of a general qualification has contrasting effects on employment and earnings over the life course. Relying on two international datasets (ESJS and PIAAC) and focussing on upper-secondary and post-secondary non-tertiary qualifications, we find similar contrasting effects in terms of educational and skill mismatches. While vocationally educated individuals are less likely to face mismatches at the start of their careers, this advantage gradually fades over time. This pattern is not only found for overall mismatches, but also for mismatches in terms of several more detailed types of skills. We also find more favourable effects in terms of avoided mismatches for vocational programmes that combine a specific focus with workplace learning, while programmes that combine a less-specific focus with workplace learning seem to be less effective.

Available at (open access): <https://dx.doi.org/10.1093/oep/gpy026>

Title:

Vézina, S., Bélanger, A., Sabourin, P., & Marois, G. (2018). *Projecting the literacy skills proficiency of the working-age population in a context of high immigration and increasing education levels*. Working paper No. 03. Montréal: Institut National de la Recherche Scientifique - Centre Urbanisation Culture. Retrieved February 15, 2019, from <http://espace.inrs.ca/7155/1/Note03-2018.pdf>

Abstract:

Labour economists and other experts have been using standard educational attainment variables to assess the workforce's human capital. While the link between skills and education level seems straightforward among the native-born population, the correlation is a lot more blurred among the foreign-born population. A more direct measure of skills, precisely the proficiency in key information-processing skills, was developed by the Organisation for Economic Cooperation and Development (OECD) and its Programme for the International Assessment of Adult Competencies (PIAAC). With a specific focus on Canada, this paper presents literacy skills proficiency projection results. Using the 2012 PIAAC survey data, skills proficiency determinants of the working-age population are analysed for both native- and foreign-born subgroups. Regression parameters serve as parameters for a skills proficiency projection module that is added to LSD-C, a microsimulation model that simultaneously projects demographic, ethnocultural and socioeconomic characteristics of the Canadian population between 2011 and 2061. Projection results show that the literacy skills proficiency is likely to be slightly declining over the next 50 years as the positive effect of increasing education is mitigated by the effect of large immigration intakes. Results also suggest that changes to immigrant selection policies could prevent the projected literacy skills decline of the Canadian working-age population. This research provides an analytical tool in simulating the effects of different immigrants' selection patterns or language training policies on the skills of the future labour force population.

Available at (open access): <http://espace.inrs.ca/7155/1/Note03-2018.pdf>

Title:

Vilalta-Bufí, M., Kucel, A., & Giusti, G. (2018). *Who becomes an entrepreneur? The role of ability, education, and sector choice*. UB Economics Working Papers No. 381. Barcelona: Universitat de Barcelona. Retrieved February 15, 2019, from http://diposit.ub.edu/dspace/bitstream/2445/124443/1/E18-381_Vilalga%2BKucel%2BGiusti.pdf

Abstract:

The classical occupational choice model does not explain the simultaneous existence of low and high ability entrepreneurs. In this paper, we study the decision to become an entrepreneur when individuals choose their education level and the economic sector where to operate. We distinguish two sectors: the knowledge and the traditional sector. The knowledge sector requires individuals to invest in education. Under this framework, two results are possible: one where only high ability individuals become entrepreneurs, and one with the coexistence of low and high ability entrepreneurs. This framework provides a rational explanation of the relationship between ability, education, and self-employment. Using PIAAC data, we test the empirical implications of the model. We find that most countries have an equilibrium with low and high ability entrepreneurs.

Available at (open access): http://diposit.ub.edu/dspace/bitstream/2445/124443/1/E18-381_Vilalga%2BKucel%2BGiusti.pdf

Title:

Vogtenhuber, S. (2018). The institutional conditions of inequality in credential and skill attainment and their impact on occupational placement. *Research in Social Stratification and Mobility*, 55, 13-24. doi: 10.1016/j.rssm.2018.03.005

Abstract:

This study comparatively analyses inequalities in educational outcomes as well as education effects on the occupational status of prime-age workers across 21 countries. Considering two distinct aspects of educational outcomes—credentials and measured worker skills—the study’s main role is to assess their partial effects on occupational placement, contingent on social origin. Overall, parental education effects on educational achievement in terms of both credentials and skills are large. Likewise, occupational status is strongly associated with educational certificate attained. Labor market placement based on worker skills is significant as well, but to a lesser extent. The individual-level path dependencies of origin-education and education-destination vary considerably across countries. In part, this variation is associated with a country’s skills formation system in terms of vocational specialization and the degree of economic coordination as measured by bargaining coordination. In line with prior research, vocational specificity relates to increased educational inequality. In addition, the study finds that economic coordination mitigates educational inequality as it reduces the intergenerational transmission of certificates and skills. In systems in which vocational specificity is accompanied by a high degree of coordination, the detrimental inequality effect of vocational specificity tends to level off. Moreover, economic coordination facilitates occupational placement based on worker skills. A concise discussion of the policy implications concludes this paper.

Available at: <https://doi.org/10.1016/j.rssm.2018.03.005>

Title:

Weingarten, H. P., & Hicks, M. (2018). Performance of the Ontario (Canada) higher-education system: Measuring only what matters. In A. Curaj, L. Deca, & R. Pricopie (Eds.), *European Higher Education Area: The Impact of Past and Future Policies* (pp. 471-485). Cham: Springer. doi: 10.1007/978-3-319-77407-7_29

Abstract:

This paper describes the thinking behind the development of an improved tool to measure the performance of the postsecondary system in Ontario. The rationale is relevant to other jurisdictions. Ontario's public higher-education system consists of 24 community colleges and 20 universities and constitutes 40% of higher-education enrolments in Canada. HEQCO has a legislated mandate to conduct performance assessments of the postsecondary sector and to make these evaluations public. In contrast to the approach of others who use a broad range of performance indicators, we are developing a performance measurement tool with a very limited number of indicators that are tied directly to the high priority goals of the Ontario government and that are designed to assess the effectiveness and impact of government policies and actions (e.g., tuition, financial aid, funding formulas, institutional differentiation). The instrument will measure system performance, not that of individual institutions (or their ranking). This approach, which measures only what matters, forces definition and measurement of the most relevant, meaningful and revealing measures. The indicators address equity of access, sustainability of institutions and academic quality, the three highest priorities for the postsecondary system in Ontario. The indicators selected reflect outcomes and impact, not inputs. Academic quality was the domain hardest to measure but our bias was to measures that are direct, embedded, meaningful to students and government, and validated by the institutions. We describe significant research trials we are currently conducting to determine the best and most efficient ways of obtaining these academic quality measures that, in our view, should form the centrepiece of any instrument that purports to measure the performance of a higher-education system or institutions.

Available at (open access): https://doi.org/10.1007/978-3-319-77407-7_29

Title:

Woessmann, L. (2018). *Effects of vocational and general education for labor-market outcomes over the life-cycle*. EENEE Analytical Report No. 37. Luxembourg: European Union. doi: 10.2766/566869

Abstract:

Vocational skills are job-specific skills that prepare for work in specific occupations. By contrast, the usage of general skills transcends specific occupations. In dynamically changing economies, this difference implies a basic trade-off between vocational and general education programs for labor-market experiences over the life-cycle. Vocational education programs have the advantage of helping young people master the transition from school to work because job-specific skills directly prepare students for the tasks demanded by firms. As a consequence, they may result in reduced youth unemployment. But there is another side to the same coin: Job-specific skills will be subject to increasing risk of becoming obsolete when the structure of occupations changes. In addition, if the acquired general skill base is limited, vocationally educated people may find it hard to learn different job-specific skills. By contrast, the skills generated by general education programs may provide workers with greater adaptability to changing environments. As a consequence, they may result in higher employment opportunities at older ages. An increasing body of empirical evidence confirms this basic trade-off between vocational and general education programs over the life-cycle. While vocationally educated individuals initially have better employment opportunities than generally educated individuals, this pattern turns around at older ages. Results are particularly strong in countries that have extensive apprenticeship systems. The trade-off between education types over the life-cycle is also visible in earnings and in participation in adult career-related education. The consistent evidence on a life-cycle trade-off of focusing education programs on job-specific skills provides the basis for policy implications about how education systems can prepare students for lifetime work. At the most basic level, the findings indicate that in dynamic economies, policy needs to consider the full working life-cycle, which also implies that they must convey the ability to adapt to changing economic conditions. Each country should aim to find the right balance between

conveying general and work-specific skills to its population. Successful apprenticeship systems require institutional and regulatory frameworks defining the tasks of stakeholders, financial structures, and certification requirements. To make graduates fit for employment over their full life-cycles, apprenticeship programs could reduce the early specialization of apprentices by lowering the number of specific apprenticeships, expanding the share of general educational content, and modularizing apprenticeship components. General education programs could implement measures to relate the conveyed skills to tasks that are relevant in the real world as currently demanded on the labor market. Finally, countries should establish strong systems of lifelong learning.

Available at (open access): <https://doi.org/10.2766/566869>

Title:

Wojniak, J., & Majorek, M. (2018). Polish education system under 2017 reform: Assumptions, aims and controversies. *SHS Web Conferences*, 48, 1-12. doi: 10.1051/shsconf/20184801043

Abstract:

The paper analyzes some current changes in the Polish education system. The comprehensive reform of the system was undertaken in 2016, and the new system was introduced in the school year 2016/2017, changing the structure of the education cycle as well as the teaching content and the handbooks. The aim of the Ministry of National Education was to create a “good school” for students, teachers and parents. The reform, however, triggered a national discussion on its aims and assumptions, as it is accompanied by a number of controversies and strong differences of opinions in the Polish society.

Available at (open access): <https://doi.org/10.1051/shsconf/20184801043>

Title:

Wyonch, R. (2018). *Risk and readiness: The impact of automation on provincial labour markets*. CD Howe Institute Commentary 499. Toronto: CD Howe Institute. Retrieved February 15, 2019, from https://www.ledevoir.com/documents/pdf/etude_CD_Howe_anglais.pdf

Abstract:

The process of technological progress is one of creative destruction, where some occupations, skills, products and firms become obsolete and are replaced by technologically superior alternatives. This process, facilitated by trade, improves overall economic growth and raises living standards in the long run. In the short run, however, it risks igniting economic and political tensions as some businesses fail and some people lose their jobs. At the same time, new jobs are created and the skills required to perform others might change dramatically. Given historical trends of employment, it seems unlikely that all occupations that are highly susceptible to automation will be replaced by smart machines over the next few years. As the demand for skills in the labour market continues to grow, however, there is room for public policy to moderate the effect of technological change on the labour market in a number of ways. Each province faces slightly different challenges when developing policy to confront a technologically advanced and uncertain future. Some provinces, with more economic diversification or a concentration of workers in areas that are not very susceptible to automation, appear to be better situated for technological change than others. In developing policies to facilitate the transition to a high-tech future, provinces that face a higher risk of labour market disruption might require a broad-based approach, while those facing a lower risk of disruption might be able leverage existing policies and expand educational or unemployment support where necessary. Differences in the composition of employment and skills levels across the country highlight priority areas that provincial governments should consider in developing education and employment policy responses to adapt to current and future technological change. Disruption as a

result of technological change is not a uniform process, so the policies to tackle it similarly should be not be uniform, but should take into account each region's strengths and weaknesses.

Available at (open access): https://www.ledevoir.com/documents/pdf/etude_CD_Howe_anglais.pdf

Title:

Yamamoto, K., Khorramdel, L., & Shin, H. J. (2018). Introducing multistage adaptive testing into international large-scale assessments designs using the example of PIAAC. *Psychological Test and Assessment Modeling*, 60(3), 347-368.

Abstract:

PIAAC is one of the first international large-scale assessments that implemented a multistage adaptive testing (MST) design. The design consists of multiple layers of adaptation to administer the most relevant and efficient set of questions based on the estimated proficiency of respondents. The benefits of the MST design were evaluated in terms of the comparability of item parameters across countries and the test efficiency. To assess the comparability across countries, item-by-country interactions were examined using item response theory (IRT) models. The efficiency of the MST design was calculated and compared to a nonadaptive design with a fixed item format. Moreover, possible effects of the position of item sets on item difficulty, which would present a problem for implementing MST, were examined. Results show a higher test efficiency in the MST design, only small item position effects and a high comparability of item parameters across different countries and languages.

Available at (open access): https://www.psychologie-aktuell.com/fileadmin/Redaktion/Journale/ptam_3-2018_347-368.pdf

Title:

Yamamoto, K., & Lennon, M. L. (2018). Understanding and detecting data fabrication in large-scale assessments. *Quality Assurance in Education*, 26(2), 196-212. doi: 10.1108/QAE-07-2017-0038

Abstract:

Purpose: Fabricated data jeopardize the reliability of large-scale population surveys and reduce the comparability of such efforts by destroying the linkage between data and measurement constructs. Such data result in the loss of comparability across participating countries and, in the case of cyclical surveys, between past and present surveys. This paper aims to describe how data fabrication can be understood in the context of the complex processes involved in the collection, handling, submission and analysis of large-scale assessment data. The actors involved in those processes, and their possible motivations for data fabrication, are also elaborated. **Design/methodology/approach:** Computer-based assessments produce new types of information that enable us to detect the possibility of data fabrication, and therefore the need for further investigation and analysis. The paper presents three examples that illustrate how data fabrication was identified and documented in the Programme for the International Assessment of Adult Competencies (PIAAC) and the Programme for International Student Assessment (PISA) and discusses the resulting remediation efforts. **Findings:** For two countries that participated in the first round of PIAAC, the data showed a subset of interviewers who handled many more cases than others. In Case 1, the average proficiency for respondents in those interviewers' caseloads was much higher than expected and included many duplicate response patterns. In Case 2, anomalous response patterns were identified. Case 3 presents findings based on data analyses for one PISA country, where results for human-coded responses were shown to be highly inflated compared to past results. **Originality/value:** This paper shows how new sources of data, such as timing information collected in computer-based assessments, can be combined with other traditional sources to detect fabrication.

Available at: <https://doi.org/10.1108/QAE-07-2017-0038>

Title:

Yamamoto, K., Shin, H. J., & Khorramdel, L. (2018). Multistage adaptive testing design in international large-scale assessments. *Educational Measurement: Issues and Practice*, 37(4), 16-27. doi: 10.1111/emip.12226

Abstract:

A multistage adaptive testing (MST) design was implemented for the Programme for the International Assessment of Adult Competencies (PIAAC) starting in 2012 for about 40 countries and has been implemented for the 2018 cycle of the Programme for International Student Assessment (PISA) for more than 80 countries. Using examples from PISA and PIAAC, this article addresses the advantages and considerations of an MST design in the context of international large-scale assessments (ILSAs). It illustrates and discusses the unique features of the implemented designs in PISA and PIAAC and the expected gains in test efficiency and accuracy, as well as limitations and challenges of MST designs for cross-country surveys. Practical aspects and insights into utilizing MST to measure complex constructs in cross-cultural surveys are provided.

Available at: <https://doi.org/10.1111/emip.12226>

Title:

Yamashita, T., Bardo, A. R., & Liu, D. (2018). *Numeracy skills, health information-seeking, and preventive health behaviors among middle and older aged adults in the US*. Commissioned Paper Washington: American Institutes for Research. Retrieved February 15, 2019, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5b50a5b80e2e72f3e4d63ae5/1532011961211/Yamashita_Bardo_Liu_Health_Report2018_Final.pdf

Abstract:

Background: Given the information/technology rich environment coupled with ongoing trends in population aging in the U.S., the central role that health literacy plays in determining health behaviors and outcomes has recently received an increasing amount of attention. Despite a growing research and policy focus on health literacy, some key components that constitute this multifaceted construct that reflects one's ability to access, process, and understand basic health information remain under-examined. Specifically, print and oral literacy have been extensively examined, but the potentially important role that numerical literacy (i.e., numeracy) plays in shaping health behaviors remains largely unknown. This issue is particularly pertinent for the older population, which is generally characterized by worsening overall physical and cognitive health. Therefore, we examined the role of numeracy in the context of relevant health determinants, including health information seeking and preventive health behaviors. **Methods:** Data were obtained from the 2012/2014 Program for the International Assessment of Adult Competencies (PIAAC), which include a nationally representative sample of American adults ages 45-74 years old. Detailed descriptive statistics and appropriate regression analyses were conducted with the use of a SAS macro program developed by the International Association for the Evaluation of Educational Achievement (IEA). Multivariate associations between numeracy skills and eight health information sources (newspaper, magazines, internet, radio, television, books, friends and family, health professional) and four preventive health behaviors (flu shot, dental check-up, vision screening, osteoporosis screening) were estimated after adjusting for age, gender, race, educational attainment, employment status, self-rated health, literacy skills, and use of numeracy skills at home. The PIAAC final sampling weights and replicate weights were also used to generate nationally representative and unbiased findings. **Results:** We provided detailed descriptive statistics for numeracy skills by demographic (i.e. age, gender, race)

socioeconomic (i.e., education, and employment status) and health (i.e., self-rated health) characteristics, as well as by health information sources (i.e., health professionals, internet, television, friends and family, books, newspapers, magazines, and radio), and preventive health behaviors (i.e., flu shot, dental checkup, vision screening, and osteoporosis screening). Multivariate results, conditioned on these demographic, socioeconomic and health characteristics, and other controls, indicated that the medium to high numeracy proficiency was associated with less frequent use of magazines, books, television, and newspapers as health information sources with respect to the low numeracy proficiency. Furthermore, numeracy skills were positively associated with dental checkups, but they were not associated with other preventive health practices, after accounting for the socio-demographic, health and other covariates. Significance: The present study is among the first to provide a nationally representative overview and exploration of numeracy skills data among middle-aged and older adults in the U.S. Thus, results from the current study represent a foundation from which future research can build upon, which ideally will lead to the identification of specific pathways that link numeracy skills with health behaviors and outcomes. Findings highlight social and economic disparities in numeracy proficiency, and the potentially important role that numeracy skills play in determining health information seeking and preventive health behaviors. These findings are useful for informing policy discussions aimed at population health promotion. Specifically, it may be beneficial for future health education and communication to target specific health information sources and improve accessibility to the vulnerable populations who generally have lower numeracy skills

Available at (open access): <https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5b50a5b80e2e72f3e4d63ae5/1532011961211/Yamashita+Bardo+Liu+Health+Report2018+Final.pdf>

Title:

Yamashita, T., Bardo, A. R., Liu, D., & Cummins, P. A. (2018). Literacy, numeracy, and health information seeking among middle-aged and older adults in the United States. *Journal of Aging and Health*, 32(1), 33-41. doi: 10.1177%2F0898264318800918

Abstract:

Objectives: Health literacy is often viewed as an essential skill set for successfully seeking health information to make health-related decisions. However, this general understanding has yet to be established with the use of nationally representative data. The objective of this study was to provide the first nationally representative empirical evidence that links health information seeking behaviors with health literacy among middle-age to older adults in the United States. **Methods:** Data were obtained from the 2012/2014 Program for the International Assessment of Adult Literacy (PIAAC). Our analytic sample is representative of adults age 45 to 74 years (N = 2,989). **Results:** Distinct components of health literacy (i.e., literacy and numeracy) were uniquely associated with the use of different health information sources (e.g., health professionals, the Internet, television). **Discussion:** Findings should be useful for government agencies and health care providers interested in targeting health communications, as well as researchers who focus on health disparities.

Available at: <https://doi.org/10.1177%2F0898264318800918>

Title:

Yamashita, T., Bardo, A. R., Millar, R. J., & Liu, D. (2018). Numeracy and preventive health care service utilization among middle-aged and older adults in the U.S. *Clinical Gerontologist: The Journal of Aging and Mental Health*, 1-12. doi: 10.1080/07317115.2018.1468378

Abstract:

Objectives: Determine whether a specific numeracy skill cut-point(s) reflects an empirical threshold

in the context of preventive health service utilization, and identify associations between numeracy and preventive health services utilization among middle-aged and older adults in the United States. Methods: A nationally representative sample (n = 2,989) of adults 45 years and older from the International Assessment of Adult Competencies (PIAAC) was analyzed. Binary logistic regression was used to examine the utilization of dental checkup, vision screening, influenza vaccination, and osteoporosis screening, using multiple numeracy level classifications. Results: A dichotomous classification of numeracy skill levels (low vs. moderate to high proficiency) was associated with dental checkup utilization, but vision screening, influenza vaccination, and osteoporosis screening. Conclusions: Middle-aged and older adults with sufficient numeracy skills are more likely to have had a dental check up in the past 12 months. Findings suggest that numeracy may be more relevant for long-term vs. short-term risk assessment in determining preventive health care service utilization. Clinical Implications: Two-level numeracy categories are recommended in preventive health contexts. Numeracy proficiency-sensitive risk communication by health care providers and education programs may enhance awareness of preventive health care and promote the utilization of specific preventive health service utilization among older adults.

Available at: <https://doi.org/10.1080/07317115.2018.1468378>

Title:

Yamashita, T., Cummins, P. A., Arbogast, A., & Millar, R. J. (2018). Adult competencies and employment outcomes among older workers in the United States: An analysis of the program for the international assessment of adult competencies. *Adult Education Quarterly*, 68(3), 235-250. doi: 10.1177/0741713618773496

Abstract:

A growing segment of the U.S. workforce—older workers—face challenges such as a greater chance of being unemployed for a longer period of time than younger workers and skill obsolescence in contemporary societies. In an age of fast-paced economic and technological change, ongoing investment in human capital in the form of skill training represents a potential strategy for improving older workers' employment prospects. However, empirical evidence is lacking on the relationship between basic skill competencies and employment outcomes for older workers in general. This study analyzed nationally representative data of adults aged 45 to 65 years (n = 2,169) from the Program for the International Assessment of Adult Competencies. Literacy skills were used as the main measure of competencies. Results from multinomial logistic regression identified statistically significant positive associations between literacy skills and employment among older workers. Implications for research, policy, and practice are discussed.

Available at: <https://doi.org/10.1177/0741713618773496>

Title:

Yamashita, T., Jennifer, R. K., Sheniz, A. M., Shen, J. J., Jennifer, R. P., & Yoo, J. W. (2018). Literacy activity and health among older adults in the USA. *Educational Gerontology*, 44(10), 627-638. doi: 10.1080/03601277.2018.1521077

Abstract:

Health literacy skills are known to be a key mediator of the relationship between education and health in the general population. However, one aspect of health literacy skills—individuals' actual literacy activities—remains understudied, especially among older adults. Health disparities that are driven by inequalities in education and level of health literacy skills are particularly problematic for older adults since they are exacerbated in old age by disadvantages that accumulate over the life course. This study examined a nationally representative sample of US adults age 50 years and older

(n = 2,573) using data from the 2014 Program for International Assessment of Adult Competencies (PIAAC). Parallel mediation analysis was conducted to examine the partial mediation effects of health literacy skills and literacy activity (i.e., reading at home) on the relationship between education and health. Results showed that both health literacy skills and literacy activity mediated the education–health relationship. On average, literacy skills mediated 31.89% and literacy activities mediated 9.59% of the effect of education on self-rated health. Literacy activity, such as reading, is an easily accessible, autonomous, and sustainable option for promoting health in later life. Policies that support the intersection of public health and education may promote lifelong learning and well-being among US adults.

Available at: <https://doi.org/10.1080/03601277.2018.1521077>

Title:

Yasukawa, K., Jackson, K., Kane, P., & Coben, D. (2018). Mapping the terrain of social practice perspectives of numeracy. In K. Yasukawa, A. Rogers, K. Jackson, & B. V. Street (Eds.), *Numeracy as Social Practice* (pp. 21-36). London: Routledge. doi: 10.4324/9781315269474

Abstract:

A numeracy as social practice perspective focuses on what people do with numeracy through social interactions in particular contexts, rather than on people's performance of mathematical skills in isolation of context. Moreover, this perspective highlights that numeracy activity must be understood in relation to the social, cultural, historical and political contexts in which it takes place. In this chapter, we map four key theoretical influences on this perspective: situative learning, cultural historical activity theory, literacy as social practice, and ethnomathematics.

Available at: <https://doi.org/10.4324/9781315269474>

Title:

Yu, C. H., Lee, H. S., Lara, E., & Gan, S. (2018). The ensemble and model comparison approaches for big data analytics in social sciences. *Practical Assessment, Research & Evaluation*, 23(17), 1-11. doi: 10.7275/chaw-y360

Abstract:

Big data analytics are prevalent in fields like business, engineering, public health, and the physical sciences, but social scientists are slower than their peers in other fields in adopting this new methodology. One major reason for this is that traditional statistical procedures are typically not suitable for the analysis of large and complex data sets. Although data mining techniques could alleviate this problem, it is often unclear to social science researchers which option is the most suitable one to a particular research problem. The main objective of this paper is to illustrate how the model comparison of two popular ensemble methods, namely, boosting and bagging, could yield an improved explanatory model.

Available at (open access): <https://doi.org/10.7275/chaw-y360>

Title:

Zwart, S., & Baker, M. (2018). *Improving productivity and job quality of low-skilled workers in the United Kingdom*. OECD Economics Department Working Papers No. 1457. Paris: OECD Publishing. doi: 10.1787/14dfd584-en

Abstract:

More than a quarter of adults in the United Kingdom have low basic skills, which has a negative

impact on career prospects, job quality and productivity growth. Furthermore, unlike most other countries, young adults do not have stronger basic skills than the generation approaching retirement. The lack of skills development starts at young ages and continues in secondary education; despite a modest reduction in recent years, the educational attainment gap between disadvantaged and non-disadvantaged students remains high. The low participation in lifelong learning of low-skilled individuals puts them at risk of falling behind in meeting the changing skill demands of the dynamic labour market. Ongoing reforms to the vocational education and training (VET) system and apprenticeship system should have a positive impact on low-skilled productivity, enabling students to gain the necessary basic skills and for workers to find quality jobs. Improving the targeting of active labour market policies, and ensuring that the ongoing increases in the national living wage are delivered in a sustainable way will also play an important role in improving job quality and reducing the high rate of youth neither employed or in education or training. Policy responses to the rise of non-standard work will also be essential in improving the job quality of the low-skilled.

Available at (open access): <https://doi.org/10.1787/14dfd584-en>

2.12 Publications in 2019

Title:

Albæk, K., & Rosdahl, A. (2019). Decomposing cross-country differences in skills: Evidence from four Nordic countries. *Scandinavian Journal of Educational Research*, 63(2), 163-178. doi: 10.1080/00313831.2017.1324908

Abstract:

This paper performs multivariate analysis of skill differences in four Nordic countries as assessed by the Organisation for Economic Co-operation and Development's Programme for the International Assessment of Adult Competencies survey of adults aged 16–65. The differences in average skills between Finland and each of the three Scandinavian countries are decomposed into a component that is due to different skill levels in subgroups of the population and a component that is due to differences in the composition of subgroups. The decompositions show that the high Finnish average skill level compared to the three Scandinavian countries can be attributed to the low share of immigrants in Finland and to high scores among Finns with high school and less than high school education. The Finnish average score is pulled substantially downwards as a consequence of the low numeracy skill level among older Finns, which is consistent with an increase in the quantity or quality of Finnish education over time, relative to the other three Nordic countries.

Available at: <https://doi.org/10.1080/00313831.2017.1324908>

Title:

Annen, S. (2019). Measuring labour market success: A comparison between immigrants and native-born Canadians using PIAAC. *Journal of Vocational Education & Training*, 71(2), 218-238. doi: 10.1080/13636820.2018.1473469

Abstract:

Canadian society is characterised by a plurality of immigrants and Canadian migration policy and corresponding recognition approaches are strongly geared to economic criteria, qualifications and skills. This paper addresses the question how immigrants who have acquired their highest qualification outside Canada are able to use their foreign qualifications and skills in their current job. The analyses are conducted to verify the assumptions of human capital theory as well as the lack of transferability of human capital across country borders. To answer these questions a labour market

success index is developed, which is used as a dependent variable in regression models. The results show that traditional operationalisations of human capital (years of education, years of work experience and skills) have a positive effect on individual labour market success. At the same time, being born abroad and having acquired one's highest qualification abroad in comparison to Canada, especially in a Non-Western country, has negative effects on the overall labour market success of an individual. Detailed comparisons regarding different indicators of labour market success also prove these comparatively negative effects. The results demonstrate the limited explanatory power of human capital theory and the necessity to complement it with Bourdieu's concepts of social and cultural capital.

Available at: <https://doi.org/10.1080/13636820.2018.1473469>

Title:

Arcangelis, G. D., & Mariani, R. D. (2019). *Multi-country tasks measures: Beyond US-based data and a focus on migration*. Working Paper Series No. 5. Roma: Dipartimento di Scienze Sociali ed Economiche della Sapienza Università di Roma. Retrieved March 6, 2020, from http://www.diss.uniroma1.it/sites/default/files/allegati/DiSSE_DeArcangelis_Mariani_wp5_2019.pdf

Abstract:

The US-based O*NET database is commonly used for multi-country studies on labor markets and migration by assuming invariant occupation technology, i.e. the quantitative assignment of tasks to occupations. We claim that the OECD dataset PIAAC (Programme for the International Assessment of Adult Competencies) could provide a valid alternative to obtain country-specific task measures. The US presence in both datasets allows us to compare the consistency of the two data sources along two dimensions. First, we compute the correlation coefficients between aggregate task indexes and they are very high (rarely less than 0.7). Secondly, we use the PIAAC database to replicate the empirical model in Peri and Sparber (2009) on US natives' task upgrading after a migration shock, and the results are strikingly similar to the original O*NET-based estimates. The multi-country variability of PIAAC-based task indexes for European countries are non-negligible; hence, we recommend these PIAAC-based measures for future multi-country analysis.

Available at (open access): http://www.diss.uniroma1.it/sites/default/files/allegati/DiSSE_DeArcangelis_Mariani_wp5_2019.pdf

Title:

Aspøy, T. M. (2019). Low education, high job quality? Job autonomy and learning among workers without higher education in Scandinavia, the United Kingdom and Ireland. *European Societies*, 1-23. doi: 10.1080/14616696.2019.1660392

Abstract:

Most comparative studies of job autonomy and learning opportunities find that workers in Scandinavian countries are better off. Recent studies have challenged these findings, showing low job quality, particularly in the lower private service sector in the Scandinavian countries. The aim of this article is to examine whether the autonomous and learning-intensive working life of Scandinavia also applies to people without higher education. It explores if there is a gap in job autonomy and informal job learning between educational groups, and if this gap varies across the social democratic systems of Sweden, Norway and Denmark on the one hand, and the liberal systems of the United Kingdom and Ireland on the other. Drawing on quantitative micro-data from PIAAC (2011/2012), this article demonstrates that Scandinavians with no education above upper secondary school do experience greater job autonomy than their counterparts in the British Isles. Moreover, the gap between educational groups in terms of job autonomy is smaller in Scandinavia than it

is in the liberal systems. Regarding informal learning opportunities, the relative disadvantage among workers without higher education seems to be associated with selection into occupations with few opportunities for informal job learning, in Scandinavia as well as the British Isles.

Available at: <https://doi.org/10.1080/14616696.2019.1660392>

Title:

Barrett, G. F., & Riddell, W. C. (2019). Ageing and skills: The case of literacy skills. *European Journal of Education, 54*(1), 60-71. doi: 10.1111/ejed.12324

Abstract:

The relationship between ageing and skills is of growing policy significance due to population ageing, the changing nature of work and the importance of literacy for social and economic well-being. This article examines the relationship between age and literacy skills in a sample of OECD countries using three internationally comparable surveys. By pooling the survey data across time we can separate birth cohort and ageing effects. In doing so, we find that literacy skills decline with age and that, in most of our sample countries, successive birth cohorts tend to have poorer literacy outcomes. Therefore, once we control for cohort effects, the rate at which literacy proficiency falls with age is much more pronounced than that which is apparent, based on the cross-sectional relationship between age and literacy skills at a point in time. Further, in studying the literacy-age relationship across the skill distribution in Canada we find a more pronounced decline in literacy skills with age at lower percentiles, which suggests that higher initial literacy moderates the influence of cognitive ageing.

Available at (open access): <https://doi.org/10.1111/ejed.12324>

Title:

Barth, E., Keute, A. L., Schøne, P., Simson, K., & Steffensen, K. (2019). NEET Status and early versus later skills among young adults: Evidence from linked register - PIAAC data. *Scandinavian Journal of Educational Research, 1*-13. doi: 10.1080/00313831.2019.1659403

Abstract:

Do skills protect against exclusion in adult ages, and how important are the skills acquired before the age of 16 years versus those acquired later on? We match the scores on numeracy and literacy skills from the 2011 PIAAC for young adults backwards to grade point average (GPA) data from compulsory school education, measured at the age of 16 years (GPA16), and forwards to employment and education register data 2 years after the PIAAC test. There is a high correlation between GPA16 and PIAAC scores even when controlling for parental background, health status, and completion of post-compulsory school education. Including both GPA16 and PIAAC scores in a model of the probability of NEET status 2 years after the PIAAC test shows three times as large differences associated with GPA16 scores than with PIAAC scores, even though the PIAAC test is taken closer in time than the GPA16 results.

Available at (open access): <https://doi.org/10.1080/00313831.2019.1659403>

Title:

Bechichi, N., Jamet, S., Kenedi, G., Grundke, R., & Squicciarini, M. (2019). *Occupational mobility, skills and training needs*. ECD Science, Technology and Industry Policy Papers No. 70. Paris: OECD Publishing. doi: 10.1787/30a12738-en

Abstract:

his work investigates how education and training policies may facilitate occupational transitions. It proposes a methodology to estimate cognitive and task-based skill distances across occupation. It identifies the occupational transitions that can occur upon small (of up to 6 months), moderate (up to 1 year) or important (up to 3 years) (re)training spells. “Possible” transitions, i.e. transitions implying reasonable upskilling needs and similar knowledge areas, are distinguished from “acceptable” occupations, i.e. possible transitions entailing limited loss of human capital and income, if any. Possible and acceptable transitions exist for the quasi-totality of occupations, when up to one year of training is considered. Low-skilled occupations display fewer acceptable transitions and generally require higher cognitive or task-based skills. Transitions for many high-skilled occupations entail important wage decreases or skills excesses. Acceptable transitions for occupations at high-risk of automation are harder to find, and tend to require cognitive and task-based skills-related training.

Available at (open access): <https://doi.org/10.1787/30a12738-en>

Title:

Bizopoulou, A. (2019). *Job tasks and gender wage gaps within occupations*. VATT Working Papers No. 124. Helsinki: VATT Institute for Economic Research. Retrieved March 4, 2020, from <https://www.doria.fi/handle/10024/171446>

Abstract:

I provide evidence that task use at work by men and women in the same occupations is significantly different. The observed difference can account for the within-occupational gender-wage gap that is prevalent in many developed countries. Using data for thirteen European countries, I find that women consistently report spending less time than men on specific job tasks. The effect is exacerbated with fertility and selection into the labour force, however neither mechanism can completely account for the observed differences. The difference is also not accounted for by the type of occupations in which women are employed, nor their working hours and it is not driven by measurement error. Similarly to studies for the US and Australia, I find that a large portion of the gender wage-gap is found among individuals employed in the same occupational titles. However, controlling for both occupations and task use in a wage equation accounts for the entirety of the within-occupational gender wage-gap, for all countries in the sample.

Available at (open access): <https://www.doria.fi/handle/10024/171446>

Title:

Boeren, E. (2019). Foreign-born adults' participation in educational activities: Evidence from Europe. *European Education*, 51(2), 127-146. doi: 10.1080/10564934.2018.1520600

Abstract:

This article demonstrates that foreign-born adults in Europe tend to participate less in adult education activities compared to native-born adults living in the same country. However, this is mainly explained through the job-related nature of nonformal education. Foreign-born adults tend to participate more in formal adult education than native-born adults in a range of countries. Based on analyses using data from the Organization for Economic Cooperation and Development Programme on the International Assessment of Adult Competencies (PIAAC), this article shows that participation rates in European countries are mainly determined by adults' educational attainment and having a job and that countries with overall high participation rates have higher participation rates among foreign-born adults as well. Exploring the participation in adult education of foreign-born adults in European countries is important, as it is known that those adults perceive difficulties in finding a job

and having their foreign credentials recognized in the new country context. Participation in adult education courses might help them in learning new or maintaining their already existing skills.

Available at: <https://doi.org/10.1080/10564934.2018.1520600>

Title:

Bönisch, M., Peterbauer, J., & Stöger, E. (2019). Skills mismatch among older workers. In M. Barslund (Eds.), *Policies for an Ageing Workforce: Work-life balance, working conditions and equal opportunities* (pp. 44-50). Brussels: Centre for European Policy Studies (CEPS). Retrieved March 9, 2020, from <https://www.ceps.eu/wp-content/uploads/2019/11/Policies-for-an-ageing-work-force-1.pdf>

Abstract:

Skills are viewed as a major component of knowledge-based economies. On an individual level, skills can support labour market success and can have an effect on earnings and job satisfaction (Hanushek et al., 2014). But skills must be used efficiently to generate these positive labour market outcomes. If this is not the case, skill mismatch occurs. This means that workers either do not meet the skills required at their workplace (under-skilled / over-utilisation) or have higher skills than needed (over-skilled / under-utilisation). In this chapter, we look at differences between two age groups (25-49 and 50-65 years) with regard to their skill levels and skill use at the workplace. We analyse how older workers (50-65) utilise their skills in the workplace compared to the younger ones. Which factors influence skill utilisation? Does age have a relevant effect on skill mismatch when controlling for gender, education and other variables? Do older workers tend to lose their skills because these skills are not fully utilised in the workplace? And what are the effects of over- or under-utilisation of skills on earnings and job satisfaction? The focus of our empirical research is on the analysis of the PIAAC dataset¹⁷ for the five countries that participate in the European FACTAGE (Fairer Active Ageing for Europe) project: Austria, Germany, Spain, Belgium and the UK.

Available at (open access): <https://www.ceps.eu/wp-content/uploads/2019/11/Policies-for-an-ageing-work-force-1.pdf>

Title:

Borgna, C., Solga, H., & Protsch, P. (2019). Overeducation, labour market dynamics, and economic downturn in Europe. *European Sociological Review*, 35(1), 116-132. doi: 10.1093/esr/jcy046

Abstract:

Previous research on overeducation focused on labour market entrants and investigated the role of individual characteristics and, more recently, labour market and educational institutions. This article shifts the focus to primeage workers, exploring the relation between economic conditions, related labour market dynamics, and overeducation across 16 European countries in the aftermath of the 2008 economic crisis. We regard cross-sectional overeducation rates as the result of past labour market dynamics involving employers' hiring and dismissal decisions and employees' job mobility. Based on data from the 2011/2012 Programme for the International Assessment of Adult Competences (PIAAC), we estimate mixed-effects linear-probability models. We find that overeducation risks are higher for individuals who experienced job mobility after the outbreak of the crisis (movers) than for those who were able to keep their jobs, with workers who changed their job before the crisis (short-term stayers) experiencing higher overeducation risks than long-term stayers. These differences are partly explained by compositional and contextual factors—however, our newly introduced differentiation of labour market dynamics profiles also shows an independent effect. Moreover, tertiary graduates are more likely to be overeducated than workers with upper-secondary qualifications—controlling for workers' skill heterogeneity. The findings on macroeconomic conditions are mixed: overeducation risks are higher in contexts of poorer economic conditions and even more

so for movers; however, the multiplicative negative effect for movers disappears after controlling for job characteristics. This finding suggests that post-crisis mobility channeled workers more often into labour market segments with inferior job conditions where the risk of overeducation is generally higher.

Available at (open access): <https://doi.org/10.1093/esr/jcy046>

Title:

Brand, G. (2019). *Returns to skills in the Israeli labor market*. Policy Research Jerusalem: Taub Center for Social Policy Studies in Israel. Retrieved March 6, 2020, from http://taubcenter.org.il/wp-content/files_mf/returnstoskillsinteisraelilabormarket2019eng.pdf

Abstract:

This study focuses on workers identified in the OECD Survey of Adult Skills as highly skilled and examines their employment characteristics, wages, and the degree to which they are employed in occupations demanding high skill levels. Although the survey data show that the skill level of highly skilled workers in Israel is lower than in other developed countries, it appears that these workers are fulfilling their potential to a greater extent. They have a greater tendency to be employed in high-paying professions and are less likely to be found in low-paying positions that do not require high skill levels. The result is that wage gaps between Israel and other countries are narrower at higher skill levels and the wages of the highest-skilled workers in Israel approach those of their counterparts in the selected OECD countries examined. This is particularly true in the case of men. The successful utilization of human capital in Israel is an indication of the need for policy makers to focus attention on low-skilled workers. Although the share of these workers with a college education is high, it has been found that they are often characterized by a low return to their education. This highlights the limitations of increasing accessibility to higher education as a way of reducing disparities and the need to improve basic skills at early education stages. Special attention should be devoted to the Arab Israeli population since, in contrast to other groups, it is characterized by low returns to both skill and experience in the labor market.

Available at (open access): http://taubcenter.org.il/wp-content/files_mf/returnstoskillsinteisraelilabormarket2019eng.pdf

Title:

Brussevich, M., Dabla-Norris, E., & Khalid, S. (2019). *Is technology widening the gender gap? Automation and the future of female employment*. IMF Working Paper No. 19/91. Washington: International Monetary Fund. Retrieved February 28, 2020, from <https://www.imf.org/~/media/Files/Publications/WP/2019/WPIEA2019091.ashx>

Abstract:

Using individual level data on task composition at work for 30 advanced and emerging economies, we find that women, on average, perform more routine tasks than men - tasks that are more prone to automation. To quantify the impact on jobs, we relate data on task composition at work to occupation level estimates of probability of automation, controlling for a rich set of individual characteristics (e.g., education, age, literacy and numeracy skills). Our results indicate that female workers are at a significantly higher risk for displacement by automation than male workers, with 11 percent of the female workforce at high risk of being automated given the current state of technology, albeit with significant cross-country heterogeneity. The probability of automation is lower for younger cohorts of women, and for those in managerial positions.

Available at (open access): <https://www.imf.org/~/media/Files/Publications/WP/2019/WPIEA2019091.ashx>

Title:

Buehler, E., & Pampaka, M. (2019). Validating a measure of numeracy skill use in the workplace for incarcerated and household adults. *Journal of Applied Measurement*, 20(3), 272-292.

Abstract:

The aim of this study is to construct a measure of numeracy skill use in the workplace for incarcerated and household adults. The 2012/2014 Programme for the International Assessment of Adult Competencies (PIAAC) Survey of Adult Skills asked about the type and frequency of numeracy tasks performed as part of one's job to nationally-representative incarcerated and household adult samples. This paper takes these items from this survey and focuses on the validation of a measure of numeracy skill use in the workplace using the principles of the Rasch rating scale model. In the interest of exploring options for strengthened validity, response categories were collapsed to produce an optimal categorization structure. Findings suggest an instrument to measure numeracy skill use in prison and free market workplaces could potentially be improved with fewer response categories and more items that ask about a broader range of numeracy skills.

Available at: <http://jampress.org>

Title:

Bustelo, M., Flabbi, L., & Viollaz, M. (2019). *The gender labor market gap in the digital economy*. IDB Working Paper Series No. 1056. Washington, DC: Inter-American Development Bank (IDB). doi: 10.18235/0001941

Abstract:

Recent years have seen an ever-greater expansion of the digital economy, a development that may bring new opportunities to workers who were at a disadvantage in the traditional economy. We focus on a specific set of workers who belong to such a group: women. We study a skill set of particular relevance in the digital economy and estimate their returns in the labor market, according to gender, across four Latin American countries. We find that information and communication technologies (ICT) skills and science, technology, engineering, and mathematics (STEM) skills yield significant positive returns for both men and women. However, there is a significant gender gap that favors men on the STEM returns. There is also a sizable gender gap regarding the amount of skills accumulated by gender. Through an Oaxaca-Blinder decomposition, we estimate that up to 80% of the gender gap in hourly wages may be due to the lower returns that women receive, relative to men, on their STEM skills. If an investment in skills relevant to the digital economy may be beneficial for the labor market performance of both men and women, why returns to STEM exhibit such strong gender asymmetries remains an open and relevant question.

Available at (open access): <http://dx.doi.org/10.18235/0001941>

Title:

Byrne, K., & Plekhanov, A. (2019). *Education reforms and adult skills: Evidence from Estonia*. EBRD Working Paper No. 237. London: European Bank for Reconstruction and Development (EBRD). doi: 10.2139/ssrn.3493799

Abstract:

This paper investigates the impact of education reforms in Estonia on adult skills, using the PIAAC surveys conducted by the OECD. Estonia implemented comprehensive education reforms in the early 1990s throughout Estonian-speaking schools while in Russian-speaking schools less comprehensive reforms were implemented later. A large minority of Estonia's population at the time was enrolled in Russian-speaking schools. This provides a unique opportunity to measure the impact of

education reforms on literacy, numeracy and problem-solving skills among adults by comparing improvements in PIAAC performance among Estonian and Russian speakers. Difference-in-difference estimations suggest that the reforms led to an improvement of around 15 per cent of a standard deviation in terms of adult skills. This translates into a wage (productivity) premium of around 6 per cent.

Available at (open access): <http://dx.doi.org/10.2139/ssrn.3493799>

Title:

Cai, J., Ruhil, A. V. S., & Gut, D. M. (2019). *Prison-based education: programs, participation and proficiency in literacy/numeracy*. Commissioned Paper Washington: PIAAC Gateway. Retrieved March 4, 2020, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5c701a794e17b60293c15fd6/1550850681961/2018_Cai_Ruhil_Gut_Prison-Based_Education.pdf

Abstract:

Today, more people are incarcerated in the United States than in past decades, and we have the infamous distinction of being the nation that leads in incarceration rates (670 per 100,000 persons as per Walmsley 2018). Although an increasing body of research shows that correctional education works in terms of enhancing post-release employability and reducing recidivism, there is a paucity of literature that identifies the educational programs that benefit inmates the most vis-à-vis developing the literacy/numeracy skills needed for reentry into an ever-changing labor market. Identifying the type, amount and intensity of programs that reduce recidivism is not a choice, it is a critical path to reducing recidivism. Given this need our study focuses on 3Ps – prison-based education programs, prisoners' participation in academic/vocational programs, and their proficiency in literacy and numeracy as assessed during their incarceration by the Program for the International Assessment of Adult Competencies (PIAAC) Survey of Incarcerated Adults in 2014. Our investigation spans the following broadly defined questions: 1) How do inmates differ from the household population in the use of literacy/numeracy skills in life and at work? 2) How do participants in different types of prison-based educational programs (such as basic skills, General Equivalency Degree (GED), employment readiness and job training) reflect literacy and numeracy proficiency? That is, does proficiency vary by program? 3) Do inmates who participate in prison-based academic and/or vocational programs use more literacy and numeracy skills in their prison life, compared with on participants? Our study identified three types of prison-based programs that serve inmates who possess a range of literacy and numeracy levels: (i) programs targeting basic skills serve inmates without a GED or high school diplomas; (ii) programs that help inmates obtain a GED or high school diplomas that equip inmates with necessary proficiency in literacy and numeracy to pursue appropriate job training programs/postsecondary education, and; (iii) vocational/professional training programs that advance skills in areas such as computers, mechanics and technology. What we found: Compared with the household population, a large proportion of inmates rarely use certain literacy /numeracy skills (e.g., reading bills, invoices and financial statements, reading diagrams, maps and schematics, filling in forms and writing reports at prison jobs) in life or work during incarceration, particularly when it comes to numeracy. Inmates who did not reach high school level and did not participate in any programs had the lowest literacy and numeracy. By contrast, inmates who participated in basic skills programs performed significantly higher than this reference group in both literacy and numeracy. Over two-thirds of inmates who participated in vocational programs (i.e. employment readiness and/or job training) had a high school diploma, and participants in vocational programs during incarceration were likely to use more literacy and numeracy skills in their prison life than the non-participants. We recommend that policy makers consider the valuable link we found between skills use and participation in vocational programs or career and technical education (CTE). From the perspective of need-based education, expanding programs targeting basic skills is a must, as almost one in three inmates have education levels lower than high school diploma. Since evidence shows

that educational programs in prison benefit inmates on improving skills, CTE should receive more resources precisely because these programs lead not only to obtaining but also retaining employment, which is a critical policy lever if we truly wish to reduce recidivism.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5c701a794e17b60293c15fd6/1550850681961/2018_Cai_Ruhil_Gut_Prison-Based_Education.pdf

Title:

Calero, J., Murillo Huertas, I. P., & Raymond Bara, J. L. (2019). Education, age and skills: An analysis using PIAAC data. *European Journal of Education*, 54(1), 72-92. doi: 10.1111/ejed.12318

Abstract:

The main aim of this article is to analyse the change of adult skills, as captured by cognitive skills assessed in PIAAC, across age cohorts, taking into account that the quality of schooling may change from one cohort to another. We estimate a model that relates numeracy and literacy skills to age, schooling, gender and variables related to both family background and labour market performance. The specification allows us to control for changes in the efficiency of the transformation of schooling into skills when drawing age-skill profiles. Our results show that the effect of ageing on skills, once isolated from cohort effects related to schooling, decreases monotonically across consecutive cohorts. The change of the efficiency of the transformation of schooling into both numeracy and literacy skills shows a remarkably similar pattern. Nonetheless, this change differs substantially between education levels, with the efficiency of the transformation of schooling into skills showing a steadier profile for intermediate than for higher education. Finally, empirical evidence is provided for the decomposition of the differences in the skill levels of the older vs. the prime age generations. The results suggest that the progressive expansion of schooling across younger generations partially offsets the negative effect of the irrepressible ageing of society on skills.

Available at (open access): <https://doi.org/10.1111/ejed.12318>

Title:

Calmfors, L., & Gassen, N. S. (2019). Integrating immigrants into the Nordic labour markets: Background, summary and policy conclusions. In L. Calmfors & N. S. Gassen (Eds.), *Integrating Immigrants into the Nordic Labour Markets* (pp. 9-35). Copenhagen: Nordic Council of Ministers. Retrieved March 9, 2020, from <https://norden.diva-portal.org/smash/get/diva2:1317928/FULLTEXT01.pdf>

Abstract:

Denmark, Finland, Norway and Sweden face similar problems of integrating large groups of immigrants, especially low-educated ones from outside the EU, into their labour markets. This volume investigates how labour market integration of these groups can be promoted and seeks to identify appropriate policies. Our introduction presents the background to the volume, summarises the main findings and discusses policy recommendations. A key conclusion is that no single policy will suffice. Instead, a combination of education, active labour market, social benefit and wage policies should be used. The exact policy mix must depend on evaluations of the trade-offs with other policy objectives.

Available at (open access): <https://norden.diva-portal.org/smash/get/diva2:1317928/FULLTEXT01.pdf>

Title:

Cebolla-Boado, H., Miyar-Busto, M., & Muñoz-Comet, J. (2019). How much can you take with you? The role of education in explaining differences in the risk of unemployment between migrants and natives. *Comparative Migration Studies*, 7(41), 1-21. doi: 10.1186/s40878-019-0144-4

Abstract:

This paper looks at how migrants with different skill profiles make use of their education in order to avoid unemployment compared with natives in three European countries with significantly different labour markets and policies for attracting highly skilled migration: France, Spain and the UK. The paper also explores the role played by the quality of the education migrants and natives received in accounting for these differentials, an explanation rarely tested in the literature due to a lack of appropriate data. We here use PIAAC data (OECD), which for the first time offers an interesting proxy of the quality of education, namely the cognitive skills of a representative sample of adult workers in our selected countries. The paper reaches three clear conclusions. Firstly, that it is among the most educated that inequality in obtaining returns to education by migrant status reaches a maximum. Secondly, that there are important differences in how this happens across countries, with the UK minimizing migrant-native differentials when compared with France and Spain. And that thirdly, and most surprisingly, differences in cognitive abilities, our proxy of the quality of education, are somewhat irrelevant in explaining this inequality.

Available at (open access): <https://doi.org/10.1186/s40878-019-0144-4>

Title:

Chatoor, K., MacKay, E., & Hudak, L. (2019). *Parental education and postsecondary attainment: Does the apple fall far from the tree?* Toronto: Higher Education Quality Council of Ontario. Retrieved March 4, 2020, from <http://hdl.voced.edu.au/10707/524226>

Abstract:

Research conducted over the past two decades has revealed that parental education is an important determinant of post secondary education (PSE) attainment. Students who come from a family where neither parent completed PSE are far less likely to pursue PSE themselves. As a result, the government of Ontario put in place policies that dramatically increased overall enrolment at universities and colleges. It also expanded financial assistance, capped tuition fees and provided targeted funding to institutions to support underrepresented students, including those whose parents did not complete PSE (known as first-generation students). Using newly available data, this report assesses whether the gap in PSE attainment between first-generation students and their counterparts whose parents attained a postsecondary credential has changed, and whether parental education remains a significant determinant of PSE attainment. [The authors] also examined whether first-generation students who do obtain a postsecondary education reap the benefits of their credentials once in the labour market, and what effect, if any, their parents' educational background has on their labour market outcomes. Key findings reveal that a notable gap still exists in the PSE completion rate between first-generation students and their counterparts. The situation appears to be particularly worrisome for young men. [The authors'] analysis indicates that parental education carries more weight in determining postsecondary attainment than other factors including family income.

Available at (open access): <http://hdl.voced.edu.au/10707/524226>

Title:

Choi, S. J., Jeong, J. C., & Kim, S. N. (2019). Impact of vocational education and training on adult skills and employment: An applied multilevel analysis. *International Journal of Educational Development*, 66, 129-38. doi: 10.1016/j.ijedudev.2018.09.007

Abstract:

Vocational education and training has played a central role in promoting the school-to-work transition of young people. Despite this role, the return to Vocational Education and Training (VET) has

been neglected in previous studies. This paper aims to examine individual returns to VET over a lifespan and to assess the effects of national VET systems, including school-based and work-based VET systems, on economic outcomes. We use the OECD's Program for the International Assessment of Adult Competencies (PIAAC) dataset for conducting our analyses. The results of this study indicate that vocational track graduates are more likely to have literacy skill disadvantages, short-term employment advantages, and long-term employment disadvantages compared to general track graduates. The most significant finding is that there are substantial differences between work-based and school-based VET systems with regard to their literacy and employment effects. Compared to VET graduates from general education-oriented countries, VET graduates from work-based VET-oriented countries are initially more likely to be employed, but that employment premium narrows faster over time. Therefore, a lifespan overview and the characteristics of national VET systems should enter into policy debates on national educational systems.

Available at: <https://doi.org/10.1016/j.ijedudev.2018.09.007>

Title:

Çim, M. (2019). *Analysis of labor markets and migration* (Dissertation). Ruhr-Universität Bochum. doi: 10.13154/294-6479

Abstract:

Do immigrants steal our jobs? Do robots take over our jobs? These two questions have been part of public concerns in many industrialized countries. These concerns were accelerated by the recent immigrant inflows and the rapid technological advancements, and were rooted in discussions in the media in the last years. Demographic change, globalization and new technologies alter the nature of labor markets and pose various challenges, but also provide opportunities to the labor force. The dissertation analyzes the recent trends in the labor markets as well as immigrant-native discrepancies with respect to educational and occupational outcomes; focuses on the educational differences between natives and immigrants and investigates the prevalence of qualification-occupation mismatches among immigrants compared to natives in Europe; studies the impact of automation on the labor market transitions of workers in Germany and examines how immigration influences the occupational attainment of natives by considering the role of workplace tasks. [Source: From the introduction]

Available at (open access): <https://doi.org/10.13154/294-6479>

Title:

Cook, R. (2019). Participation and inclusivity in adult learning: International perspectives. In J. Tummons (Eds.), *PCET: Learning and teaching in the post compulsory sector*. London: Sage. <https://uk.sagepub.com/en-gb/eur/pcet/book261886>

Abstract:

This chapter uses the international data from PIAAC to analyses: (a) levels of participation in adult learning (how many adults participate); and (b) its inclusivity (to what extent all individuals in society have a chance to participate in adults learning). Empirical findings are discussed alongside the theories that have been used to understand why participation rates vary across countries and across different groups in society. The chapter finishes with a discussion of the Nordic countries' distinctive approach to adult learning, followed by a conclusion, referring back to the key arguments about adult learning and providing an outlook for future international comparative research on adult learning. [Source: From the introduction, p. 223]

Available at: <https://uk.sagepub.com/en-gb/eur/pcet/book261886>

Title:

Cooper, R., & Liu, H. (2019). MisMatch in human capital accumulation. *International Economic Review*, 60(3), 1291-1328 doi: 10.1111/iere.12386

Abstract:

This article studies the allocation of heterogeneous agents to levels of educational attainment. The goal is to understand the magnitudes and sources of mismatch in this assignment, both in theory and in the data. The article presents evidence of substantial mismatch between ability and educational attainment across 21 OECD countries, with a main focus on Germany, Italy, Japan, and the United States. Model parameters are estimated using a simulated method of moments approach. The main empirical finding is that measured mismatch arises largely from noise in test scores and does not reflect borrowing constraints. Taste shocks play a minor role in explaining mismatch.

Available at (open access): <https://doi.org/10.1111/iere.12386>

Title:

Cummins, P. A., Yamashita, T., Millar, R. J., & Sahoo, S. (2019). Problem-solving skills of the U.S. workforce and preparedness for job automation. *Adult Learning*, 30(3), 111-120. doi: 10.1177/1045159518818407

Abstract:

Automation and advanced technologies have increased the need for a better understanding of the skills necessary to have a globally competitive workforce. This study used data from the Program for the International Assessment of Adult Competencies to compare problem-solving skills in technology-rich environments among adults in South Korea, Germany, Singapore, Japan, Canada, Estonia, the United Kingdom, the United States, and Australia. Overall, the United States had the lowest scores among all countries, and in all countries scores declined with age. The United States had higher proportions of survey participants in the lowest skill category and lower proportions in the top-skill categories. The results of this study suggest changes in the U.S. educational and lifelong learning systems, and policies may be necessary to ensure all adults have the necessary skills in a competitive workforce.

Available at: <https://doi.org/10.1177/1045159518818407>

Title:

Daley, A., Hu, M., & Warman, C. (2019). *Language proficiency and immigrants' economic integration. It is vital to measure language proficiency well, as it crucially determines immigrants' earnings*. IZA World of Labor No. 469. Bonn: IZA – Institute of Labor Economics. doi: 10.15185/izawol.469

Abstract:

Over recent decades, Western countries have admitted many immigrants from non-traditional regions (e.g. Philippines, India, China), which has coincided with poor economic integration. Language proficiency is an important determinant of economic integration; in addition to being a component of human capital, it plays a key role in facilitating the transmission of other components of human capital. Examining the strengths and weaknesses of objective and subjective measures of language proficiency is crucial for good integration policy, as is understanding the relationship between these measures and earnings, a key indicator of economic integration.

Available at (open access): <https://doi.org/10.15185/izawol.469>

Title:

Damme, D. V. (2019). Convergence and divergence in the global higher education system: The conflict between qualifications and skills. *International Journal of Chinese Education*, 8(1), 7–24. doi: 10.1163/22125868-12340102

Abstract:

Globally, higher education is expanding at an unprecedented pace. But two competing forces seem to be at work. The first is globalization: higher education systems are globalizing, especially through international research networks and global rankings which fuel competition on a global scale. Internationally comparable qualification frameworks, credit transfer, internationalization policies and quality assurance and accreditation arrangements work towards globally exchangeable qualifications. But the second force, driving institutions to deliver skills which are relevant for the national and regional economies, works against convergence. The skills equivalents of national qualifications remain very different across countries. The skills agendas, driven by countries' position in global value chains, drive unequal outcomes. The consequence is that the global higher education system will remain characterized by huge inequalities, which are perceived as quality differences. Higher education policies need to find a balance between integration in the global higher education order and serving the domestic skills needs.

Available at: <https://doi.org/10.1163/22125868-12340102>

Title:

Davier, M., Khorramdel, L., He, Q., Shin, H. J., & Chen, H. (2019). Developments in psychometric population models for technology-based large-scale assessments: An overview of challenges and opportunities. *Journal of Educational and Behavioral Statistics*, 44(6), 671-705. doi: 10.3102/1076998619881789

Abstract:

International large-scale assessments (ILSAs) transitioned from paper-based assessments to computer-based assessments (CBAs) facilitating the use of new item types and more effective data collection tools. This allows implementation of more complex test designs and to collect process and response time (RT) data. These new data types can be used to improve data quality and the accuracy of test scores obtained through latent regression (population) models. However, the move to a CBA also poses challenges for comparability and trend measurement, one of the major goals in ILSAs. We provide an overview of current methods used in ILSAs to examine and assure the comparability of data across different assessment modes and methods that improve the accuracy of test scores by making use of new data types provided by a CBA.

Available at: <https://doi.org/10.3102/1076998619881789>

Title:

Delaney, R., & Smith, L. (2019). *Understanding educational aspiration among people in prison*. Washington: PIAAC Gateway. Retrieved March 5, 2020, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5c51c4f7562fa792468f687e/1548862712295/2019_Delaney_Smith_Educational_Aspiration_Prison.pdf

Abstract:

This study contributes to the research on achievement and educational aspirations in prison. What we found indicates a broad interest in education among incarcerated people that is not specific to gender, educational attainment, race (except perhaps among incarcerated Hispanics), or parental education, that becomes stronger with age and that is predicted by cognitive skill. In addition, we

find that a substantial majority of people in prison across all the co-variates and independent variables studied except one (having below high school educational attainment) that aspire to any level of education, indicate that they ultimately seek postsecondary education. In addition, those that aspire to postsecondary education have higher cognitive skill scores than those who seek programs other than postsecondary education. Given the malleability of cognitive skills, this would seem to suggest an opportunity for skill-building programs within prisons that could enhance interest in further educational attainment, perhaps increasing the pool of students motivated to pursue additional education, including postsecondary education in prison or after release. Higher levels of educational attainment could have a significant impact on the quality of life of these individuals, their families, and their communities in the future, in addition to public safety gains (Davis et al, 2013; Attewell and Lavin, 2007). Finally, enhancing cognitive skill-building programs in prison could aid corrections and college program staff in cultivating more interest in education programs, potentially diversifying the pool of applicants to postsecondary programs by increasing interest among underrepresented populations (for example Hispanic people). [Source: From the conclusion, p. 22]

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5c51c4f7562fa792468f687e/1548862712295/2019_Delaney_Smith_Educational_Aspiration_Prison.pdf

Title:

Demirbolat, A. O. (2019). A study on the relationship between mean years of schooling, literacy skills level of the countries, and their level of democratic development. *World Journal of Education*, 9(1), 145-151. doi: 10.5430/wje.v9n1p145

Abstract:

This study's objective is to examine the relationship between the mean years of schooling, level of adult literacy skills, and democratic development levels. The study was designed as a relational survey model. The analytics employed is the path analysis, which tests the existence of causal relationship between the variables. The statistical analysis indicates that a significant and strong relationship exists between the mean years of schooling and adult literacy skills and further that a significant, medium level, relationship is present between the countries' adult literacy skills and their democratic development levels. Moreover, literacy skills create a significant mediation impact on the relationship between the mean years of schooling and democratic development level. Also significant is the indirect impact of the nations' mean years of schooling on their democratic development levels. Countries seeking to sustain and protect participative and deep democracy may need to review their formal and informal education policies. Therefore, it may be especially necessary to attach greater importance to cognitive-verbal processes in formal education institutions as a departure point of action.

Available at (open access): <https://doi.org/10.5430/wje.v9n1p145>

Title:

Desjardins, R. (2019). The relationship between attaining formal qualifications at older ages and outcomes related to active ageing. *European Journal of Education*, 54(1), 30-47. doi: 10.1111/ejed.12315

Abstract:

Active ageing has become a policy concept that serves as an important response to the ageing of many societies, primarily because it is thought to lead to positive outcomes such as increased employment, productivity, health and other well-being into older ages. This article presents results of an analysis of the relationship between attaining qualifications at older ages and active ageing in later life. The analysis is based on data made available by the Programme for the International Assessment of Adult Competencies (PIAAC). Results of the analysis show that adults who attain higher

levels of qualifications in mid to later life are associated with an increased probability of, being employed, participating in continued learning, and scoring higher on the PIAAC literacy scale when they are older. The findings suggest that open and flexible formal education structures at all levels is good for activating the population to be employed, to engage in continued learning and to develop and maintain literacy skills into older ages.

Available at (open access): <https://doi.org/10.1111/ejed.12315>

Title:

Desjardins, R. (2019). *Revisiting the determinants of literacy proficiency: A lifelong-lifewide learning perspective*. Commissioned Paper Washington: PIAAC Gateway. Retrieved February 28, 2020, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5dd814b4f6489a1d4d9bf678/1574442164794/2019_Desjardins_Determinants_Literacy.pdf

Abstract:

Emphasis on the acquisition and maintenance of literacy skills has grown due to mounting evidence of their importance to quality of life and overall societal productivity and social cohesion. This is one of the underlying motivations for the OECD's Programme for the Assessment of Adult Competencies (PIAAC). Important goals of the PIAAC study are to provide an accurate overview of the extent and distribution of literacy proficiency and other core competencies among and within countries in a comparable manner, and to study the antecedents as well as individual and societal outcomes associated with such competencies. Foremost, an important goal is to provide data to conduct analyses which can suggest ways in which policymakers might work to augment adult literacy competencies in the society in which they live and work. To do so, it is important to understand the determinants of literacy proficiency, how they may be implicated in the development of literacy from an individual lifecycle perspective, as well as how they may be implicated in development of national profiles of literacy proficiency as countries' socio-demographic make-up, socio-cultural practices and economies change over time. As part of the PIAAC study, direct links were established with the International Adult Literacy Survey (IALS) conducted in the 1990s, which together now provide measures of literacy proficiency and a range of antecedents that are comparable over time and across countries. First results of the PIAAC study were reported in OECD (2013a) which included some analysis of the determinants of literacy proficiency. Similarly, Desjardins (2003) summarized results from an extensive analysis of the determinants of literacy on the basis of the IALS data. The purpose of this paper is to revisit research examining the determinants of literacy proficiency and specifically to examine further the underlying structure of the determinants from a lifecycle perspective as well as the trends in this structure at the macro level for countries that participated in both the PIAAC and IALS studies.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5dd814b4f6489a1d4d9bf678/1574442164794/2019_Desjardins_Determinants_Literacy.pdf

Title:

Dohmen, D., Yelubayeva, G., & Wrobel, L. (2019). *Patterns in adult education participation in Europe*. FIBS-Forum No. 65. Berlin: Forschungsinstitut für Bildungs- und Sozialökonomie (FiBS). Retrieved February 28, 2020, from <http://hdl.handle.net/10419/203472>

Abstract:

In light of the growing importance of lifelong learning and the increased skills demand more and more studies focus on adult education statistics to derive policy recommendations. In part, the project VoRREFi-WB ("Economic and regional costs, funding structures and benefits of continuing education") aims to producing a more grounded analysis of perspectives on adult education and to

contribute to the discussion of several EU policy objectives, especially with respect to the follow-up indicators of the Lisbon strategy and the new Europe 2020 strategy. There is an urgent need for a common understanding of adult education statistics to overcome misinterpretations of Europe-wide comparable datasets on adult education. This paper provides an in-depth analysis of issues related to adult learning classifications and statistical concerns as well as an analysis of the development and performance of the adult education sector in Europe. The main overarching policy objectives to which the VoRREFi-WB project contributes include: Analysing trans-European data on the adult education sector to monitor the multiplicity of adult learning and to develop evidence-based policies; Achieving better insights about and understanding of the participation of adult learning, its participants, providers and nature. In the literature, analysts use a variety of concepts of training. Moreover, compared to compulsory education and higher education, data on adult education are limited due to their varied nature and the high dispersion of providers. Since for their surveys analysts must draw on what is available in terms of data, the emphasis is generally placed on simple measures of training participation, for example, whether training has been received during a particular time period. Furthermore, are statistical issues arise from the method of data collection as well as the varied wording of survey questions. Thus far, the literature is less focused on training aspects such as its duration, purpose, funding, location and the number of courses taken. These concepts have, however, often been regarded as important in more general discussions about the provision of training. To restate, this paper aims to fill the gap in the analysis of statistical data collection of adult education surveys, to provide a holistic analysis of the content and comparability of surveys as well as of current trends with comprehensive data split by contextual factors.

Available at (open access): <http://hdl.handle.net/10419/203472>

Title:

Doposo-Fernández, R., Giusti, G., & Kucel, A. (2019). *Predicting job satisfaction through individual cognitive ability and job autonomy*. Barcelona: Escola Superior de Ciències Socials i de l'Empresa de Tecnocampus, Universitat Pompeu Fabra. doi: 10.2139/ssrn.3404302

Abstract:

This paper analyzes the effects of cognitive ability on job satisfaction. Using PIAAC data we explore whether job satisfaction predictors observed in the literature change their behavior once we control for cognitive ability, proxied by an explicit test of individual numeracy level. We show that both, learning at work and job autonomy affect differently the job satisfaction for workers interacting with their level of cognitive ability measured. While learning increases job satisfaction for highly cognitive-able workers, task discretion (a measure of job autonomy) is particularly well valued by lower cognitive-able workers.

Available at (open access): <https://dx.doi.org/10.2139/ssrn.3404302>

Title:

Dudaité, J. (2019). Literacy change as a result of the education reform: Comparison among the Post-Soviet countries. *New Educational Review*, 54(1), 17-28.

Abstract:

In 1989 – 1991, after the collapse of the Soviet Union, it was an auspicious moment for structural changes in education systems in the new independent countries, which had been under control of the Soviet government for a long time. About three decades have passed since the beginning of the education reforms in the post-Soviet countries and several generations who studied within the framework of the reformed systems starting from the first grade have already grown up. Therefore, it is relevant to estimate the results of the reforms. One of the possible measures for estimating the

results of the education system or education reform is the change in population literacy within certain education systems. The purpose of the article is to compare the results of education reforms of the post-Soviet countries based on the population literacy considered as a result of former learning. The data of the Programme for the International Assessment of Adult Competencies (PIAAC) organised by the Organisation for Economic Co-operation and Development (OECD) are used for literacy comparison. The OECD PIAAC survey databases of Lithuania, Estonia, Russia, Poland, the Czech Republic, Slovakia and Slovenia were used for comparison of the results of the reforms implemented in the post-Soviet countries. Data analysis showed that at the lower and upper secondary education levels, the most positive results of the education reform were observed in Lithuania, while in Russia, the results were negative.

Available at (open access): <https://repository.mruni.eu/handle/007/15547>

Title:

Engelhardt, L., & Goldhammer, F. (2019). Validating test score interpretations using time information. *Frontiers in Psychology, 10*(1131), 1-18 doi: 10.3389/fpsyg.2019.01131

Abstract:

A validity approach is proposed that uses processing times to collect validity evidence for the construct interpretation of test scores. The rationale of the approach is based on current research of processing times and on classical validity approaches, providing validity evidence based on relationships with other variables. Within the new approach, convergent validity evidence is obtained if a component skill, that is expected to underlie the task solution process in the target construct, positively moderates the relationship between effective speed and effective ability in the corresponding target construct. Discriminant validity evidence is provided if a component skill, that is not expected to underlie the task solution process in the target construct, does indeed not moderate the speed-ability relation in this target construct. Using data from a study that follows up the German PIAAC sample, this approach was applied to reading competence, assessed with PIAAC literacy items, and to quantitative reasoning, assessed with Number Series. As expected from theory, the effect of speed on ability in the target construct was only moderated by the respective underlying component skill, that is, word meaning activation skill as an underlying component skill of reading competence, and perceptual speed as an underlying component skill of reasoning. Accordingly, no positive interactions were found for the component skill that should not underlie the task solution process, that is, word meaning activation for reasoning and perceptual speed for reading. Furthermore, the study shows the suitability of the proposed validation approach. The use of time information in association with task results brings construct validation closer to the actual response process than widely used correlations of test scores.

Available at (open access): <https://doi.org/10.3389/fpsyg.2019.01131>

Title:

Feinberg, I., Tighe, E. L., Talwar, A., & Greenberg, D. (2019). *Writing behaviors relation to literacy and problem solving in technology-rich environments: Results from the 2012 and 2014 U.S. PIAAC study*. Commissioned Paper Washington: PIAAC Gateway. Retrieved March 5, 2020, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5d3a210b5abd570001becd72/1564090635798/2019_Feinberg_Tighe_Talwar_Greenberg_WritingBehaviors.pdf

Abstract:

Writing is a fundamental skill used in everyday life and in the workplace, yet there is a paucity of research describing adults' self-reported writing behaviors as a function of their measured literacy and digital skills. Writing is a critical survival skill in the 21st century as adults need to fill out forms

or write emails or letters in both paper-based and digital environments for many different reasons such as health care, banking, voting, and education. Empirical evidence has found that in children, reading and writing skills are positively related, yet little is known about this relationship for adults. To deepen our understanding of this relationship, the study aims: a. to gain an understanding of relations among overall reading and writing behaviors at home and at work; b. to examine functional writing behaviors (writing emails/letters/memos, filling in forms) among lower- and higher-skilled adults in the Program for the International Assessment of Adult Literacy (PIAAC) Literacy and Problem Solving in Technology-Rich Environments (PSTRE) by varying demographic characteristics (age, race, native language status, job category); and c. to examine the predictive relations of Literacy, PSTRE, and reading behaviors to writing behaviors at home and at work and whether the relations of reading behaviors to writing behaviors depends on higher or lower literacy skills.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5d3a210b5abd570001beecd72/1564090635798/2019_Feinberg_Tighe_Talwar_Greenberg_WritingBehaviors.pdf

Title:

Fernandez, F., & Liu, H. (2019). Examining relationships between soft skills and occupational outcomes among U.S. adults with - and without - university degrees. *Journal of Education and Work*, 32(8), 650-664. doi: 10.1080/13639080.2019.1697802

Abstract:

Policymakers are increasingly concerned that employees need both foundational skills, such as numeracy, and soft skills to take better advantage of new technologies and adapt to changing work. In this study, we examined the relationships between the use of soft skills and occupational outcomes among a nationally representative sample of adult workers in the United States. Based on our analysis of PIAAC data, we found that even after accounting for numeracy skill and university degrees, there were positive, statistically significant relationships between the use of soft skills (i.e. Readiness to Learn; Influence; Planning; and Task Discretion) and workers' occupational outcomes. Our findings also suggested that, relative to university graduates, adult workers without university degrees tend to have higher occupational status if they more frequently exercise soft skills.

Available at: <https://doi.org/10.1080/13639080.2019.1697802>

Title:

Fialho, P., Quintini, G., & Vandeweyer, M. (2019). *Returns to different forms of job related training*. OECD Social, Employment and Migration Working Papers No. 231. Paris: OECD Publishing. doi: 10.1787/b21807e9-en

Abstract:

This study aims at disentangling the returns to formal, non-formal and informal training and fills key knowledge gaps. Informal learning is found to be by far the most common form of job-related learning at work. Learning informally at work is found to be associated with 3.5% higher wages, on top of the wage returns of non-formal training which amount to about 11%. Work environments which apply high performance work organisation practices – i.e. where workers have more autonomy and work in teams – are found to nurture a training culture that yields high returns. Workers in these contexts are 12% more likely to experience informal learning. In addition, they also reap higher returns from the training they attend, both non-formal and informal. This suggests that HPWP may amplify the benefits of learning at work, possibly giving workers more opportunities to turn what they learn into immediate use because of the increased flexibility in organising once work.

Available at (open access): <https://doi.org/10.1787/b21807e9-en>

Title:

Flisi, S., Goglio, V., Meroni, E. C., & Vera-Toscano, E. (2019). Cohort patterns in adult literacy skills: How are new generations doing? *Journal of Policy Modeling*, 41(1), 52-65. Retrieved March 4, 2020, from doi: 10.1016/j.jpolmod.2018.10.002

Abstract:

Skills are core elements of the socio-economic prospects of individuals, while they also improve national productivity, growth and social cohesion. Understanding how skills evolve over time and what drives their evolution has become a policy priority of many European countries. Using the 1994–1998 International Adult Literacy Survey (IALS) and the 2012 Survey on Adult Skills (PIAAC) we build synthetic cohorts and examine how the population gains, loses or preserves cognitive skills (literacy) over time. While, as expected, deterioration in the level of skills due to ageing is common to almost all the European countries studied, for some of them concerns arise for the occurrence of skill deterioration across generations, especially among less well-educated and medium-educated individuals. Certain countries appear to be doing a poorer job in providing the necessary literacy skills over successive generations.

Available at (open access): <https://doi.org/10.1016/j.jpolmod.2018.10.002>

Title:

Fogg, N., Harrington, P., & Khatiwada, I. (2019). *Skills and the earnings of college graduates. The impact of human capital in the American labor market series*. The Impact of Human Capital in the American Labor Market Series Princeton: ETS Center for Research on Human Capital and Education Research and Development Educational. Retrieved March 4, 2020, from <https://files.eric.ed.gov/fulltext/ED595423.pdf>

Abstract:

In this paper, the second in the "Impact of Human Capital in the American Labor Market" series, the authors reveal that there are large groups of college graduates who lose out on the seemingly automatic earnings premium from their degree, and that their failure is related to a lack of skills. One of every five bachelor's degree holders among employed college graduates ages 21 to 65 lacks some important skills in literacy. For numeracy, the number is one in three. Furthermore, the authors determined that access to college labor market, or CLM, occupations is critical. Working in an occupation that utilizes the skills, knowledge, and abilities that are typically developed with a college education reaps large earnings premiums. But those who wind up mal-employed—working in jobs that do not require those types of skills—get no premium at all. This report amplifies a crucial message emanating from a wider series of reports by the ETS Center for Research on Human Capital and Education: the importance of human capital and the cost to a large number of individuals—and to society itself—when levels of it are lacking. Specifically, this report examines the relationship between Programme for the International Assessment of Adult Competencies (PIAAC), an assessment measuring achievement for countries across the world, measures of human capital traits and the earnings of 21- to 65-year-old employed college graduates in the United States. It begins with an examination of the basic demographic characteristics of employed college graduates, level of college degree completion, college major field of study, literacy and numeracy proficiencies, access to college level jobs, and intensity of employment (weekly hours of work). The next section contains a descriptive analysis of the mean earnings of college graduates by key characteristics including college degree and major, literacy and numeracy proficiencies, and access to employment in CLM occupations. Following the descriptive analysis, the report presents findings from human capital earnings functions designed to estimate the independent effect of human capital traits and other covariates on the earnings of employed college graduates in the United States.

Available at (open access): <https://files.eric.ed.gov/fulltext/ED595423.pdf>

Title:

Franzini, M., & Raitano, M. (2019). Earnings inequality and workers' skills in Italy. *Structural Change and Economic Dynamics*, 51, 215–224. doi: 10.1016/j.strueco.2019.09.004

Abstract:

The increasing trend of earnings inequality observed in many countries is usually ascribed to a higher premium to skills, commonly proxied by education. Focusing on Italy, a country characterized by a steep rise in earnings inequality since the '90 s, we aim at verifying whether this trend is attributable to education. Making use of administrative data about private employees, we carry out Theil decompositions and estimate wage equations to investigate how much of this trend is linked with education and other observable worker's and firm's characteristics. We find that the rise in earnings inequality is explained by the "within education" component, rejecting the idea that it is due to a higher premium for the high-skilled. Furthermore, controlling for workers' and firms' characteristics in wage regressions – also including workers' literacy and numeracy recorded in OCED-PIAAC – we find that level and trend of earnings inequality are not explained by these characteristics.

Available at: <https://doi.org/10.1016/j.strueco.2019.09.004>

Title:

Galeshi, R., & Bolin, R. M. (2019). *The influence of correctional education, skills, and lifelong learning on social outcomes*. Commissioned Paper Washington: PIAAC Gateway. Retrieved March 5, 2020, from <http://piaacgateway.com/researchpapers>

Abstract:

A rich body of scientific research suggests a positive relationship between education and social and political engagement. Active social engagement is important for incarcerated individuals if they are to successfully reintegrate into communities and desist from further involvement in crime. While a plethora of research has focused on the importance of correctional education, the extent of association between other forms of human capital such as cognitive skills and adult lifelong learning is unclear. The current study utilized data from the U.S. PIAAC Prison Study (2014) to explore the relationship between educational attainment, adult cognitive skill proficiency, lifelong learning, and social outcomes among incarcerated individuals. At least one of the three types of human capital variables included was found to be positively and significantly related to the three social outcomes of political efficacy, interpersonal trust, and health perception, even after controlling for the other two human capital variables and a number of demographics, demonstrating that each has its own, distinct contribution to social outcomes. Policy implications regarding these findings are discussed.

Available at: <http://piaacgateway.com/researchpapers>

Title:

Gauly, B., & Lechner, C. M. (2019). Self-perfection or self-selection? Unraveling the relationship between job-related training and adults' literacy skills. *PLOS ONE*, 14(5), 1-23. doi: 10.1371/journal.pone.0215971

Abstract:

Can participation in job-related training contribute to the formation and maintenance of adults' literacy skills? Although evidence suggests that participation in training is related to higher literacy skills, it remains unclear whether this association reflects a causal effect of training participation on literacy (training effects), results from the self-selection of more high-skilled individuals into training

(selection effects), or is due to other sources of endogeneity (e.g., omitted variable bias). To unravel these possibilities, we used data from the Programme for the International Assessment of Adult Competencies (PIAAC) and its German follow-up, PIAAC-Longitudinal (PIAAC-L). As these unique data offer repeated measures of literacy skills, spaced three years apart, in a large and representative sample, they allowed us to disentangle training effects from selection effects and to account for potential endogeneity. Analyses revealed that, even after taking account of formal education and a host of job characteristics, individuals with higher literacy skills were more likely to participate in training. By contrast, no evidence for effects of training on literacy skills emerged in any of our models, which comprised lagged-dependent, fixed effects, and instrumental-variable models. These findings suggest that, rather than job-related training contributing to literacy development, individuals with higher literacy skills are more likely to participate in training.

Available at (open access): <https://doi.org/10.1371/journal.pone.0215971>

Title:

Geis-Thöne, W. (2019). Sprachkenntnisse entscheidend für die Arbeitsmarktintegration [Language proficiency and labour market integration]. *IW-Trends - Vierteljahresschrift zur empirischen Wirtschaftsforschung*, 46(3), 73-89. doi: 10.2373/1864-810X.19-03-05

Abstract:

Unlike their level of formal education, it is very difficult to monitor immigrants' German language skills and there is always a degree of uncertainty about their measurement. For this reason, the relationship between language skills and wages and unemployment was analysed using three different sets of data. In the National Education Panel and the PIAAC study, knowledge of German was measured using standardised tests, ensuring good comparability and accuracy of data. However, recent immigrants are not included in these datasets. The Socio-Economic Panel does cover the newly arrived, but only contains self-assessments of their language level. The National Educational Panel and the Socio-Economic Panel fail to find any wage differences between immigrants and natives when language skills and formal educational attainment are controlled for. In the PIAAC study, wage differences are so small as to be of scarce practical relevance. For unemployment there is no uniform picture. However, here too the results suggest that language skills are a decisive factor. On average, highly qualified immigrants perform better in the German tests than the low-skilled without a migration background. Language problems are therefore not exclusive to members of migrant families. In certain cases the indigenous population would also benefit from courses in basic literacy to improve their language skills.

Available at (open access): <https://doi.org/10.2373/1864-810X.19-03-05>

Title:

Geraint, J. (2019). The incidence of and returns to 'overeducation': PIAAC evidence on the G7. *Minnerva*, 57(1), 85-107. doi: 10.1007/s11024-018-9357-1

Abstract:

PIAAC data are used to evaluate the extent of overeducation in G7 countries. Incidence of overeducation is seen to vary systematically with a number of demographic characteristics. The impact of overeducation on remuneration is then estimated using quantile regression. This impact is observed to be minor, suggesting that while some individuals have qualifications in excess of those required to undertake their job, their additional human capital is nonetheless rewarded. Care therefore needs to be taken in interpreting measures of overeducation.

Available at (open access): <https://doi.org/10.1007/s11024-018-9357-1>

Title:

Gray, C. M. K. (2019). Using profiles of human and social capital to understand adult immigrants' education needs: A latent class approach. *Adult Education Quarterly*, 69(1), 3-23. doi: 10.1177/0741713618802271

Abstract:

With the U.S. adult education system providing education services to millions of immigrants annually, understanding the unique skills and assets among adult immigrant learners is important. Using data from the U.S. Program for the International Assessment of Adult Competencies, this study used data on immigrants (n = 1,873) to identify latent classes along dimensions of human and social capital. Latent class analysis indicated five discrete profiles: High Opportunity, Upskill Ready, Satisfactorily Skilled, Motivated and Engaged, and Highly Skilled. The results provide support for using customized education approaches to capitalize on the collection of assets adult learners have while concurrently increasing education service providers' capacity to serve.

Available at: <https://doi.org/10.1177/0741713618802271>

Title:

Greenberg, D., & Feinberg, I. Z. (2019). Adult literacy: A perspective from the United States. *Zeitschrift für Erziehungswissenschaft*, 22(1), 105-121. doi: 10.1007/s11618-018-0853-8

Abstract:

Although low adult literacy has a long history in the United States, it continues to be very prevalent. Low literacy skills impact adults' abilities to read, write, compute, use technology, and successfully engage in functional areas such as health. Adults in the United States who have literacy difficulties are a heterogeneous group. As an example of a skill considered difficult by those who struggle with literacy, health literacy is discussed. This article describes the landscape of adult literacy in the United States, with a highlighted focus on health literacy. It concludes with the notion that more research is needed in all areas of literacy to better understand how to interact with and teach adults in the United States who have low literacy skills.

Available at: <https://doi.org/10.1007/s11618-018-0853-8>

Title:

Grotlüschen, A., Buddeberg, K., Redmer, A., Ansen, H., & Dannath, J. (2019). Vulnerable subgroups and numeracy practices: How poverty, debt, and unemployment relate to everyday numeracy practices. *Adult Education Quarterly*, 69(4), 251-270. doi: 10.1177/0741713619841132

Abstract:

Adult numeracy is underresearched especially regarding numeracy practices. Research shows general correlations between numeracy skills and the use of these skills, indicating that low proficient groups use their skills less often than others do. Earlier research also shows correlations of low numeracy skills and practices with low income. Both results feed stereotypes that vulnerable subgroups—with low numeracy proficiency or a low monthly budget—would not calculate much and this would even cause their complicated income situation. Findings of this article show that the tighter the budget is the more likely vulnerable subgroups are to monitor it by frequent calculations of prices, costs, or budgets. This article connects representative Programme for the International Assessment of Adult Competencies data from the German data set with a local sample of people with lowest income. Findings show that vulnerable subgroups calculate more often than other parts of the population, but they mostly do without technical devices.

Available at (open access): <https://doi.org/10.1177/0741713619841132>

Title:

Grotlüschen, A., Thériault, V., Nienkemper, B., & Capstick, T. (2019). Critical viewpoints on adult literacy practices at the time of PIAAC. *International Journal of Lifelong Education*, 38(4), 361-365. doi: 10.1080/02601370.2019.1614105

Abstract:

The aim of this special issue is to question and, in our exploration, unsettle the rising hegemony of skills-oriented approaches and ideologies driven by the power of international literacy surveys such as the Programme for the International Assessment of Adult Competencies (PIAAC) in the field of adult education. This special issue is the culmination of many years of collaboration and discussions. Two symposiums were held in 2016 that have established the foundations of this collection of research papers: the first one was in Maynooth, as part of the European Society for Research on the Education of Adults Conference, and the second in Dublin, as part of the European Educational Research Association Conference. Yet, the scope of the special issue goes beyond Europe and includes perspectives from different national contexts (Canada, Germany, Japan, New Zealand, Pakistan, and the United Kingdom) that present alternative views on adults' literacy practices. It sheds light on adults' literacy practices, on the creativity needed to research these practices, and on the obstacles researchers and practitioners face in trying to confront the dominant skill-oriented perspective on literacy (Duckworth & Hamilton, 2016). This creativity can be seen in the multi-disciplinary frameworks drawn on in this special issue, frameworks that have literacy practices as their central orientation as they aim to account for the socio-political influences and political processes that shape adult literacies. The papers focus on aspects that are generally not considered in large-scale literacy surveys such as multilingual literacy practices, emotions, and social contexts. Drawing on the New Literacy Studies (NLS), the papers adopt a 'literacy as social practice' perspective (Barton & Hamilton, 1998; Street, 1984). This perspective recognises that there is more to literacy than skills. Accordingly, literacies are looked at in terms of what people do, as part of social interactions, as multimodal, and as situated in complex and layered social contexts.

Available at: <https://doi.org/10.1080/02601370.2019.1614105>

Title:

Hämäläinen, R., Wever, B. D., Nissinen, K., & Cincinnato, S. (2019). What makes the difference – PIAAC as a resource for understanding the problem-solving skills of Europe's higher-education adults. *Computers & Education*, 129, 27-36. doi: 10.1016/j.compedu.2018.10.013

Abstract:

The ever-evolving technological landscape is challenging adults' problem-solving skills. The central goal of higher education (HE) is to guarantee a high level of know-how, which is in line with the changing demands of technology at work and in everyday life. This study builds on European data from the Programme for the International Assessment of Adult Competencies (PIAAC) to understand adults' (N = 53,407) skills for solving problems in technology-rich environments. The study provides insight into the socio-demographic, work-related, and everyday factors that are associated with a strong and a weak problem-solving performance. The results indicate that HE adults stand out from adults with other educational backgrounds. Having a higher education degree is related with strong problem-solving skills. Still, it is rather surprising that only 15% of HE adults are strong problem-solvers and that as many as 35% can be considered weak problem-solvers. Since this century requires citizens to possess more and more skills to resolve problems in technology-rich environments, this study identifies the indicators for problem-solving skills differences. Namely, this article presents the models that predict problem-solving performance on the basis of theoretical assumptions as well as empirical support. Our results indicate that HE adults' strong or weak performance seems to be associated with socio-demographic factors (especially age, gender, parental education,

and native speaking skills), as well as work-related and everyday-life factors. The models presented in this study may be helpful when developing HE practices and new approaches to foster HE adults' problem-solving skills to meet the needs of technological advancement at work and in everyday life.

Available at (open access): <https://doi.org/10.1016/j.compedu.2018.10.013>

Title:

Hamilton, M. (2019). The discourses of PIAAC. Re-imagining literacy through numbers. In F. Finnegan & B. Grummell (Eds.), *Power and Possibility. Adult Education in a Diverse and Complex World* (pp. 65-74). Leiden: Brill. doi: 10.1163/9789004413320_006

Abstract: Mary Hamilton reveals in her analysis of how people's own experience and meanings of literacy are devalued and rendered invisible in international comparative surveys such as PIAAC. As she argues, such surveys play a significant role in the establishment of new forms of governance and social regulation on a global and national basis, where power is exerted through data management and efforts are made to normalize knowledge in line with neoliberal views of the world, leading to a narrowing of the educational imagination. [Source: From the editor's introduction, Finnegan & Grummell, p. 7]

Available at (open access): https://doi.org/10.1163/9789004413320_006

Title:

Hampf, F. (2019). *The effect of compulsory schooling on skills: evidence from a reform in Germany*. ifo Working Paper Series No. 313. Munich: ifo Institute - Leibniz Institute for Economic Research. Retrieved February 28, 2020, from <https://www.ifo.de/publikationen/2019/working-paper/effect-compulsory-schooling-skills-evidence-reform-germany>

Abstract:

Based on high-quality skill data from PIAAC, this paper provides evidence on the effect of schooling on labor-market relevant cognitive skills. For identification, I exploit the staggered introduction of a compulsory ninth grade in basic track schools across German states, as well as a simultaneous reform that introduced short school years to harmonize the start of the school year nation-wide. Instrumental-variable results suggest that the additional year of compulsory schooling increased numeracy skills of basic-track students by about 0.2 standard deviations. Using superior skill data, the results contrast with previous evidence of zero skill effects of compulsory schooling in Germany

Available at (open access): <https://www.ifo.de/publikationen/2019/working-paper/effect-compulsory-schooling-skills-evidence-reform-germany>

Title:

Han, J.-S., & Lee, J.-W. (2019). *Demographic change, human capital, and economic growth in Korea*. CAMA Working Papers No. 2019-39. Centre for Applied Macroeconomic Analysis, Crawford School of Public Policy, The Australian National University. Retrieved March 4, 2020, from https://cama.crawford.anu.edu.au/sites/default/files/publication/cama_crawford_anu_edu_au/201906/39_2019_han_lee.pdf

Abstract:

In this study, we construct a measure of human capital using micro datasets on labor composition of age, gender, education, and wage rate and analyze its role in economic growth for the Korean economy. Over the past three decades, human capital has grown steadily at about 1% per year, contrasting to a continuously declining trend of total workhours. This growth has been driven by the

rise of better-educated baby boom cohorts. A growth accounting exercise shows that human capital contributes significantly to economic growth; it accounted for 0.5% points of annual GDP growth over the period. Human capital is projected to remain a major growth factor over the next two decades as the increase in educational attainment continues. Increased employment rate of elderly or female workers reduces the aggregate human capital growth while increasing the available labor. Policies to improve human capital of less-productivity workers will help to support aggregate human capital and economic growth.

Available at (open access): https://cama.crawford.anu.edu.au/sites/default/files/publication/cama_crawford_anu_edu_au/201906/39_2019_han_lee.pdf

Title:

Hanushek, E. (2019). *Addressing cross-national generalizability in educational impact evaluation*. HCEO Working Papers No. 2019-007. Chicago: Human Capital and Economic Opportunity Working Group. Retrieved March 4, 2020, from http://humcap.uchicago.edu/RePEc/hka/wpaper/Hanushek_2019_addressing-cross-national-generalizability.pdf

Abstract:

The evaluation of educational programs has accelerated dramatically in the past quarter century. While such evaluations were once almost exclusively conducted in the U.S., they have broadened dramatically across many countries of the world. At the same time, the methodology has improved, strengthening considerably the internal validity of various studies. We must now consider what conclusions can be drawn from the growing wealth of international results. In particular, available cross-national studies on a variety of topics suggest using caution when generalizing results, because the results vary systematically with a number of institutional characteristics of the different countries that are not explicitly considered in within-country analyses.

Available at (open access): http://humcap.uchicago.edu/RePEc/hka/wpaper/Hanushek_2019_addressing-cross-national-generalizability.pdf

Title:

Hanushek, E. A., Piopiunik, M., & Wiederhold, S. (2019). Do smarter teachers make smarter students? International evidence on teacher cognitive skills and student performance. *Education Next*, 19(2), 57-64.

Abstract:

Student achievement varies widely across developed countries, but the source of these differences is not well understood. One obvious candidate, and a major focus of research and policy discussions both in the United States and abroad, is teacher quality. Research and common sense tell that good teachers can have a tremendous impact on their students' learning. But what, exactly, makes some teachers more effective than others? Can systematic evidence be provided that teachers' cognitive skills matter for student achievement? Do smarter teachers make for smarter students? And if so, how might education systems recruit teachers with stronger cognitive skills in the U.S.? To investigate these questions, the authors look at whether differences in the cognitive skills of teachers can help explain differences in student performance across developed countries. The authors consider data from the Organization for Economic Cooperation and Development (OECD), an association of 36 largely developed countries that has assessed nationally representative samples of both adults and students in reading and math. The authors use these data to estimate the effects of teacher cognitive skills on student achievement across 31 OECD countries. They find that teachers' cognitive skills differ widely among nations--and that these differences matter greatly for students' success in school. An increase of one standard deviation in teacher cognitive skills is associated with an

increase of 10 to 15 percent of a standard deviation in student performance. This implies that as much as one quarter of the gaps in average student performance across the countries in the study would be closed if each of them were to raise their teachers' cognitive skills to the level of those in the highest-ranked country, Finland. The authors also investigate two explanations for why teachers in some countries are smarter than in others: differences in job opportunities for women and in teachers' salaries compared to those of other professions. They find that teachers have lower cognitive skills, on average, in countries with greater non-teaching job opportunities for women in high-skill occupations and where teaching pays relatively less than other professions. These findings have clear implications for policy debates here in the U.S., where teachers earn some 20 percent less than comparable college graduates.

Available at (open success): https://www.educationnext.org/files/ednext_XIX_2_hanushek_et_al.pdf

Title:

Hanushek, E. A., Piopiunik, M., & Wiederhold, S. (2019). The value of smarter teachers. *International evidence on teacher cognitive skills and student performance. Journal of Human Resources, 54*(41), 857-899. doi: 10.3368/jhr.54.4.0317.8619R1

Abstract:

We construct country-level measures of teacher cognitive skills using unique assessment data for 31 countries. We find substantial differences in teacher cognitive skills across countries that are strongly related to student performance. Results are supported by fixed-effects estimation exploiting within-country between-subject variation in teacher skills. A series of robustness and placebo tests indicate a systematic influence of teacher skills as distinct from overall differences among countries in the level of cognitive skills. Moreover, observed country variations in teacher cognitive skills are significantly related to differences in women's access to high-skill occupations outside teaching and to salary premiums for teachers.

Available at: <https://doi.org/10.3368/jhr.54.4.0317.8619R1>

Title:

Harrington, A. K., & Cummins, P. (2019). Adult education and training in Canada: Opportunities, funding, and gender gaps. *Innovation in Aging, 3*(Suppl 1), S4-S4. doi: 10.1093/geroni/igz038.012

Abstract:

Labor force participation rates for middle-aged and older Canadians have increased substantially over the past two decades, with increases for women outpacing men. Given the importance of adult education and training (AET) to stay competitive in later career, we used a mixed methods approach to examine gender differences. Our analysis of the 2012 Program for the International Assessment of Adult Competencies (PIAAC) data indicated that, for ages 55-65, rates of AET participation are similar for both men and women. However, women are less likely than men to have AET funded by their employers. Findings suggest that women are more likely to need alternate funding sources for AET, such as other organizations or through self-funding. In addition, our review of literature, policy-related documents, and key informant interviews identified possible changes in policies and practices for the promotion of AET for middle-aged and older Canadians.

Available at: <https://doi.org/10.1093/geroni/igz038.012>

Title:

Hazan, M., & Tsur, S. (2019). *Why is labor productivity in Israel so low?* CEPR Discussion Papers No. 14011. London: Centre for Economic Policy Research (CEPR), from http://www.cepr.org/active/publications/discussion_papers/dp.php?dpno=14011

Abstract:

We analyze differences in labor productivity between Israel and a group of small OECD countries. We assume a more general human capital production function and calibrate it using PIAAC surveys, which examine the literacy and numeracy skills of the adult population in the OECD countries. Whereas Israel has more years of schooling, its population has lower measured skills. Using development accounting exercise, we show that once years of schooling and numeracy skills are taken into account, differences in accumulated factors explain more than three-quarters of the gap. This is against a split of 60-40 between accumulated factors and total factor productivity, when these skills are ignored. Additionally, using panel data on 13 OECD countries we show strong positive correlation between physical and human capital per worker at the industry level. A causal interpretation of our estimates implies that closing the gap in skills will indirectly close 18 percent of the gap in physical capital.

Available at: http://www.cepr.org/active/publications/discussion_papers/dp.php?dpno=14011

Title:

He, Q., Borgonovi, F., & Paccagnella, M. (2019). *Using process data to understand adults' problem-solving behaviour in the Programme for the International Assessment of Adult Competencies (PIAAC)*. OECD Education Working Papers No. 205. Paris: OECD Publishing. doi: <https://doi.org/10.1787/650918f2-en>

Abstract:

The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), used computers as the main assessment deliver platform. This enabled the Programme to collect data not only on whether respondents were able to solve specific tasks, but also on how they approached the problems at hand and how much time they spent on them. This paper draws on this information to characterise individuals' problem-solving strategies using the longest common subsequence (LCS) method, a sequence-mining technique commonly used in natural language processing and biostatistics. The LCS is used to compare the action sequences followed by PIAAC respondents to a set of "optimal" predefined sequences identified by test developers and subject matter experts. This approach allows studying problem-solving behaviours across multiple assessment items.

Available at (open access): <https://doi.org/10.1787/650918f2-en>

Title:

He, Q., Liao, D., & Jiao, H. (2019). Clustering behavioral patterns using process data in PIAAC problem-solving items. In B. P. Veldkamp & C. Sluijter (Eds.), *Theoretical and Practical Advances in Computer-based Educational Measurement* (pp. 189-212). Cham: Springer International Publishing. doi: [10.1007/978-3-030-18480-3_10](https://doi.org/10.1007/978-3-030-18480-3_10)

Abstract:

Technical advances provide the possibility of capturing timing and process data as test takers solve digital problems in computer-based assessments. The data collected in log files, which represent information beyond response data (i.e., correct/incorrect), are particularly valuable when examining interactive problem-solving tasks to identify the step-by-step problem-solving processes used

by individual respondents. In this chapter, we present an exploratory study that used cluster analysis to investigate the relationship between behavioral patterns and proficiency estimates as well as employment-based background variables. Specifically, with a focus on the sample from the United States, we drew on a set of background variables related to employment status and process data collected from one problem-solving item in the Programme for the International Assessment of Adult Competencies (PIAAC) to address two research questions: (1) What do respondents in each cluster have in common regarding their behavioral patterns and backgrounds? (2) Is problem-solving proficiency related with respondents' behavioral patterns? Significant differences in problem-solving proficiency were found among clusters based on process data, especially when focusing on the group not solving the problem correctly. The results implied that different problem-solving strategies and behavioral patterns were related to proficiency estimates. What respondents did when not solving digital tasks correct was more influential to their problem-solving proficiency than what they did when getting them correct. These results helped us understand the relationship between sequences of actions and proficiency estimates in large-scale assessments and held the promise of further improving the accuracy of problem-solving proficiency estimates.

Available at (open access): https://doi.org/10.1007/978-3-030-18480-3_10

Title:

Heilmann, L. (2019). Health and numeracy: The role of numeracy skills in health satisfaction and health-related behaviour. *ZDM Mathematics Education*, 1-12. doi: 10.1007/s11858-019-01106-z

Abstract:

Health-related decisions make use of numeracy skills, for example counting medication dosages, extracting health-related information from food packaging or understanding statistical data. Even though the concept of health literacy is often used to explain health disparities (Freedman et al., in *American Journal of Preventive Medicine* 36:446–451, 2009), discourses that differentiate between health literacy and health numeracy are emerging. Golbeck et al. (*American Journal of Preventive Medicine* 29:375–376, 2005) defined health numeracy as “the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions” (p. 375). To determine which numeracy skills impact health and health practices, the present study examines the 2015 German extension of the Programme for the International Assessment of Adult Competencies (PIAAC) survey, which collected data on numeracy skills and numeracy practices and on the perception of health and health practices (as in the socio-economic panel, SOEP). Further, it indicates which numeracy practices (or the lack of these) might play a part in poor health and in (health) vulnerability in Germany.

Available at: <https://doi.org/10.1007/s11858-019-01106-z>

Title:

Heisig, J. P., Gesthuizen, M., & Solga, H. (2019). Lack of skills or formal qualifications? New evidence on cross-country differences in the labor market disadvantage of less-educated adults. *Social Science Research*, 83(102314), 102314. doi: 10.1016/j.ssresearch.2019.06.005

Abstract:

We use PIAAC data on the literacy and numeracy skills of 49,366 25-to-54-year-olds in 27 countries to shed new light on cross-national variation in the labor market disadvantage of less-educated adults (i.e., those who have not completed upper secondary education). Our empirical analysis focuses on the occupational status gap between less-educated adults and those with a degree at the upper secondary level and yields three main findings. First, individual-level differences in literacy

and numeracy skills are an important source of cross-national variation in labor market inequalities by educational attainment, but substantial gaps in occupational status remain even after accounting for individuals' actual skills and further socio-demographics. Second, this remaining occupational status gap rises with a country's level of "skills transparency" (i.e., the extent to which formal qualifications are more informative about actual skills): labor market gaps increase as the skills gap between the two educational groups increases and as the within-group distribution of skills becomes more homogeneous. Third, country differences in skills transparency seem to be the primary mediating channel for the inequality-enhancing effect of tracking in secondary education found in previous research.

Available at: <https://doi.org/10.1016/j.ssresearch.2019.06.005>

Title:

Heller-Sahlgren, G. (2019). *Education policy for health equality: Lessons for the Nordic region*. Stockholm: Nordic Welfare Centre. Retrieved March 4, 2020, from <http://norden.diva-portal.org/smash/get/diva2:1315464/FULLTEXT01.pdf>

Abstract:

In the Nordic countries, health is linked to educational attainment to a higher extent than to income. Studies have now shown that the progressive pedagogy which generally characterizes Nordic teaching is likely to actually increase social disparities in health. The Education Policy for Health Equality – Lessons for the Nordic Region report analyses the link between health, education, knowledge and pedagogical methods. Health is often linked to educational attainment, to a greater extent than to income. Therefore, it is important to examine the extent to which education policy can contribute to, or be counterproductive to, health equality and health equity. In the report research director Gabriel Heller-Sahlgren raises a critical voice against the type of progressive, student-centered learning that the Nordic countries utilize to varying degree. It is the report's recommendation that student-centered learning should be reassessed and phased out if the school is to contribute to greater equality in health and provide all children a good education.

Available at (open access): <http://norden.diva-portal.org/smash/get/diva2:1315464/FULLTEXT01.pdf>

Title:

Hicks, J. C. (2019). *The use of process data to examine reading strategies* (Dissertation). University of North Carolina at Greensboro.

Abstract:

Researchers are increasingly interested in the cognitive behaviors students display during tests. This interest has led researchers to look for innovative ways to collect this type of data. Due to the proliferation of computer-based assessments, process data has become popular for its ability to help show what students know, what students don't know, and how students interact during assessments. Aim: The aims of the current study are 1) to use process data to identify potential reading strategies and 2) to examine if reading strategy is associated with gender, race/ethnicity, and differences in performance. Methods: Apply latent profile analysis (LPA) to extracted process data variables collected from US examinees who participated in the literacy section of the Program for the International Assessment of Adult Competencies (PIAAC). The variables are item response time and number of highlight events per item. Results: A two-class solution provided the best fit for the data in each testlet of the literacy section of the PIAAC. Class one progressed through items in each testlet faster than class two. Class one most closely resembled a skimming strategy while class two most closely resembled a full-reading strategy. However, there was not conclusive evidence to suggest that the classes were reminiscent of skimming and full-reading. Class assignment had no significant

relationship with gender nor race/ethnicity, and there was no significant difference in literacy performance between the two classes, except in one case. Even then, both classes performed at a level two on the PIAAC literacy achievement scale. Discussion: Response time was found to be the only discriminating variable in the identification of patterns related to reading strategies. While there was some separation between classes, it was minimal in some cases. Response time was found to be useful but not enough to identify conclusive reading strategies. Further research is needed to identify process data variables with explanatory power other than response time to aid in the identification of reading strategies.

Available at (open access): <https://search.proquest.com/openview/61faba135d887e1ef7d272a1513c8b7f/1?pqorigsite=gscholar&cbl=2026366&diss=y>

Title:

Hu, M. (2019). *Three essays on labour and health outcomes of vulnerable populations in Canada* (Dissertation). Dalhousie University. Retrieved March 5, 2020, from <http://hdl.handle.net/10222/75415>

Abstract:

This dissertation contains three essays examining the labour market and health outcomes of vulnerable populations in Canada. The first essay examines the relationship between information-processing skills, educational attainment, and labour market outcomes among Indigenous peoples in Canada, and uses the 2012 Programme for the International Assessment of Adult Competencies (PIAAC). Relative to the non-Indigenous sample, this study finds negative earning differentials, lower information-processing skills, higher unemployment, lower employment and labour market participation among Indigenous peoples. The results show a positive relationship between skills and earnings and there is no evidence of economic discrimination based on the returns to skills which are very similar for both groups. The results also imply the need to consider barriers to education faced by Indigenous peoples. The second essay measures and examines the gender gaps in the health status among Indigenous adults living off-reserve in 2001, 2006 and 2012 with three corresponded Aboriginal People Surveys (APS). It shows that the self-rated general health gap between Indigenous males and females widened from 1.6 to 5.2 percentage point between 2001 and 2012. Oaxaca-Blinder decomposition shows that differences in the observable characteristics between males and females explain more than half of the gender difference in good general health. Specifically, the results indicated that improving socioeconomic status and participation in traditional activities of females to the level of males will effectively reduce the gender health gap among Indigenous peoples in Canada. The third essay investigates the causal detrimental effect of Ramadan fasting during pregnancy on infant birth weight and fraction of male births in Canada. With seven million birth record from 1990-2016 Canadian Vital Statistics Birth Record, and large variation in daylight hours within geographic locations over time, as well as across locations, this study also enables estimations of a large amount variation in Ramadan fasting hours. The results show that babies of Muslim mothers have lower average birth weight and are more likely to be below the low birth threshold. Moreover, once the extreme fasting hours are removed, modest reductions are found in birth weight associated with Ramadan falling on the ninth, seventh or fifth month of pregnancy.

Available at (open access): <http://hdl.handle.net/10222/75415>

Title:

Hu, M., Daley, A., & Warman, C. (2019). Literacy, numeracy, technology skill, and labour market outcomes among indigenous peoples in Canada. *Canadian Public Policy*, 45(1), 48-73. doi: 10.3138/cpp.2017-068

Abstract:

We use the 2012 Programme for the International Assessment of Adult Competencies to examine the relationship between information-processing skills, educational attainment, and labour market outcomes among Indigenous peoples in Canada. Relative to the non-Indigenous sample, we find negative earnings differentials, higher unemployment, and lower employment and labour market participation among Indigenous peoples, as well as important differences between First Nations, Métis, and Inuit workers. First Nations peoples show larger gaps in terms of earnings and employment outcomes. Moreover, Métis peoples show worse employment outcomes and negative earnings differentials in the upper part of the distribution. First Nations peoples also show sizable gaps in literacy, numeracy, and technology skill relative to the non-Indigenous sample. Not surprisingly, there is a positive relationship between information-processing skills and wages. However, the returns to skills are very similar for Indigenous and non-Indigenous peoples. That is, we find no evidence of economic discrimination. Once these skills are conditioned on, the earnings differentials decline. We also find that education can reduce skill and wage gaps, although the additional impact is small. The results imply the need to consider barriers to education faced by Indigenous peoples.

Available at: <https://doi.org/10.3138/cpp.2017-068>

Title:

Huber, E., Gunderson, J., & Stephens, J. D. (2019). Private education and inequality in the knowledge economy. *Policy and Society*, 1-18. doi: 10.1080/14494035.2019.1636603

Abstract:

This article explores the consequences of public and private spending on education at all levels, looking at skills and income inequality. We use data for 22 affluent democracies from 1960 or 1995 (depending on data availability) to 2017. High levels of public education spending consistently lower income inequality, both measured as wage dispersion and as the education premium. In contrast, higher levels of private education spending are associated with both higher wage dispersion and a higher education premium. We show that this effect works in part through differential skills acquisition. Public education spending raises the math scores of 15-years old students at the mean and at the 25th percentile, but private education spending has no effect on skills at these levels. We find the same pattern among skills of adults; public education spending raises skills at the 25th percentile and the mean; private spending has no effect. Finally, we also show that higher levels of adult skills indeed depress the education premium.

Available at (open access): <https://doi.org/10.1080/14494035.2019.1636603>

Title:

Icardi, R. (2019). Does workplace training participation vary by type of secondary level qualification? England and Germany in comparison. *International Journal of Lifelong Education*, 38(6), 615-631. doi: 10.1080/02601370.2019.1689434

Abstract:

Existing evidence shows that the higher the level of education the higher the likelihood to participate in workplace training. However, we know little about training participation of individuals educated to the secondary level, and whether this may vary by the type of qualification attained, i.e. vocational or general. Vocational qualification holders are known to find employment sooner after school than those with a general qualification but we do not know whether they are also more likely to participate in workplace training. Using data from the 2012 Programme of International Assessment of Adult Competencies (PIAAC) and logistic regressions, we investigate whether vocational qualification holders are more likely to participate in workplace training than general ones in

Germany and England. Germany is a coordinated labour market economy with a large emphasis on the provision of vocational qualifications which facilitate school-to-work transitions whereas England is an example of liberal labour markets where the focus is on general qualifications. Results show that in Germany general qualification holders are more likely to participate in training compared to vocational ones; however, differences reduce when controlling for endogeneity. In contrast, in England there is no difference between types of qualification.

Available at: <https://doi.org/10.1080/02601370.2019.1689434>

Title:

Iñiguez-Berrozpe, T., & Boeren, E. (2019). Twenty-first century skills for all: Adults and problem solving in technology rich environments. *Technology, Knowledge and Learning*. doi: 10.1007/s10758-019-09403-y

Abstract:

The current Information Society requires new skills for personal, labor and social inclusion. Among the so-called Twenty-First Century Skills (Care et al. (eds) in *Assessment and teaching of 21st century skills*, Springer, New York, 2018) is Problem Solving in Technology Rich Environments (PS-TRE) competence evaluated in PISA and PIAAC tests (OECD in Survey of adult skills (PIAAC). Retrieved from <https://goo.gl/cpb3fQ> (2016)). This skill, although currently receiving considerable attention in compulsory education, has not received the same level of thought in the case of adult education. In this article, the presence of the PS-TRE skill among adults of working age (25–65 years) in Europe is analysed in relation to the factors that potentially affect a higher score in this skill. This analysis is carried out using structural equations modelling, taking into account socio-personal and educational factors, as well as the use of different skills in work and daily life. The results indicate that educational level and the use of different skills (reading, numerical, related to ICT) at home and at work, as well as participation in non-formal education activities, decisively relate to a higher level of PS-TRE. This result is positively mediated through risk factors such as being older or being a woman. This study concludes that it is necessary to reinforce these skills, not only in children, but also in the adult population, in order to avoid social and labour exclusion.

Available at: <https://doi.org/10.1007/s10758-019-09403-y>

Title:

Jakubowski, M., & Pokropek, A. (2019). *piaactools*: A program for data analysis with PIAAC data. *The Stata Journal*, 19(1), 112-128. doi: 10.1177/1536867X19830909

Abstract:

The OECD Programme for the International Assessment of Adult Competencies (PIAAC) is currently the only international survey of adult skills. It provides rich data on skills, work and life situations, earnings, and attitudes. To ensure representativeness and high reliability, the study is based on a complex survey design and advanced statistical methods. To obtain correct results from publicly available microdata, one must use special methods that are often too advanced for less experienced researchers. In this article, we present *piaactools*—a package of three commands that facilitate analysis with PIAAC data. The command *piaacdes* calculates basic statistics, *piaactab* computes frequencies of adults at each proficiency level, and *piaacreg* allows for the use of several regression models with PIAAC data. Output is saved as HTML files that can be opened in most spreadsheets and as Stata matrices that can be further processed in Stata. We also explain how to use these commands and provide examples that can be easily modified for use with different models and variables.

Available at (open access): <https://doi.org/10.1177/1536867X19830909>

Title:

Johnes, G. (2019). The incidence of and returns to 'overeducation': PIAAC evidence on the G7. *Minerva*, 57(1), 85-107. doi: 10.1007/s11024-018-9357-1

Abstract:

PIAAC data are used to evaluate the extent of overeducation in G7 countries. Incidence of overeducation is seen to vary systematically with a number of demographic characteristics. The impact of overeducation on remuneration is then estimated using quantile regression. This impact is observed to be minor, suggesting that while some individuals have qualifications in excess of those required to undertake their job, their additional human capital is nonetheless rewarded. Care therefore needs to be taken in interpreting measures of overeducation.

Available at (open access): <https://doi.org/10.1007/s11024-018-9357-1>

Title:

Kaul, C. R. (2019). *Using structural equation modeling to examine the relationships between environmental characteristics, intrapersonal characteristics, and adult numeracy achievement*. (Dissertation). Baylor University. Retrieved March 5, 2020, from <https://hdl.handle.net/2104/10666>

Abstract:

Quantitative literacy or numeracy skills are increasingly important at every level in a knowledge-based society. The purpose of this study was to investigate the relationships between numeracy achievement, environmental and intrapersonal characteristics. Although the sample for this study included 5,862 U.S. adults (aged 16-65) from the Program for International Assessment of Adult Competencies (PIAAC), the results were weighted to represent the population. According to descriptive statistics, significant differences were found for multiple variables. The top 10% were more likely to have a foreign-born father, higher levels of parent education, more books in their childhood home, more years of formal schooling, be employed, and earn more money. Individuals with the following characteristics were more likely to be in the high numeracy group: male, native-English speaking, White, age 25 to 34, very good to excellent health, and no learning disability. Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were conducted on a new Adult Numeracy Achievement Model. The second-order Intrapersonal factor predicted numeracy achievement in the top 10%; however, the second-order Environmental factor did not. Intrapersonal characteristics with small indirect effects on numeracy achievement included gender, age, race, native language, learning disability, health, and participation in ongoing training or education outside of a degree program. Findings were used to support suggestions for future methodological and future numeracy research. Implications for parents, adults, educators, and policymakers are suggested which include greater emphasis on mathematical learning, understanding, and application at all levels including school, home, and workplace.

Available at (open access): <https://hdl.handle.net/2104/10666>

Title:

Khorramdel, L., Davier, M., & Pokropek, A. (2019). Combining mixture distribution and multidimensional IRTree models for the measurement of extreme response styles. *British Journal of Mathematical and Statistical Psychology*, 72(3), 538-559. doi: 10.1111/bmsp.12179

Abstract:

Personality constructs, attitudes and other non-cognitive variables are often measured using rating or Likert-type scales, which does not come without problems. Especially in low-stakes assessments, respondents may produce biased responses due to response styles (RS) that reduce the validity and

comparability of the measurement. Detecting and correcting RS is not always straightforward because not all respondents show RS and the ones who do may not do so to the same extent or in the same direction. The present study proposes the combination of a multidimensional IRTree model with a mixture distribution item response theory model and illustrates the application of the approach using data from the Programme for the International Assessment of Adult Competencies (PIAAC). This joint approach allows for the differentiation between different latent classes of respondents who show different RS behaviours and respondents who show RS versus respondents who give (largely) unbiased responses. We illustrate the application of the approach by examining extreme RS and show how the resulting latent classes can be further examined using external variables and process data from computer-based assessments to develop a better understanding of response behaviour and RS.

Available at: <https://doi.org/10.1111/bmsp.12179>

Title:

Klotzke, K., & Fox, J.-P. (2019). Bayesian covariance structure modeling of responses and process data. *Frontiers in Psychology, 10*(1675), 1-15. doi: 10.3389/fpsyg.2019.01675

Abstract:

A novel Bayesian modeling framework for response accuracy (RA), response times (RTs) and other process data is proposed. In a Bayesian covariance structure modeling approach, nested and crossed dependences within test-taker data (e.g., within a testlet, between RAs and RTs for an item) are explicitly modeled. The local dependences are modeled directly through covariance parameters in an additive covariance matrix. The inclusion of random effects (on person or group level) is not necessary, which allows constructing parsimonious models for responses and multiple types of process data. Bayesian Covariance Structure Models (BCSMs) are presented for various well-known dependence structures. Through truncated shifted inverse-gamma priors, closed-form expressions for the conditional posteriors of the covariance parameters are derived. The priors avoid boundary effects at zero, and ensure the positive definiteness of the additive covariance structure at any layer. Dependences of categorical outcome data are modeled through latent continuous variables. In a simulation study, a BCSM for RAs and RTs is compared to van der Linden's hierarchical model (LHM; van der Linden, 2007). Under the BCSM, the dependence structure is extended to allow variations in test-takers' working speed and ability and is estimated with a satisfying performance. Under the LHM, the assumption of local independence is violated, which results in a biased estimate of the variance of the ability distribution. Moreover, the BCSM provides insight in changes in the speed-accuracy trade-off. With an empirical example, the flexibility and relevance of the BCSM for complex dependence structures in a real-world setting are discussed.

Available at (open access): <https://doi.org/10.3389/fpsyg.2019.01675>

Title:

Komatsu, H., & Rappleye, J. (2019). Refuting the OECD-World Bank development narrative: Was East Asia's 'Economic Miracle' primarily driven by education quality and cognitive skills? *Globalisation, Societies and Education, 17*(2), 101-116. doi: 10.1080/14767724.2019.1577718

Abstract:

Founded on several highly influential quantitative studies, the past decade has witnessed the OECD and World Bank increasingly converge on the view that cognitive levels of students and education quality, as proxied by international large-scale assessments (ILSAs), are the primary determinant of national economic growth worldwide. More recent OECD and World Bank pronouncements have further suggested these dynamics are clearly illustrated in East Asia's education and 'Economic

Miracle', in particular the cases of South Korea and Singapore. Herein we utilise the OECD's own data to examine this new development narrative, finding little evidence in support of these claims.

Available at: <https://doi.org/10.1080/14767724.2019.1577718>

Title:

Kovacova, M., Kliestikova, J., Grupac, M., Grecu, I., & Grecu, G. (2019). Automating gender roles at work: How digital disruption and artificial intelligence alter industry structures and sex-based divisions of labor. *Journal of Research in Gender Studies*, 9(1), 153–159. doi: 10.22381/JRGS9120198

Abstract:

We draw on a substantial body of theoretical and empirical research concerning how digital disruption and artificial intelligence alter industry structures and sex-based divisions of labor, and using and replicating data from Bloomberg, BLS, Eurostat, McKinsey, OECD, PIAAC, PISA, PwC, and World Economic Forum, we performed analyses and made estimates regarding patterns of jobs lost and gained (% of 2019 employment for each gender) and potential impact of job automation over time across workers (% by gender, age group, and education level). Structural equation modeling was used to analyze the data and test the proposed conceptual model.

Available at: <https://doi.org/10.22381/JRGS9120198>

Title:

Kristal, T., & Edler, S. (2019). Computers meet politics at wage structure: An analysis of the computer wage premium across rich countries. *Socio-Economic Review*. doi: 10.1093/ser/mwz049

Abstract:

This article addresses an important question in the age of rapid spread of new computer technologies: how do institutions influence the computer wage premium? To identify institutional factors that account for differences in computers' impact on wages, the authors estimate computer wage premiums for 20 countries classified into three national 'varieties' of capitalism and distinct forms of industrial relations and education systems. The analyses are based on unique international data from the Survey of Adult Skills, recently conducted by the Organisation for Economic Co-operation and Development. Results reveal that computer use at work is rewarded considerably higher in Liberal countries than in other countries—Nordic Coordinated countries above all. These results signify the centrality of coordinated markets, grounded in strong unions, centralized wage bargaining and publicly funded education and training, for lower computer wage gaps, hence for lower levels of wage inequality.

Available at: <https://doi.org/10.1093/ser/mwz049>

Title:

Lane, J., & Murray, T. S. (2019). *What now? The literacy hustle how 'learning-to-learn' skills help people survive in the changing workplace*. Policy Brief Calgary: Canada West Foundation. Retrieved March 5, 2020, from https://cwf.ca/wp-content/uploads/2019/03/2019-02-CWF_WhatNowPolicyBrief_LiteracyHustle_WEB-2.pdf

Abstract:

Problem: In a world where jobs are changing quickly, or being eliminated altogether, it's more essential than ever for the people in Canada's workforce to be able to "learn their way" into new or changing roles. The problem is that in Canada, more than 40 per cent of the workforce doesn't have enough "learning-to-learn" skills to enable them to maintain stable and well-paying employment.

To learn easily, an individual must first master the basic skills: communicating well – through speaking and listening (language); understanding and using printed and digital material (literacy); and, managing basic arithmetic (numeracy). Written words only make sense if you understand at least some of the language, and basic reading skills are needed to understand, formulate and solve problems, including those that involve numbers. Recommendation Because learning is entwined in language, literacy and numeracy, improving these skills is critical if Canada wants a workforce that can thrive in the changing world of work. As it stands, much of the country’s workforce won’t fare as well as they could as jobs change or disappear altogether. That outcome could be improved if we – individuals, employers, training providers and governments – build on and expand proven methods for improving basic skills in adults, through education, training and workplace learning programs.

Available at (open access): https://cwf.ca/wp-content/uploads/2019/03/2019-02-CWF_WhatNowPolicyBrief_LiteracyHustle_WEB-2.pdf

Title:

Lane, J., & Murray, T. S. (2019). *What now? Busted: 11 enduring literacy myths*. Policy Brief Calgary: Canada West Foundation. Retrieved March 5, 2020, from https://cwf.ca/wp-content/uploads/2019/08/2019-08-HCC_WhatNowPolicyBrief_Busted11Myths_WEB.pdf

Abstract:

Mention that there’s a literacy problem and most people’s eyes glaze over. “Everyone can read, so there can’t be a problem!” This belief is one of Canada’s most pervasive and enduring myths about literacy. However, while virtually everyone can read, not everyone can read well enough to realize their full economic potential. And that’s a problem for them, for their employers and for our country. Solution: Almost half of the working-age population needs to improve not just their ability to read, but also their ability to understand and use what they have read to meet the demands of life and work. This is not an impossible goal – it can be done. But, some enduring myths about literacy keep us from understanding and tackling the problem. They can all be busted.

Available at (open access): https://cwf.ca/wp-content/uploads/2019/08/2019-08-HCC_WhatNowPolicyBrief_Busted11Myths_WEB.pdf

Title:

Lane, J., & Murray, T. S. (2019). *What now? Opportunity lost*. Policy Brief Calgary: Canada West Foundation. Retrieved March 5, 2020, from https://cwf.ca/wp-content/uploads/2019/05/2019-05-08-HCC_WhatNowPolicyBrief_OpportunityLost_WEB.pdf

Abstract:

Canada’s poor productivity performance is holding back improvements in its standard of living, including wages. In particular, labour productivity has been virtually stagnant since 2000. For the last few years, Canada’s Gross Domestic Product (GDP) per capita has hovered about \$14,000 below that of the U.S. In advanced services, manufacturing and energy industries, the workforce in the U.S. is twice as productive as Canada’s. The usual solutions to improved productivity include investing in more capital items such as machinery and information and communication technology, or asking people to work harder. These solutions are not working. As more routine tasks are being assigned to machines, people are being asked to do more thinking, problemsolving and relational tasks. Rather than becoming less important, cognitive skills are becoming more important. It is clear that the Canadian economy needs to increase investment in another kind of capital: human capital. Solution Working smarter, not harder can improve both productivity and economic growth. Working smarter requires the skills to learn new ways of doing things. Advanced literacy skills increase a person’s ability to learn easily and efficiently. New evidence shows that improvements in literacy can also

increase productivity and GDP per capita more than ever before. Research also indicates that improving the skills of the people with the lowest levels of literacy provides an even greater boost. Furthermore, Canadian experience has shown that literacy skills can be increased through inexpensive and efficient workplace learning programs.

Available at (open access): https://cwf.ca/wp-content/uploads/2019/05/2019-05-08-HCC_WhatNowPolicyBrief_OpportunityLost_WEB.pdf

Title:

Lane, J., & Murray, T. S. (2019). *What now? Ready or not*. Policy Brief Calgary: Canada West Foundation. Retrieved March 5, 2020, from https://cwf.ca/wp-content/uploads/2019/04/2019-04-09-HCC_WhatNowPolicyBrief_ReadyorNot_WEB.pdf

Abstract:

The Problem: A significant proportion of Canada's youth have poor literacy and numeracy skills. This is bad news for them, for employers and for our economy. These skills still matter. Level 3 literacy, the level at which readers begin to analyze, evaluate and apply what they have read in new and different situations and to easily problem-solve, is needed to perform well in every new job that is being created. What's more, literacy and numeracy are the core "learning to learn" skills, and more than ever, our young people will need to keep learning to keep pace with the changing world of work. The Solution Building basic skills is the mandate of the K-12 system, but despite rising high school graduation rates, average literacy and numeracy scores of Canada's high school aged youth are actually declining. The solution must begin here. More immediate results would be realized if the literacy and numeracy skills of the more than 80 per cent of youth who attend post-secondary education were assessed and, where necessary, boosted, upon entry to their post-secondary institutions. This would guarantee that graduates have these essential skills and would have the added benefit of ensuring students get more out of their expensive education. Finally, there is a need to embed these fundamental skills into any workplace training, including orientation training offered as new graduates begin their careers.

Available at (open access): https://cwf.ca/wp-content/uploads/2019/04/2019-04-09-HCC_WhatNowPolicyBrief_ReadyorNot_WEB.pdf

Title:

Larson, A., Milana, M., Klatt, G., Klempova, M., Knipprath, H., Rasmussen, P., Studena, I., Taru, M., & Vatrella, S. (2019). *Deliverable D3.3. Report on the use of PIAAC in informing policy in selected countries*. Encouraging Lifelong Learning for an Inclusive & Vibrant Europe Brüssel: European Commission. Retrieved March 6, 2020, from <https://iris.univr.it/retrieve/handle/11562/1008715/148362/enliven-d3.3-final.pdf>

Abstract:

This report deals with the role standard setting plays as a governance mechanism in adult learning, building on previous work on European governance carried out under the ENLIVEN project. But it does so from a specific angle. It focuses on the Programme for the International Assessment of Adult Competencies (PIAAC) to exemplify how standard setting in adult learning influences the public debate (through national newspapers), which informs policy in selected European countries (Estonia, Denmark, Italy, Slovakia, and the United Kingdom). Standard setting, particularly in European adult learning, is framed in this report as the process involved in the establishment of common rules for states, which implies two concurring phenomena: normative action (or the entitling of some actions as good, desirable, or permissible versus those that are bad, undesirable or impermissible), that is never value-free; and the agreement on common goals to be pursued through normative action.

Moreover this reports acknowledges the growing use of social indicators and benchmarks for monitoring progress in EU adult learning. On this ground, this report claims that both the data generated through PIAAC and the ‘implicit’ benchmarking of Level 3 in adults’ literacy, numeracy and problem-solving skills that come with it, contribute to standard setting in adult learning within the EU. But too little is known on how PIAAC’s contribution to standard setting in adult learning influences the public debate through national media, and particularly the highest circulating newspapers, which contribute to knowledge production around the events on which they report, yet from ideological stances. Hence this report presents the methodology applied to, and the results of, a coverage and content media analysis that was performed on a total of 116 news articles. These were published between 2012 and 2019 (July) in the highest circulating newspapers of Estonia, Denmark, Italy, Slovakia, and the United Kingdom. Among all countries involved in the ENLIVEN project, these were selected as each represents a typology of Welfare State Regimes (WSRs), as developed by Roosmaa and Saar (2017). Albeit Bulgaria (also an ENLIVEN country) would have represented one more WSR (Post-socialist, Balkan), it was not considered, as it did not partake in the PIAAC Survey. The results highlight that the national press differently presents and represents the PIAAC Survey, and connects PIAAC data to other subject matters across as much as within countries. Such differences connect to the wider context of reference at the time of publication (i.e., the government on power, the socio-economic situation, and on-going or foreseen education and labour markets reforms) but also to the WSR to which each country belongs. Regardless of such differences, however, some trends and common topics are found in that since 2014 the weight of PIAAC as a subject matter as gradually decreased, while reference to PIAAC data by the press persisted and acquired political, ideological, and ontological functions. Therefrom two policy recommendations can be drawn: 1. Make benchmarking in EU adult learning an explicit process, under the solely responsibility of the Union and its member states; 2. Do not take results from international assessment surveys (like PIAAC) at face value.

Available at (open access): <https://iris.univr.it/retrieve/handle/11562/1008715/148362/enliven-d3.3-final.pdf>

Title:

Le Mouel, M. (2019). *Knowledge-based capital and firm productivity* (Dissertation). Technische Universität Berlin. doi: 10.14279/depositonce-8120

Abstract:

The productivity slowdown of the last decades has raised concerns about the ability of advanced economies to sustain high living standards and renewed the interest in understanding the sources of aggregate productivity growth. The present thesis looks at the role of knowledge-based capital as a determinant of productivity, both within and across firms. I use firm-level administrative data to explore whether investment in knowledge assets is associated with productivity divergence between top performers and other firms, and how labour mobility can act as a vector of knowledge transmission between firms to mitigate this dynamic. First, I estimate the effect on productivity of a firm's stock of knowledge-based capital (encompassing research and development, software, intellectual property products and organizational capital), and connect the micro-level relationship to industry-level patterns of productivity divergence for Germany. Second, I use international survey information on tasks performed in the workplace to identify the categories of employees involved in implementing effective management practices. Finally, using Finnish firm-level data, I test whether the mobility of managers between firms can help reduce productivity dispersion, by helping low productivity firms acquire managerial knowledge and improve their productivity.

Available at (open access): <http://dx.doi.org/10.14279/depositonce-8120>

Title:

Lechner, C. M., Anger, S., & Rammstedt, B. (2019). Socio-emotional skills in education and beyond: Recent evidence and future research avenues. In R. Becker (Eds.), *Research Handbook on the Sociology of Education* (pp. 427-453). Cheltenham: Edward Elgar Publishing. doi: 10.4337/9781788110426.00034

Abstract:

During the past two decades, socio-emotional (or 'non-cognitive') skills have gained currency in research on education. In this chapter we begin by introducing the reader to the concept of socio-emotional skills and identify core themes in the current body of evidence. We then review recent studies, including several from our own research groups, which illustrate research on each of these core themes. Using the Big Five framework of personality as a guidepost, and drawing on large-scale data, these studies shed light on three main issues. First, they show that socio-emotional skills contribute to educational outcomes (e.g., academic success and educational transitions) in childhood and adolescence – above and beyond cognitive skills and socioeconomic background. Second, they demonstrate that socio-emotional skills co-shape important life outcomes in adulthood (e.g., income, health and social participation) over and above formal educational attainment and cognitive skills. Third, they demonstrate that various educational factors (e.g., characteristics of educational systems such as school starting age, schooling intensity) contribute to the formation of socio-emotional skills in childhood and adolescence. We conclude by outlining future avenues for research on socio-emotional skills in the educational context that pays particular attention to enhancing causal inference and strengthening policy relevance.

Available at: <https://doi.org/10.4337/9781788110426.00034>

Title:

Lechner, C. M., Danner, D., & Rammstedt, B. (2019). Grit (effortful persistence) can be measured with a short scale, shows little variation across socio-demographic subgroups, and is associated with career success and career engagement. *PLoS one*, 14(11), 1-29. doi: 10.1371/journal.pone.0224814

Abstract:

Grit (effortful persistence) has received considerable attention as a personality trait relevant for success and performance. However, critics have questioned grit's construct validity and criterion validity. Here we report on two studies that contribute to the debate surrounding the grit construct. Study 1 (N = 6,230) examined the psychometric properties of a five-item grit scale, covering mainly the perseverance facet, in a large and representative sample of German adults. Moreover, it investigated the distribution of grit across sociodemographic subgroups (age groups, genders, educational strata, employment statuses). Multiple-group measurement models demonstrated that grit showed full metric, but only partial scalar, invariance across all sociodemographic subgroups. Sociodemographic differences in the levels of grit emerged for age, education, and employment status but were generally small. Study 2 investigated how grit relates to career success (income, job prestige, job satisfaction) and career engagement (working overtime, participation in continuing professional development courses, attitudes toward lifelong learning) in an employed subsample (n = 2,246). When modeled as a first-order factor, grit was incrementally associated with all indicators of career success and especially of career engagement ($.08 \leq \beta \leq .75$)-over and above cognitive ability and sociodemographic characteristics. When modeled as a residual facet of conscientiousness, grit largely retained its criterion validity for success but only partly for engagement ($-.14 \leq \beta \leq .61$). Our findings offer qualified support for the psychometric quality of the short grit scale and suggest that grit may provide some added value in predicting career outcomes. We critically discuss these findings while highlighting that grit hardly differs from established facets of conscientiousness such as industriousness/perseverance.

Available at (open access): <https://doi.org/10.1371/journal.pone.0224814>

Title:

Lee, H. (2019). *Patterns and determinants of intergenerational educational mobility: Evidence across countries*. Working Paper Series No. 2019-02. Kitakyūshū: Asian Growth Research Institute. Retrieved February 28, 2020, from <http://www.agi.or.jp/workingpapers/WP2019-02.pdf>

Abstract:

This study measures the intergenerational persistence of education attainment, using internationally comparable data for parents' and children's education levels by age cohort for 30 countries, and identifies its determinants. The estimated intergenerational regression coefficients show that educational mobility worsened over generations in most countries, but its degrees varies considerably across countries and over time. The country-cohort panel regressions show that intergenerational educational mobility decreases with educational expansion, income inequality and credit constraints, and increases with per-capita GDP. The results also highlight the importance of progressive public expenditure on education for improving intergenerational educational mobility.

Available at (open access): <http://www.agi.or.jp/workingpapers/WP2019-02.pdf>

Title:

Lee, J., & Desjardins, R. (2019). Inequality in adult learning and education participation: The effects of social origins and social inequality. *International Journal of Lifelong Education*, 38(3), 339-359. doi: 10.1080/02601370.2019.1618402

Abstract:

This comparative study examines patterns of inequality in participation in two different types of adult learning and education (ALE) – job-related formal ALE (JFALE) and job-related non-formal ALE (JNFALE) – as related to social origins at the micro-level and three categories of social inequality at the macro-level at the macro level (economic, education, and skill inequality). Using data from the Programme for the International Assessment of Adult Competencies (PIAAC), two methods are used to analyse 19 selected OECD countries: multivariate binary logistic regressions to explore the extent to which individuals' social origins are associated with ALE participation and two-stage multilevel analysis to examine the relationship between social origins' advantages in ALE participation and social inequality. Statistically significant advantages in ALE participation of social origins were observed in some countries. Additionally, statistically significant positive relationships between social inequality and social origins' advantages in JNFALE participation are found, which implies that increases in social inequality strengthen advantages associated with social origins.

Available at: <https://doi.org/10.1080/02601370.2019.1618402>

Title:

Lee, J.-W., Han, J.-S., & Song, E. (2019). The effects and challenges of vocational training in Korea. *International Journal of Training Research*, 17(sup1), 96-111. doi: 10.1080/14480220.2019.1639272

Abstract:

This paper explores whether training programs were effective in improving labor market performance of individuals, in particular wages and employment probability, in South Korea. The regression analyses using the data from Korean respondents in the Program for the International Assessment of Adults Competencies (PIAAC) survey show the strong positive effects of vocational training programs on earnings as well as on employment probability of individuals, while controlling for education, experience, and literacy skills as a proxy for unobserved ability, as well as occupation and

industry. Moreover, the effects of job-training tend to be larger in older cohorts. These results suggest that against challenges posed by rapidly aging population and emergence of technological breakthroughs, Korea should promote vocational training activities and life-long learning programs, especially to the elderly.

Available at (open access): <https://doi.org/10.1080/14480220.2019.1639272>

Title:

Lewandowski, P., Park, A., Hardy, W., & Yang, D. (2019). *Technology, skills, and globalization: Explaining international differences in routine and nonroutine work using survey data*. IBS Working Papers No. 04/2019. Warszawa: Instytut Badan Strukturalnych. Retrieved February 28, 2020, from http://ibs.org.pl/app/uploads/2019/04/IBS_Working_Paper_04_2019.pdf

Abstract:

The shift away from manual and routine cognitive work, and towards non-routine cognitive work is a key feature of labor markets. There is no evidence, however, if the relative importance of various tasks differs between workers performing seemingly similar jobs in different countries. We develop worker-level, survey-based measures of task content of jobs – non-routine cognitive analytical and personal, routine cognitive and manual – that are consistent with widely-used occupation-specific measures based on O*NET database. We apply them to representative surveys conducted in 42 countries at different stages of development. We find substantial cross-country differences in the content of work within occupations. Routine task intensity (RTI) of jobs decreases significantly with GDP per capita for high-skill occupations but not for middle- and low-skill occupations. We estimate the determinants of workers' RTI as a function of technology (computer use), globalization (specialization in global value chains), structural change, and supply of skills, and decompose their role in accounting for the variation in RTI across countries. Computer use, better education, and higher literacy skills are related to lower RTI. Globalization (as measured by sector foreign value-added share) increases RTI in poorer countries but reduces RTI in richer countries. Differences in technology endowments and in skills' supply matter most for cross-country differences in RTI, with globalization also important. Technology contributes the most to the differences in RTI among workers in high-skilled occupations and non-off-shorable occupations; globalization contributes the most to differences among workers in low-skilled occupations and offshorable occupations.

Available at (open access): http://ibs.org.pl/app/uploads/2019/04/IBS_Working_Paper_04_2019.pdf

Title:

Liao, D., He, Q., & Jiao, H. (2019). Mapping background variables with sequential patterns in problem-solving environments: An investigation of United States adults' employment status in PIAAC. *Frontiers in Psychology, 10*, 1-32. doi: 10.3389/fpsyg.2019.00646

Abstract:

Adult assessments have evolved to keep pace with the changing nature of adult literacy and learning demands. As the importance of information and communication technologies (ICT) continues to grow, measures of ICT literacy skills, digital reading, and problem-solving in technology-rich environments (PSTRE) are increasingly important topics for exploration through computer-based assessment (CBA). This study used process data collected in log files and survey data from the Programme for the International Assessment of Adult Competencies (PIAAC), with a focus on the United States sample, to (a) identify employment-related background variables that significantly related to PSTRE skills and problem-solving behaviors, and (b) extract robust sequences of actions by sub-groups categorized by significant variables. We conducted this study in two phases. First, we used regression analyses to select background variables that significantly predict the general PSTRE,

literacy, and numeracy skills, as well as the response time and correctness in the example item. Second, we identified typical action sequences by different subgroups using the chi-square feature selection model to explore these sequences and differentiate the subgroups. Based on the malleable factors associated with problem-solving skills, the goal of this study is to provide information for improving competences in adult education for targeted groups.

Available at (open access): <https://doi.org/10.3389/fpsyg.2019.00646>

Title:

Lind, P., & Mellander, E. (2019). The immigration-skill nexus: similarities and differences among the Nordic countries. *Scandinavian Journal of Educational Research*, 1-14. doi: 10.1080/00313831.2019.1577755

Abstract:

We examine if the OECD survey of adult skills, PIAAC, can provide information about the relative quality of education and training in Denmark, Finland, Norway and Sweden. We find that the average population scores are inappropriate while the mean scores of natives well approximate the skills of individuals that had the chance to attend the countries' education and training systems in full. Native mean scores are invariably higher than population scores in all four countries, for all skills: literacy, numeracy, and ICT problem-solving. Thus, viewed as quality measures, average population scores are biased downwards. The native-population differences are small – at most 3.5% of population scores – but statistically significant. We also consider how the ranks of these Nordic countries in the international skill distribution are changed when mean native scores are substituted for average population scores. Except for an improvement in Sweden's numeracy rank, all changes are statistically insignificant.

Available at (open access): <https://doi.org/10.1080/00313831.2019.1577755>

Title:

Lissitsa, S., & Chachashvili-Bolotin, S. (2019). Cognitive skills and labour market experience of FSU immigrants in Israel. *Current Politics and Economics of the Middle East*, 10(3), 357-379.

Abstract:

Based on the nationwide database of the Programme for the International Assessment of Adult Competencies (PIAAC), the current study investigated the correlation between three cognitive skills (literacy, numeracy and problem solving in technology-rich environments) and three indicators of labour market integration of Former Soviet Union (FSU) immigrants in Israel - income, job autonomy and job satisfaction. FSU immigrants reported relatively high levels of job satisfaction, medium levels of job autonomy and an average income. Our findings from multivariate analysis show that numeric skills and problem solving in technology-rich environments were positively correlated with income, while the effect of literacy skills was insignificant, controlling for sociodemographic variables. The effects of the three types of cognitive skills on job autonomy and job satisfaction were found to be insignificant. Our important finding is that if FSU immigrants want to succeed economically, they have to be proficient in the Hebrew language.

Available at: <https://search.proquest.com/openview/4f893838319fd1a43d31a686579b405e/1?pq-origsite=gscholar&cb1=2034880>

Title:

Liu, H. (2019). Low-numerate adults, motivational factors in learning, and their employment, education and training status in Germany, the US, and South Korea. *ZDM Mathematics Education*, 1-13. doi: 10.1007/s11858-019-01108-x

Abstract:

Drawing on the PIAAC data, in this paper I examine how motivational factors such as motivation to learn and grit are related to low-numerate adults' employment status and their actual participation in lifelong learning in Germany, the United States and South Korea. In particular, the study uses PIAAC self-reported data on the degree to which the respondent "likes learning new things", and "likes to get to the bottom of difficult things" as proxies of motivational factors in adult learning. Findings show that across three countries both motivation to learn and grit have independent relationships with adults' employment status and actual participation in adult learning. Considering that low-skilled adults are the ones who need further learning the most, yet are repeatedly reported to have the lowest rate of participation in further learning, these findings highlight the motivational factors in adult learning. They also suggest that motivation to learn and grit may mitigate the disadvantages that 'vulnerable' adults experience due to low numeracy skills. Implications for mathematics educators and adult education research are discussed.

Available at (open access): <https://doi.org/10.1007/s11858-019-01108-x>

Title:

Liu, H., Fernandez, F., & Grotlüschen, A. (2019). Examining self-directedness and its relationships with lifelong learning and earnings in Yunnan, Vietnam, Germany, and the United States. *International Journal of Educational Development*, 70. doi: 10.1016/j.ijedudev.2019.102088

Abstract:

This study provides an empirical analysis of the significance of self-directedness in learning in the labor market and further pursuit of education and training among adults in two high-income (Germany, U.S) and two middle-income countries (Vietnam, Yunnan China). We find substantial gaps in the self-directedness measures between low- and high-SES workers. Additionally, self-directedness in learning is rewarded in the labor market in Yunnan and Vietnam. Those who are motivated to learn and are resilient are more likely to pursue further learning opportunities in the high-income countries, as well as in Yunnan China where adult learning opportunities are severely lacking.

Available at: <https://doi.org/10.1016/j.ijedudev.2019.102088>

Title:

Llena-Nozal, A., Martin, N., & Murtin, F. (2019). *The economy of well-being. Creating opportunities for people's well-being and economic growth*. OECD Statistics Working Papers No. 2019/02. Paris: OECD Publishing. doi: 10.1787/498e9bc7-en

Abstract:

As well-being has matured as a statistical and measurement agenda, it has become increasingly relevant as a "compass" for policy, with a growing number of countries using well-being metrics to guide decision-making and inform budgetary processes. One remaining challenge has consisted in providing policy-makers with a better understanding of the linkages between the drivers of well-being and economic growth. This paper develops the concept of an "Economy of Well-being" as a basis for highlighting these linkages and showing how policy can most effectively leverage them. The paper defines an economy of well-being around the idea of a "virtuous circle" in which individual well-being and long-term economic growth are mutually reinforcing. It also explores the

characteristics of an economy of well-being and the conditions under which it can be sustained. Secondly, based on a survey of existing empirical evidence, the paper contributes to outline how economies of well-being can be built. It provides analysis of several important channels through which economic growth and well-being support and reinforce one another, focusing on the multi-dimensional impact of policies in four areas that research has shown to be important for well-being: Education and Skills; Health; Social Protection and Redistribution; and Gender Equality.

Available at (open access): <https://doi.org/10.1787/498e9bc7-en>

Title:

Lopes, T., Scully-Russ, E., Zarestky, J., & Collins, J. C. (2019). The effects of social characteristics of jobs on the cognitive skills of adults in the United States: A PIAAC analysis. *Adult Education Quarterly*, doi: 10.1177/0741713619884567

Abstract:

There is contrary research around whether collaboration at work fosters individual learning and skill development. This study's purpose was to examine the relationship between social characteristics of jobs on adults' cognitive skills as measured by the Program for the International Assessment of Adult Competencies (PIAAC). For select industry sectors, we used a linear regression model to predict scores for PIAAC scales—literacy, numeracy, and problem solving in technology-rich environments—based on the independent variables gender, education level, frequency of workplace collaboration, and frequency of sharing work-related information. Results showed level of collaboration at work is negatively associated with PIAAC scores, contradicting current thinking on the role of social interactions in the workplace. We conclude there may be an overemphasis on the social characteristics in job design in some industries and workplaces, leaving little support and time for other activities known to support workplace learning, like management support and time for reflection.

Available at: <https://doi.org/10.1177/0741713619884567>

Title:

Lopez-Fogues, A., & Scandurra, R. (2019). Analyzing PIAAC through the capability approach. In S. McGrath, M. Mulder, J. Papier, & R. Suart (Eds.), *Handbook of Vocational Education and Training: Developments in the Changing World of Work* (pp. 237-257). Cham: Springer International Publishing. doi: 10.1007/978-3-319-94532-3_3

Abstract:

The purpose of this chapter is to evidence the shortcomings of large-scale assessments and the new shift toward capability-oriented indicators. Focusing on the international data on adult skills (PIAAC) and its impact in forging VET (vocational education and training) policies, we assume that current VET systems are confronted with many challenges that arise from the interaction of two sources. On one hand, VET policy focuses mainly on employability which is insufficient to grasp wider benefits that education entails – as postulated by many educational (i.e., Nussbaum, *Creating capabilities: The human development approach*. Harvard University Press, Cambridge, MA, 2011; Boni and Walker, *Universities and global human development: Theoretical and empirical insights for social change*. Routledge, London, 2016) and a considerable smaller education and work scholars (i.e., McGrath and Powell, *Int J Educ Dev* 50:12–19, 2016; Egdell and McQuaid, *Soc Policy Adm* 50:1–18, 2016). On the other hand, the underpinnings of the objectives and designs of VET should adapt to the socioeconomic consequences of the Great Recession. The chapter focuses on the PIAAC and most concretely to the Spanish case as an example of how the Great Recession becomes an open license to fast- and short-term strategies that favors employment regardless of its quality and long-term consequences and values education and youth role in society in relation to their

contribution to boost the economy. The chapter recognizes the urge for seeking fast solutions that shift the unemployment rates but alerts to the overlooked aspects with some of those measures in relation to VET. In fact, this chapter is a call to policy-makers and academics toward the importance of rethinking education on the basis of new information basis of judgment that are human-centered.

Available at: https://doi.org/10.1007/978-3-319-94532-3_3

Title:

Lorenz, E., & Potter, J. (2019). *Workplace organisation and innovation in small and medium-sized enterprises*. OECD SME and Entrepreneurship Papers No. 17. Paris: OECD Publishing. doi: 10.1787/1732c0c-en

Abstract:

This paper examines the relationship between workplace organisation and innovation in small and medium-sized enterprises (SMEs). It uses data for 30 countries, drawn from the European Company Survey, the OECD Programme for International Assessment of Adult Competencies and the Community Innovation Survey. It contrasts SMEs adopting a “learning organisation” or “discretionary learning” form of workplace organisation with SMEs adopting more hierarchical organisational forms. Learning organisation or discretionary learning SMEs are characterised by high levels of self-planning of tasks by employees, teamwork, knowledge exchange with employees and supervisors, on-the-job training, and employee performance incentives. They account for approximately one-third of SMEs across the countries examined. SMEs with this form of work organisation are more likely than other SMEs to develop new products/services and processes. At a macro level, countries with high proportions of these SMEs have higher rates of new-to-the-market innovations among SMEs and of SME innovation collaborations with other firms and organisations. The findings point to the potential role of policies favouring organisational change in SMEs as a means of stimulating SME innovation.

Available at (open access): <https://doi.org/10.1787/11732c0c-en>

Title:

Madhala, S. (2019). *The risk of automation in the Israeli labor market*. Policy Research Jerusalem: Taub Center for Social Policy Studies in Israel. Retrieved March 6, 2020, from http://taubcenter.org.il/wp-content/files_mf/theriskofautomationintheisraelilabormarket2019eng75.pdf

Abstract:

This research presents a current mapping of the Israeli labor market using data from the OECD’s Survey of Adults Skills (PIAAC – Programme for the International Assessment of Adult Competencies) and based on a recent model that ranks different jobs according to the tasks required in the future labor market. The study focuses on identifying the population that is at highest risk of automation and further identifying their specific skill weaknesses that put them at higher risk of automation and less fit for the future labor market. The results of the mapping show that the share of occupations at high risk in Israel stands at about 15 percent. A large portion of these positions are in the manufacturing and construction industries as well as clerking positions. The study also found that a central characteristic of work at risk of automation is that it does not require higher education, and a large portion of these jobs, in fact, do not require any formal education. Further, occupations at high risk are also characterized by low hourly wages and, often, less than full-time work hours. The data reveal the existence of gender gaps and indicate that women, and especially non-Haredi Jewish women, are at higher risk of computerization relative to their male peers, apparently mainly due to the fact that they make less use of the skills that will be required in the future labor market and not due to their choice of occupation. Another population at high risk of automation is the Arab

Israeli population, and especially Arab Israeli men. A large share of these men are employed in positions characterized by low wages with minimal educational requirements, with little use of the skills that will be required in the future labor market and in digital platforms. Proper preparation for the expected changes in the Israeli labor market is essential in order to train workers for the future and to narrow inequalities that are foreseen within the labor force. In this framework, it is important to consider how these essential skills are provided to workers and at what stage it is optimal to provide them. It is, of course, preferable to provide these skills early on, within the formal education system. The findings indicate the financial difficulties in gaining new skills particularly among this group of workers at high risk of automation, and underscore the advantages of a wider use of the training system run by the government. Nevertheless, the best way to enable the adaptability of workers to the future labor market is through appropriate long-term planning, including the collection of a wide range of data on an ongoing basis.

Available at (open access): http://taubcenter.org.il/wp-content/files_mf/theriskofautomationintheisraelilabormarket2019eng75.pdf

Title:

Mahboubi, P. (2019). *Bad fits: The causes, extent and costs of job skills mismatch in Canada*. Commentary No. 552. Toronto: C.D. Howe Institute. Retrieved March 4, 2020, from https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary%20552.pdf

Abstract:

About 13 percent of Canadian workers have skills mismatched to their jobs. Although this is somewhat in line with an average of around 10 percent among OECD countries in an international survey, Canadian policymakers have two reasons for concern. Firstly, there is significant variation across socioeconomic groups. While workers with higher educational attainment are more likely to be over-skilled, women, immigrants, and older workers are more likely to be under-skilled for their jobs. In the case of immigrants, the under-skilled problem entirely disappears with time spent in Canada, highlighting the importance of settlement policies that provide rigorous and accessible skills training, language programs, and job-search workshops for newcomers. Secondly, these results could worsen in the years ahead in the face of technological development and demographic aging that are occurring in the labour market at the same time as the role of newcomers in Canada's labour force is growing. As it is, the majority of workers across occupations need to use cognitive skills such as literacy, numeracy, and problem solving at least once a week at work. More importantly, there is no occupation where these skills are not required at all. This study's results highlight the importance of providing more opportunities for skills development and lifelong learning for all workers and better addressing individual training needs, particularly, among underskilled people such as older workers and new immigrants. Businesses – in addition to providing training opportunities for under-skilled workers – can reduce mismatches within their organizations by appropriately reassigning tasks, providing relocation assistance and finding innovative ways to use workers' skills in order to optimize productivity. Governments can help reduce skills mismatch with policies that enhance labour market flexibility, ease labour mobility, and more importantly, increase participation in lifelong learning.

Available at (open access): https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary%20552.pdf

Title:

Marcolin, L., Miroudot, S., & Squicciarini, M. (2019). To be (routine) or not to be (routine), that is the question: a cross-country task-based answer. *Industrial and Corporate Change*, 28(3), 477–501. doi: 10.1093/icc/dty020

Abstract:

This work proposes a new measure of the routine content of occupations and sectors for 20 OECD countries, based on information about the sequence and flexibility of the tasks performed on the job. A negative but weak association emerges between routineness and skill intensity, which suggests the importance of both technological and organizational considerations in the measure of routine intensity. Between 2000 and 2010, employment mainly grew in non-routine occupations, especially in market services, while manufacturing shed routine and non-routine jobs. Changes in shares of employment by routine quartile are dominated by within-effects.

Available at (open access): <https://doi.org/10.1093/icc/dty020>

Title:

Maryna, T., & Tiiu, P. (2019). Immigrant–native wage gap in Europe: The role of cognitive skills and their use at work. *International Journal of Manpower*, 40(1), 154–175. doi: 10.1108/IJM-03-2018-0087

Abstract:

Purpose: The purpose of this paper is to address the role of cognitive skills and extent of skill use at work in explaining the immigrant–native wage gap in Europe. The study targets immigrant–native disparities in literacy and numeracy cognitive skills, as important, yet not exhaustive factor behind immigrants’ wage penalty. **Design/methodology/approach:** The research relies on the Program of International Assessment of Adult Competencies data for 15 European countries. The empirical analysis employs multivariate regression analysis and incorporates the full set of plausible values for each skill domain, to correctly measure cognitive skills. To estimate standard errors, the authors employ Jackknife replication methodology with 80 replication weights and final population weight. **Findings:** The authors document that, on average, immigrants achieve substantially worse scores in literacy and numeracy test domains. Only highly educated immigrants tend to improve their skills over time in host countries. The results of wage gap analysis indicate that having cognitive skills, demographic profile and occupation category comparable to natives does not yield comparable wage rate. The remaining wage gap results from the systematic differences in skills application at work, as immigrants use their skills to lower extent, relative to natives. **Originality/value:** The research employs a novel measure of productive human capital, which accounts for cognitive skills in literacy and numeracy domains, and frequencies of skill use at work. It allows to more precisely evaluate the immigrant–native disparity in human capital application and its reflection on the wage rate.

Available at: <https://doi.org/10.1108/IJM-03-2018-0087>

Title:

Massing, N., Wasmer, M., Wolf, C., & Zuell, C. (2019). How standardized is occupational coding? A comparison of results from different coding agencies in Germany. *Journal of Official Statistics*, 35(1), 16–187. doi: 10.2478/jos-2019-0008

Abstract:

As occupational data play a crucial part in many social and economic analyses, information on the reliability of these data and, in particular on the role of coding agencies, is important. Based on our review of previous research, we develop four hypotheses, which we test using occupation-coded

data from the German General Social Survey and the field test data from the German Programme for the International Assessment of Adult Competencies. Because the same data were coded by several agencies, their coding results could be directly compared. As the surveys used different instruments, and interviewer training differed, the effects of these factors could also be evaluated. Our main findings are: the percentage of uncodeable responses is low (1.8–4.9%) but what is classified as “uncodeable” varies between coding agencies. Inter-agency coding reliability is relatively low ca. 0.5 at four-digit level, and codings sometimes differ systematically between agencies. The reliability of derived status scores is satisfactory (0.82–0.90). The previously reported negative relationship between answer length and coding reliability could be replicated and effects of interviewer training demonstrated. Finally, we discuss the importance of establishing common coding rules and present recommendations to overcome some of the problems in occupation coding.

Available at (open access): <https://doi.org/10.2478/jos-2019-0008>

Title:

Mayerl, M. (2019). Qualifikationsmismatch und generische Arbeitsplatz [Qualification mismatch and generic workplace]. In F. Gramlinger, C. Iller, A. Ostendorf, K. Schmid, & G. Tafner (Eds.), *Bildung = Berufsbildung?! (pp. 33-44)*. Bielefeld: wbv. doi: 10.3278/6004660w033

Abstract:

A central issue in the discourse on qualifications and skills mismatch is whether skills mismatch (over- or under-qualification) can be explained by variances in the actual skill levels of the workforce or job requirements. Subsequently, this paper uses linear regression analyses based on the data of PIAAC 2011/12 to empirically test a possible relationship between the qualification-related employment status and the generic job requirements of workers for the Austrian labour market. The results show that qualification mismatch implies to a high degree skills mismatch. Non-qualification-adequate employment is not correlated to heterogeneity in the skills of the workforce and the skill requirements of jobs, but rather to the qualification-related structure of jobs, which limits (overqualification) or enables (underqualification) the use of skills by the workforce. [Translated on behalf of editors]

Available at (open access): <https://doi.org/10.3278/6004660w033>

Title:

McLean, D., Bouaissa, M., Rainville, B., & Auger, L. (2019). Non-cognitive skills: How much do they matter for earnings in Canada? *American Journal of Management*, 19(4), 104-124. doi: 10.33423/ajm.v19i4.2392

Abstract:

Evidence from different countries suggests that non-cognitive skills play an important role in wage determination and overall social outcomes, but studies for Canada are scarce. We contribute to filling this gap by estimating wage regressions with the Big Five traits using the Longitudinal and International Study of Adults. Our results indicate that conscientiousness is positively associated with wages, while agreeableness, extraversion, and neuroticism are associated with negative returns, with higher magnitudes on agreeableness and conscientiousness for females. Cognitive ability has the highest estimated wage return so, while significant, non-cognitive skills do not seem to be the most important wage determinant.

Available at (open access): <https://doi.org/10.33423/ajm.v19i4.2392>

Title:

Millar, R. J., Sahoo, S., Yamashita, T., & Cummins, P. (2019). Language use, literacy skills, and online health information-seeking in later life among Hispanics in the U.S. *Innovation in Aging*, Volume 3 (Supplement 1), S266-S266. doi: 10.1093/geroni/igz038.989

Abstract:

Online platforms, which are often in English, have become a common source of health information. Accordingly, language skills have been shown to be important for health information-seeking. In the United States, the use of online health information is generally low among Hispanics, particularly those with limited English proficiency. What is less clear, however, is how different measures of English proficiency may be linked to online health information seeking in later life. This study examines the associations between language spoken at home, literacy skills, and online health information seeking among middle age and older Hispanics in the U.S. Data of Hispanic adults aged 40 years and older (n = 315) come from the 2012/2014 Program for International Assessment of Adult Competencies (PIAAC). We used binary logistic regression models with complex sampling weights to examine online health information seeking as a function of primary language use at home (Spanish vs. English) and literacy skill assessment scores (low – high: 0 – 500 points). Results indicated that speaking Spanish at home (OR = 0.317, p lt; 0.05) is a negative predictor, and greater literacy skills (OR = 1.011, p lt; 0.05) is a positive predictor of online health information seeking. Findings from this study clarify possible health information disadvantages by limited English proficiency and lower literacy skills. We discuss how the impact of primary language use and literacy skills should be incorporated into future health communication and policy initiatives to address the barriers to health information among middle-aged and older Hispanic adults.

Available at (open access): <https://doi.org/10.1093/geroni/igz038.989>

Title:

Millar, R. J., Sahoo, S., Yamashita, T., & Cummins, P. (2019). Problem solving in technology-rich environments and self-rated health among adults in the U.S.: An analysis of the program for the international assessment of adult competencies. *Journal of Applied Gerontology*, doi: 10.1177/0733464819829663

Abstract:

Problem-solving skills in the context of technologically complex modern societies have become increasingly important to health management in later life. This study is designed to investigate the associations between problem-solving skills in technology-rich environments (PSTRE) and health, and to explore whether age differences exist. Using data from the 2012/2014 Program for the International Assessment of Adult Competencies (PIAAC), we used logistic regression to examine the relationship between PSTRE and self-reported health among a representative sample of American adults aged 35 years and older (N = 3,260). Overall, greater PSTRE (odds ratio [OR] = 1.012, p < .001) was significantly associated with better self-rated health even after adjusting for the sociodemographic characteristics. Yet, PSTRE was only partially predictive of health in some age groups. Our findings highlight the potential of PSTRE to reduce health disparities among middle-aged and older adults living in modern technology and information-rich societies.

Available at: <https://doi.org/10.1177/0733464819829663>

Title:

Mor, Z., Iris, B.-H., & Joseph, K. (2019). Education and competencies within Belt and Road countries. *International Journal of Educational Management*, 33(6), 1411-1430. doi: 10.1108/IJEM-032019-0100

Abstract:

Purpose: The purpose of this paper is to examine the relationships between education and competencies from a comparative view, while controlling for background characteristics (e.g. parental education), home features (e.g. income) and country fixed effect. **Design/methodology/approach:** This paper utilises an international data sets of 12 Belt and Road (B&R) countries participating in the PIAAC survey. Data are examined using regression models with “REPSET” Stata code. The focus on B&R countries is interesting as this recent economic and strategic development alliance might transform the contemporary global balance of power. Therefore, examining its educational development is important. **Findings:** Findings reveal the higher the level of education, the higher the competency level in numeracy and literacy. Age was found to be negatively related to competencies, and gender was found to be dually significant. Among the examined B&R countries, Slovenia, Russia and Israel contribute the most to the numeracy, literacy and problem solving competencies (respectively) compared with other countries. The findings might contribute to the design of education for development policies aimed at increasing the level of state competitiveness while accounting for social cohesiveness. **Originality/value:** The paper provides a comparative study into educational development of the B&R alliance, and therefore offers an insight of the developmental cooperation as it emerges. The focus on the B&R initiative is important as it is a strategic development alliance which might transform the contemporary global balance of power. Therefore, the examination of the above-mentioned relationships with the focus on B&R countries might advance the strategic design of this cooperation.

Available at: <https://doi.org/10.1108/IJEM-03-2019-0100>

Title:

Mu, C., Reeve, R., & Cronin, P. (2019). *Association of literacy and numeracy with adult health and socioeconomic outcomes*. CHERE Working Paper No. 2019/02. Sydney: Centre for Health Economics Research and Evaluation (CHERE). Retrieved March 4, 2020, from <http://hdl.handle.net/10453/133392>

Abstract:

Literacy and numeracy are cognitive skills which are core components of human capital. Understanding the effect of literacy and numeracy on individual outcomes in adulthood can help identify long term benefits of interventions to improve these skills. Utilising a national survey in Australia, we examine the links between literacy and numeracy and adult health and socioeconomic outcomes including employment status and social capital (measured by volunteering and level of trust). To account for the potential endogeneity of literacy and numeracy and educational attainment, we develop a simultaneous equation model consisting of outcome variables, literacy and numeracy, and education. The results show that literacy and numeracy exert a positive influence on education, health, the probability of being employed, the probability of participating in voluntary work, and having high level of trust.

Available at (open access): <http://hdl.handle.net/10453/133392>

Title:

Mueller, R., & Truong, K. (2019). *The impacts of literacy and numeracy on earnings: Do admission categories matter?* Child and Youth Refugee Research Coalition (CYRRC) Halifax: Dalhousie University. Retrieved March 9, 2020, from <http://hdl.handle.net/10222/76735>

Abstract:

We explore differences in literacy and numeracy skills, and the economic returns to these skills for immigrants to Canada in different admission classes, and their Canadian-born counterparts.

Respondents are categorized into nine subpopulations: adult economic immigrants, adult refugees, adult family reunification, other adult immigrants, adult temporary residents, young refugees, young non-refugee immigrants, second- and third-generation Canadians. With some exceptions, the results suggest that both adult and young immigrants (those who arrived in Canada at age 13 or younger) do not perform as well on literacy and numeracy tests as those born in Canada, although young immigrants have higher test scores than adult immigrants. Similar results are found for wages, our metric for success in the labour market. Generally, we find that economic immigrants tend to have the highest test scores and hourly wages, with refugees having the lowest, amongst all immigration categories. A one-standard deviation increase in literacy attracts a wage premium of eight percent for men and nine percent for women. Those of numeracy scores are associated with 10 percent wage premium for both males and females. Though literacy and numeracy tests in PIAAC 2012 are used to capture basic everyday life and workplace proficiency, the returns to these basic skills are economically significant across different quantiles of earnings.

Available at (open access): <http://hdl.handle.net/10222/76735>

Title:

Musset, P., Field, S., Mann, A., & Bergseng, B. (2019). *Vocational education and training in Estonia*. Paris: OECD Publishing. doi: 10.1787/g2g9fac9-en

Abstract:

One of a series of studies on vocational education and training, this review assesses the vocational education and training (VET) in Estonia and provides policy recommendations. Estonia does very well in terms of student achievement on PISA, and the results from the Survey of Adult Skills (PIAAC) are also excellent. Unemployment levels are low. But despite recent reforms, VET remains relatively low status compared to general education, dropout rates are too high for comfort, and apprenticeships, despite recent efforts, fail to attract many young people. Suggested approaches to improve VET in Estonia include the expansion of work-based learning within all VET programmes and measures to increase the number of apprentices. Tackling dropout should be done by a set of complementary measures, including support in basic skills for those students lagging behind. Building pathways between VET and general education options can help improve the status of VET. More and better career guidance, especially before the key grade 9 transition point, is also needed.

Available at (open access): <https://doi.org/10.1787/g2g9fac9-en>

Title:

Nienkemper, B., & Grotlüschen, A. (2019). Using PIAAC data to learn more about the literacy practices of adults. *International Journal of Lifelong Education*, 38(4), 393-405. doi: 10.1080/02601370.2019.1596171

Abstract:

The present article connects a secondary analysis of quantitative data from the Programme for the International Assessment of Adult Competencies (PIAAC) with the theoretical approach of 'literacy practices' and related research results from the so-called New Literacy Studies (NLS) tradition, which follows a cultural practices paradigm. According to the literacy as social practice approach, the analysis of adults' literacy and numeracy practices could provide relevant policy information about how to address target groups in adult literacy and basic education. Thus, a Latent Class Analysis was carried out with the German PIAAC dataset in order to differentiate the adult population by their uses of literacy, numeracy and ICT. As a result of this procedure, three subgroups of adults can be distinguished by the frequency in which they use selected skill-related activities. Surprisingly, an adult's individual literacy level does not clearly predict group membership. A further interesting

result is that participants in one of the groups seem to compensate for the few chances they have to use their skills at work by using them more often in their everyday life. Both results contribute to the need to draw a more differentiated picture of adults with lower literacy skills.

Available at: <https://doi.org/10.1080/02601370.2019.1596171>

Title:

Nygren, H., Nissinen, K., Hämläinen, R., & De Wever, B. (2019). Lifelong learning: Formal, non-formal and informal learning in the context of the use of problem-solving skills in technology-rich environments. *British Journal of Educational Technology*, 50(4), 1759-1770. doi: 10.1111/bjet.12807

Abstract:

The evolving technological landscape in the digital era has a crucial influence on lifelong learning and the demand for problem-solving skills. In this paper, we identify associations between formal, non-formal and informal learning with sufficient problem-solving skills in technology-rich environments (TRE). We focus on adults' problem-solving skills in TRE as a novel approach to investigate formal, non-formal and informal learning based on data from the Programme for the International Assessment of Adult Competencies. This programme measured 16–64-year-old adults' proficiency in problem-solving skills in TRE. The total sample size was 61 654 individuals from 13 European countries. Our results clearly indicate that the skill levels of more than 50% of adults aged 16–64 years old seem to be insufficient to cope effectively in TRE. The findings suggest that the learning ecologies of adults are a combination of formal, non-formal and informal learning activities. The overall level of problem-solving skills in TRE was higher among individuals who indicated that they have participated either formal or non-formal learning activities, compared to those who have not. However, interestingly, the association between formal learning and problem-solving skills in TRE was not major. Instead, our results clearly indicate that informal learning seems to be highly associated with sufficient problem-solving skills in TRE. In practice, we outline those formal, non-formal and informal learning activities that adults perform when applying the skills in TRE. By recognising these activities undertaken by sufficient problem solvers, we can promote lifelong learning skills. Our findings can also be used as a starting point for future studies on lifelong learning.

Available at (open access): <https://doi.org/10.1111/bjet.12807>

Title:

Oakford, P., Brumfield, C., Goldvale, C., & Tatum, L. (2019). *Investing in futures: Economic and fiscal benefits of postsecondary education in prison*. New York: Vera - Institute of Justice. Retrieved March 4, 2020, from https://storage.googleapis.com/vera-web-assets/downloads/Publications/investing-in-futures-education-in-prison/legacy_downloads/investing-in-futures.pdf

Abstract:

Efforts to build robust postsecondary education programs in prison have accelerated in recent years, with support from a broad range of groups from correctional officers to college administrators. This report describes how lifting the current ban on awarding Pell Grants to incarcerated people would benefit workers, employers, and states. Specifically, it analyzes the potential employment and earnings impact of postsecondary education programs in prison; identifies the millions of job openings annually that require the skills a person in prison could acquire through postsecondary education; and estimates the money states would save through lower recidivism rates these postsecondary education programs would yield.

Available at (open access): https://storage.googleapis.com/vera-web-assets/downloads/Publications/investing-in-futures-education-in-prison/legacy_downloads/investing-in-futures.pdf

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Investing in the skills of adult immigrants*. Adult Skills in Focus No. 11. Paris: OECD Publishing. doi: 10.1787/79990b8c-en

Abstract:

Lifelong learning is especially important for immigrants, who are often at a disadvantage in terms of the languages and skills that are valued in the labour market of their host country. Yet foreign-born adults are less likely to participate in training than native-born ones, and face higher financial and non-financial barriers to training. Policy efforts should focus not only on providing more training opportunities, but also on removing barriers to participation.

Available at (open access): <https://doi.org/10.1787/79990b8c-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Beyond proficiency. Using log files to understand respondent behaviour in the survey of adult skills*. Paris: OECD Publishing. doi: 10.1787/0b1414ed-en.

Abstract:

Computer-based administration of large-scale assessments makes it possible to collect a rich set of information on test takers, through analysis of the log files recording interactions between the computer interface and the server. This report examines timing and engagement indicators from the Survey of Adult Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC), both of which indicate large differences across countries and socio-demographic groups, in the amount of time spent by respondents and their levels of disengagement, which reduce the probability of giving a correct answer and consequently reduces measured performance. Such insights can help policy makers, researchers and educators to better understand respondents' cognitive strategies and the underlying causes of low and high performance. This, in turn, can help improve the design of assessments and lead to more effective training and learning programmes.

Available at (open access): <https://doi.org/10.1787/0b1414ed-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *The Survey of Adult Skills – Reader's companion, Third Edition*. Paris: OECD Publishing. doi: 10.1787/f70238c7-en

Abstract:

This edition of the Reader's Companion accompanies Skills Matter: Additional Results from the Survey of Adult Skills that reports the results from the 39 countries and regions that participated in the 3 rounds of data collection in the first cycle of PIAAC, with a particular focus on the 6 countries that participated in the third round of the study (Ecuador, Hungary, Kazakhstan, Mexico, Peru and the United States). It describes the design and methodology of the survey and its relationship to other international assessments of young students and adults.

The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), was designed to provide insights into the availability of some key skills in society and how they are used at work and at home. The first survey of its kind, it directly measures proficiency in several information-processing skills – namely literacy, numeracy and problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.1787/f70238c7-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Skills Matter – Additional Results from the Survey of Adult Skills*. Paris: OECD Publishing. doi: 10.1787/1f029d8f-en

Abstract:

In the wake of the technological revolution that began in the last decades of the 20th century, labour-market demand for information-processing and other high-level cognitive and interpersonal skills have been growing substantially. Based on the results from the 33 countries and regions that participated in the 1st and 2nd round of the Survey of Adult Skills in 2011-12 and in 2014-15, this report describes adults' proficiency in three information-processing skills, and examines how proficiency is related to labour-market and social outcomes. It also places special emphasis on the results from the 3rd and final round of the first cycle of PIAAC in 2017-18, which included 6 countries (Ecuador, Hungary, Kazakhstan, Mexico, Peru and the United States). The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), was designed to provide insights into the availability of some of these key skills in society and how they are used at work and at home. The first survey of its kind, it directly measures proficiency in three information-processing skills: literacy, numeracy and problem-solving in technology-rich environments.

Available at (open access): <https://doi.org/10.1787/1f029d8f-en>

Title:

Pak, M., & Schwellnus, C. (2019). *Labour share developments over the past two decades*. OECD Economics Department Working Papers No. 1541. Paris: OECD Publishing. doi: 10.1787/b21e518b-en

Abstract:

Labour share developments over the past two decades have differed widely across OECD countries, with about half of them experiencing significant declines. This paper analyses the role of public policies in shaping labour share developments across countries. The results suggest that pro-competition product market reforms raise the labour share by reducing producer rents. Labour market reforms that strengthen the bargaining position of workers, such as tightening employment protection or raising minimum wages, may raise wages in the short term but risk triggering the substitution of capital for labour in the medium term. On average, across countries, such reforms are estimated to reduce the labour share. By contrast, promoting the re-employment of workers who lose their jobs through active labour market policies unambiguously raises the labour share.

Available at (open access): <https://doi.org/10.1787/b21e518b-en>

Title:

Pareliussen, J., André, C., & Hwang, H. (2019). *Improving school results and equity in compulsory education in Sweden*. OECD Economics Department Working Papers No. 1587. Paris: OECD Publishing. doi: 10.1787/99a20f8e-en

Abstract:

Swedish school results declined for two decades following a series of reforms in the early 1990s decentralising the school system and introducing choice, competition and management by objectives. The general aims and direction of reform were not destined to lower results, but weaknesses of reform design and implementation, against the backdrop of a deep recession, likely contributed to falling outcomes. Residential segregation and the current model of competition and choice increase school segregation and likely reduce equality of opportunity. A coherent set of reforms should strengthen central government institutions, rebuild a regional governance structure and

increasingly target funding to pupils' needs. Better steering of competition and school choice implies ensuring that grades fairly represent pupils' skills and knowledge, that municipalities increasingly take the socio-economic mix of pupils into account in entry and investment decisions, and that entry and expansion of private schools are better coordinated to counter school segregation. Teaching needs to become more attractive to raise the quality of recruitment to the profession and to address current and future teacher shortages by improving teacher education, strengthening continuous learning and instigating more cooperation, feedback and support between colleagues.

Available at (open access): <https://doi.org/10.1787/99a20fbc-en>

Title:

Parkin, A., Seward, B., & Truong, K. (2019). *Combining school and work: An update on postsecondary student employment in Canada*. Mowat Research No. 187. Toronto: Mowat Centre. Retrieved March 4, 2020, from <http://hdl.handle.net/1807/99436>

Abstract:

Postsecondary students have been increasingly combining education and employment as a way of enhancing skills and not only as a way of managing costs. This Mowat note summarizes what descriptive statistics from Statistics Canada's most recent Longitudinal and International Survey of Adults (LISA) data tell us about students' work experiences while in postsecondary education. We find that: Combining work and studies is a common experience for postsecondary students. Fewer than two in five PSE students report holding a job while enrolled that is related to their studies. Nearly one in two students who combined employment with their PSE studies say it provided them with knowledge and experience needed to help them obtain their first career-related job. Students with higher literacy, numeracy and problem-solving scores – who are less likely to face difficulties transitioning into the labour force – are more likely to work while in PSE.

Available at (open access): <http://hdl.handle.net/1807/99436>

Title:

Patel, P. C., & Ganzach, Y. (2019). Returns to balance in cognitive skills for the self-employed: Evidence from 18 countries. *Small Business Economics*, 52(1), 89-109. doi: 10.1007/s11187-018-0018-4

Abstract:

Is there a positive contemporaneous association between balance in cognitive skills and self-employment earnings? In this paper, we extend past studies that draw on balance in cognitive skills tests administered at an early age and use the balance in scores on cognitive skills tests administered during 2011–2012 in the Programme for the International Assessment of Adult Competencies (PIAAC), a cross-sectional sample of 47,768 adult participants from 18 countries. Lowering concerns for cognitive skills measured at an early age, PIAAC's measure of cognitive skills provides a contemporaneous measure of cognitive skills also accumulated through past experiences. Using a standardized measure of cognitive skills across participating countries, PIAAC also lowers concerns for measurement error resulting from cultural bias in country-specific cognitive skills tests. Extending the entrepreneurship earnings puzzle—lower average income for the self-employed relative to wage earners—a greater balance in cognitive skills among the self-employed helps close earnings gaps with wage earners. However, balance in cognitive skills is not associated with self-employment. The implications of the findings are discussed.

Available at (open access): <https://doi.org/10.1007/s11187-018-0018-4>

Title:

Patterson, M. B. (2019). Adults with low skills and learning disabilities. In D. Perin (Eds.), *The Wiley Handbook of Adult Literacy* (pp. 337-360). Hoboken: John Wiley & Sons. doi: 10.1002/9781119261407.ch16

Abstract:

In this chapter, the author describes the characteristics, background, and experience of adult learners with low skills and self-reported learning disabilities (LD) using two large-scale sets of data: the Programme for International Assessment of Adult Competencies (PIAAC:2012/2014), which contains data on adults with low skills and LD from a representative sample of 5,040 U.S. working-age adults; and PowerPath™ to Education and Employment, which contains data from 1,761 U.S. adult learners screened for learning challenges at adult education enrollment. PIAAC:2012/2014 respondents reported limited participation in formal education, lower educational attainment and employment, and high rates of coexisting disabilities and poor health. PowerPath respondents and PIAAC:2012/2014 respondents reported an incidence of LD of 26 and 10%, respectively. A partial explanation for the difference in rates of LD is that PowerPath respondents who were entering adult education, had lower skills than adults with low skills and LD in the more broadly representative PIAAC:2012/2014 sample. Findings from visual, auditory, and attention screenings are presented.

Available at: <https://doi.org/10.1002/9781119261407.ch16>

Title:

Perry, A., & Gauly, B. (2019). Analysing poor reading skills: A comparison between PIAAC literacy levels and reading components. *Survey Methods: Insights from the Field*, 1-9. doi: 10.13094/SMIF-2019-00020

Abstract:

The aim of this paper is to compare two measures of literacy skills used in the Programme for the International Assessment of Adult Competencies (PIAAC), i.e. literacy levels and reading components. Different from assessing literacy levels, which cover the entire range of reading skills from very high to very low, the reading components assessment is specifically designed to test the reading skills of the low literate. As literacy skills are an important determinant for labour market success, we examine whether the reading components assessment is a better predictor of employment of the test takers than the general literacy level assessment used in PIAAC. We compare different logistic regression models that include literacy levels and the reading components and use the Wald-test to compare the model fit of each examined model. In a further step we test whether the predictive validity differs between low and high literate test takers. Our results indicate that the PIAAC reading components are more useful in predicting employment of the low literate than the PIAAC literacy levels.

Available at (open access): <https://doi.org/10.13094/SMIF-2019-00020>

Title:

Popov, D., & Strelnikova, A. (2019). Inconsistency between educational attainment and literacy: The case of Russia. *Communist and Post-Communist Studies*, 52(3), 259-269. doi: 10.1016/j.postcomstud.2019.08.001

Abstract:

From the moment when wide spread of large scale assessments in sociology and economics began, the most commonly used indicators of peoples' qualifications are the number of years spent in education and the possession of a high school/college/university diploma. But what if these formal

indicators are unreliable under certain conditions and do not reflect actual literacy and competency of people? This article, drawing on data from the Programme for the International Assessment of Adult Competencies (PIAAC), questions accuracy of the basic educational indicators in Russia. There is a linear relationship between the possession of a formal graduation diploma and the measurement of PIAAC literacy of the able-bodied population in OECD countries, including the Eastern European ones. However, the analysis shows that in Russia there is an inconsistency between literacy and formal educational status. This fact in itself casts doubt on the effectiveness of formal education indicators in Russia. The social implications resulting from this inconsistency become apparent through an international comparison of research results. These ill effects have been documented in the areas of employment, education and social reproduction and in the social self-awareness of the Russian people.

Available at (open access): <https://doi.org/10.1016/j.postcomstud.2019.08.001>

Title:

Prins, E., & Monnat, S. (2019). Literacy, numeracy, and self-rated health among U.S. Adults. In *The Wiley Handbook of Adult Literacy* (pp. 317-336). Hoboken: John Wiley & Sons. doi: 10.1002/9781119261407.ch15

Abstract:

In this chapter, we examine whether and how health is related to adult literacy and numeracy. A social determinants of health model is applied to elucidate how literacy and numeracy may facilitate access to health-promoting opportunities and resources. Health literacy is differentiated from print literacy. We highlight two prevalent problems in discussions of literacy/numeracy and health: (a) conflation of print and health literacy and (b) failure to control for sociodemographic characteristics. We then summarize research on the key predictors of limited (health) literacy and numeracy and explains how these capabilities are implicated in health. Finally, we present findings from two studies in which data analyzed from the Program for International Assessment of Adult Competencies (PIAAC), indicates that literacy and numeracy should be considered as potential determinants of health. The PIAAC findings underscore the need to couple basic skills instruction with other initiatives to enhance health, especially among low-socioeconomic status adults.

Available at: <https://doi.org/10.1002/9781119261407.ch15>

Title:

Pullman, A., & Jongbloed, J. (2019). The relative relationship between education and workplace task discretion: An international comparative perspective. *Journal of Education and Work*, 32(1), 66-84. doi: 10.1080/13639080.2019.1594173

Abstract:

Through analyses of Programme for the International Assessment of Adult Competencies (PIAAC) data, the following study considers the direct and indirect association between education and workplace task discretion in 30 countries. By focusing on cross-national comparison, it considers the ways in which these findings are dependent on both the overall level and the range of task discretion across occupational sectors within a country. Theoretically, individual-agency and critical-institutional hypotheses are compared, two perspectives that provide divergent explanations for the indirect association between education and task discretion. The findings partially support both perspectives and there is strong evidence of a relative relationship between education and task discretion. That is, in country contexts where overall levels of task discretion are higher and more equal, education operates less strongly as a stratifying force. The originality of this approach showcases empirically how the association between education and task discretion is context dependent and

theoretically how individual-agency and critical-institutional perspectives both contribute to understanding this relationship.

Available at: <https://doi.org/10.1080/13639080.2019.1594173>

Title:

Rammstedt, B., Zabal, A., & Gauly, B. (2019). Grundkompetenzen Erwachsener im internationalen Vergleich - Ergebnisse aus 32 PIAAC Teilnehmerländern [Literacy skills of adults in international comparison – Results from 32 PIAAC countries]. In G. Quenzel & K. Hurrelmann (Eds.), *Handbuch Bildungsarmut* (pp. 287-314). Wiesbaden: Springer Fachmedien. doi:10.1007/978-3-658-19573-1_11

Abstract:

The chapter presents the literacy skills in more than 30 countries participating in the first and second rounds of PIAAC (Programme for the International Assessment of Adult Competencies) from the perspective of Germany. Furthermore, the findings of this international comparison are contrasted with the findings exclusively based on the countries of the first PIAAC round. With 17.5 percent, Germany has a comparatively high proportion of individuals with very low literacy skills compared to other countries with a similar average level of literacy skills. The study examines determinants of and protective factors for low literacy skills in Germany, and it compares these findings with those for Austria and the USA, as these countries had a similar average level of literacy skills in PIAAC.

Available at: https://doi.org/10.1007/978-3-658-19573-1_11

Title:

Rapplee, J., & Komatsu, H. (2019). Is knowledge capital theory degenerate? PIAAC, PISA, and economic growth. *Compare: A Journal of Comparative and International Education*, 1-19. doi: 10.1080/03057925.2019.1612233

Abstract:

Extending recent analyses using PISA data, the current study utilises the OECD's Survey of Adult Skills (PIAAC) to test the central claims of knowledge capital theory. PIAAC has a distinct advantage over PISA in that it more directly tests levels of purported 'knowledge capital' across an entire national workforce, rather than offering approximations based on the performance of 15-year-old students. Findings from our two original studies reported herein further refute the tight linkage between cognitive levels and GDP growth per capita envisaged by proponents of knowledge capital, most notably the OECD and World Bank. These results suggest that knowledge capital theory is now degenerate. If scholars are willing to extend this reporting of results refuting knowledge capital theory, this will likely accelerate the theory's loss of momentum in the coming years.

Available at: <https://doi.org/10.1080/03057925.2019.1612233>

Title:

Rasmusson, M., Albæk, K., Lind, P., & Myrberg, M. (2019). Cognitive foundation skills following vocational versus general upper-secondary education: A long-term perspective. *Scandinavian Journal of Educational Research*, 63(7), 985-1006. doi: 10.1080/00313831.2018.1466361

Abstract:

The present study aims at investigating the long-term cognitive effects of vocational education and training (VET) in Sweden and Denmark using data from the PIAAC Survey of Adult Skills. While Sweden has moved towards a more academic vocational education, Denmark has kept the apprenticeship system. Using multiple regression analysis we estimate the contribution of VET versus general

upper-secondary education to the proficiency in literacy. The results show a higher literacy performance in those Swedish age groups in more academic VET programmes compared to the older Swedish age groups and to all the Danish age groups. A reasonable interpretation is that the amount of cognitively challenging subjects at the upper-secondary level gives a lasting imprint on literacy proficiency later in life.

Available at (open access): <https://doi.org/10.1080/00313831.2018.1466361>

Title:

Reder, S. (2019). Numeracy imprisoned: skills and practices of incarcerated adults in the United States. *ZDM Mathematics Education*. doi: 10.1007/s11858-019-01094-0

Abstract:

The development of cognitive skills is influenced by characteristics of both individuals and the environments in which they live, including their homes, neighborhoods, schools and workplaces. Contextual features of these environments shape and constrain cognitive development in various ways. This article considers the case of numeracy development within the highly constrained environment of prisons in the United States. Data are analyzed from recent PIAAC assessments of the incarcerated and household populations of the United States. Individuals' assessed numeracy skills and engagement in everyday numeracy practices, both inside and outside of prisons, are analyzed in relation to their education and other background characteristics. Although some of the observed differences in numeracy between household and prison populations can be attributed to differences in these background characteristics, significant differences in numeracy skills and practices remain after controlling for background characteristics. Such regression-adjusted differences may reflect the distinctive numerate environment of prisons. Prisoners' numeracy appears to be initially disrupted by incarceration but gradually improves as it adjusts over time to the new numerate environment. Numeracy also appears to be an important determinant of key social outcomes in prisons. Some methodological limitations of these findings are considered along with their implications for fostering numeracy development and improved social outcomes inside and outside of prisons as well as in other vulnerable populations.

Available at: <https://doi.org/10.1007/s11858-019-01094-0>

Title:

Redmer, A., & Dannath, J. (2019). Changes in employment since the 1990s: Numeracy practices at work in IALS and PIAAC. *ZDM Mathematics Education*, 1-13. doi: 10.1007/s11858-019-01112-1

Abstract:

Observing the transition from industrial work to more and more digitalised work in the last decades, in this paper we discuss changes in employment and the relevance of numeracy in adult basic education and in working environments. In a knowledge society, the demand for highly qualified professionals is growing. It is questionable what effects this need will have on other occupational groups. Is there a higher risk of becoming more vulnerable as a result of a so-called 'polarisation of the labour market'? Dealing with change in employment structures for industrialised countries, the authors examine the change in numeracy practices in the International Adult Literacy Survey compared with that in the Programme for the International Assessment of Adult Competencies. In a comparison of the two large-scale assessments, the authors are able to confirm a polarisation in the sense of more higher- and lower-qualified jobs and less medium-qualified jobs. Numeracy practices, however, have been decreasing across all occupational groups over the last 3 decades. Today there is a higher risk of becoming vulnerable if the occupations are part of a middle qualified job. More critical numeracy skills and a visibility of numeracy at work could reduce the risk of vulnerability.

Available at (open access): <https://doi.org/10.1007/s11858-019-01112-1>

Title:

Redmer, A., & Grotlüschen, A. (2019). Alltagsmathematische Praktiken im höheren Lebensalter [Numeracy practices in older age]. *Zeitschrift für Weiterbildungsforschung*, 42(3), 397-413. doi: 10.1007/s40955-019-0135-y

Abstract:

Demographic change renders basic skills important at an increasingly older age. Among them, skills in financial matters are becoming increasingly relevant. The skills measured in PIAAC and CILL represent comprehensive cognitive abilities which can be seen as the basis for successful participation in social and economic life. Based on a secondary analysis, this paper shows that financial practices remain for older people, although their numeracy skills proficiency lower than those of younger people. The analysis clearly shows a gender difference in dealing with financial matters: men handle bills and bank statements, women manage the household.

Available at (open access): <https://doi.org/10.1007/s40955-019-0135-y>

Title:

Renbarger, R., Rivera, G., & Sulak, T. (2019). What predicts literacy, numeracy, and problem solving for incarcerated individuals? A PIAAC examination. *Journal of Offender Rehabilitation*, 58(3), 199-219. doi: 10.1080/10509674.2019.1582575

Abstract:

The purpose of this article was to investigate relationships between literacy, numeracy, and problem solving ability with characteristics of individuals within the United States prison system. The Programme for the International Assessment of Adult Competencies (PIAAC) dataset was used for analysis, which included information for 1,319 participants ages 16–74. Results indicated that offenders' prior experiences and prison context variables differentially predicted literacy, numeracy, and problem solving in technology-rich environments. Implications for prison education are discussed along with study limitations.

Available at: <https://doi.org/10.1080/10509674.2019.1582575>

Title:

Rhodes, C. M., Cordie, L., & Wooten, M. (2019). An examination of social capital among U.S. Adults: Patterns that facilitate social well-being as measured by PIAAC. *International Journal of Learning, Teaching and Educational Research*, 18(2), 1-12. doi: 10.26803/ijlter.18.2.1

Abstract:

Communities thrive when individuals work together to share knowledge and resources. This phenomenon, social capital, is widely understood as the access and proficiency individuals have to knowledge and networks that facilitate acquisition of economic resources and social well-being (Putnam, 2000). This paper presents findings from data collected in the Programme for the International Assessment of Adult Competencies (PIAAC) related to three elements of social capital. Community involvement, political efficacy, and social trust were explored as they relate to age, educational attainment, and time of residence in the United States. Key results include low levels of all social capital variables and differences by age and educational attainment. Findings add to the understanding of the ways in which sub-groups of U.S. communities engage with their social networks.

Available at (open access): <https://doi.org/10.26803/ijlter.18.2.1>

Title:

Ridala, S., & Toomet, O. (2019). Wage gap in an ethnically segmented labor market: The role of cognitive skills. *Eastern European Economics*, 57(1), 20-30. doi: 10.1080/00128775.2018.1524713

Abstract:

We analyzed the ethnic wage gap in Estonia that hosts a large Russian-speaking minority population. We used the Oaxaca-Blinder decomposition to test whether the observed wage gap among the working population is related to commonly unobserved skills. Data from the Estonian Labor Force Survey and the Programme for the International Assessment of Adult Competencies (PIAAC) have been used. We find that the three PIAAC skills combination lowered the estimated unexplained wage differential by approximately 20%. We conclude that the unexplained wage gap is most likely related to entry barriers, combined with low-level segregation and segregated social networks.

Available at: <https://doi.org/10.1080/00128775.2018.1524713>

Title:

Rose, A. D., Smith, T. J., Ross-Gordon, J. M., Zarestky, J., Lopes, T., Smith, M. C., Grotlüschen, A., & Fleige, M. (2019). *Adults' civic engagement in the U.S. and Germany: Evidence from the PIAAC survey*. Commissioned Paper Washington: PIAAC Gateway. Retrieved February 28, 2020, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5df93f5d87540752b2721d36/1576615774386/2019_Rose_Adults_Civic_Engagement_US_Germany.pdf

Abstract:

We examine civic engagement among immigrants and native-born adults in the United States (U.S.) and Germany—world-leading nations with different responses to immigration and assimilation. Civic engagement involves the practices and beliefs underpinning the democratic functions of citizenry, and is operationalized in this study as voluntary work or volunteerism, political efficacy, and social trust. Data for the analyses are drawn from PIAAC. Individual background factors—age, gender, education level, skills, immigrant status, and employment—serve as covariates in our regression models. Several cross-national differences were observed in the relationships among background factors and dimensions of civic engagement. Results are discussed regarding the role of adult education programs for supporting both the transitions of migrants and maintenance of democratic behaviors among native-born citizens.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5df93f5d87540752b2721d36/1576615774386/2019_Rose_Adults_Civic_Engagement_US_Germany.pdf

Title:

Roumell, E., & Roessger, K. (2019). Humanistic, innovative solutionism: What role do data analytics play in developing a more responsive and more intelligent adult and workforce education policy? In T. Jules & F. Salajan (Eds.), *International Perspectives on Education and Society* (pp. 127-142). Bingley: Emerald Publishing Limited. doi: 10.1108/S1479-367920190000038008

Abstract:

In a world where the continual combining of computer applications and the expansion of artificial intelligence is already necessarily changing the world of work for people, an education system that does not adequately respond to these trends and changes will render itself irrelevant. Education policy and regulation may suffer at the hand of such accelerations due to unexpected consequences and developments. However, the rapid, exponential improvements in computer hardware and software that have enhanced the rate and our ability to gather, transform, manipulate, and interpret these data in an ongoing fashion also present myriad educational opportunities. The so-called

Fourth Industrial Revolution offers societies data and information capabilities previously unimagined, making it possible to learn how to combine, innovate, and imagine entirely new avenues for building responsive and intelligent education policies and systems that promote the education and wellbeing of citizens as well as improving their economic participation. These advances necessitate a growing number of educators and education systems who can intelligently respond to Industry 4.0 trends. In this chapter, some considerations regarding the use of large-scale, international datasets and emerging data analytics for analyzing policy for the governance of education are offered, and a discussion of the need for the more systematic use of data analytics as a mechanism for developing socially responsive adult learning and workforce education policy and programming.

Available at: <https://doi.org/10.1108/S1479-367920190000038008>

Title:

Rubenson, K. (2019). Assessing the status of lifelong learning: Issues with composite indexes and surveys on participation. *International Review of Education*, 65(2), 295-317. doi: 10.1007/s11159-019-09768-3

Abstract:

A quick review of national policy documents reveals how lifelong learning has evolved as the key principle for a comprehensive education and learning strategy from cradle to grave. This raises major challenges for how to assess and report the state of lifelong learning in UNESCO Member States. It is in this context that this article critically evaluates the efforts to develop a composite index on lifelong learning. In addition, the author reviews the two leading surveys on adult education and learning, the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) and the European Union's Adult Education Survey (AES). He examines their potential to provide a national picture of the state of lifelong learning, pointing out some fundamental shortcomings in these surveys and in the way their data have been classified. The present approach to data gathering on adult and lifelong learning, with its deep roots in the skills agenda, creates a "reality" of adult learning where the broad humanistic traditions of adult education become invisible. Analyses of the European and Canadian composite indexes of lifelong learning reveal serious problems using this approach. Not only must one question the underlying framework based on Jacques Delors' four pillars of learning, but also its practical use for directly assessing the impact of the various aspects of lifelong learning and education. A core argument in this article is that there is a need to broaden not only the indicators used to assess the state of lifelong learning, but also the approach to how outcomes are being understood and judged.

Available at (open access): <https://doi.org/10.1007/s11159-019-09768-3>

Title:

Saal, L. K., Yamashita, T., Shaw, D. M., & Perry, K. H. (2019). An exploration of U.S. adults' information processing skills and political efficacy. *Journal of Adult and Continuing Education*. doi: 10.1177/1477971419852750

Abstract:

As recent debates about the role of social media in election outcomes suggest, understanding the association between information processing skills and political efficacy in the U.S. is a significant inquiry for adult and continuing education. Data from the Programme for the International Assessment of Adult Competencies were used to explore relationships between U.S. participants' information processing skills and political efficacy. Given the impact of certain demographic characteristics on political efficacy, the study also analyzed whether the relationship between information processing skills and self-reported political efficacy varied across levels of cultural engagement,

formal educational attainment, or immigrant status. The results illustrate that higher levels of literacy, numeracy, and problem solving in technology-rich environments are associated with higher political efficacy for U.S. participants. Our research is framed in both cognitive and critical lenses, and we provide implications for practice in adult and continuing education settings.

Available at: <https://doi.org/10.1177/1477971419852750>

Title:

Salinas, D. (2019). Can academic performance help disadvantaged students to achieve upward educational mobility? *Pisa in Focus* No. 99. Paris: OECD Publishing. doi: 10.1787/fd5356d0-en

Abstract:

During the past century, access to education increased in countries all over the world. Up until the early decades of the 20th century, people attended school for only a few years. Towards the end of the century, adults in high-income countries completed 12 years of schooling, on average. Today in OECD countries, a larger share of the population than ever before completes tertiary education. For many, especially socio-economically disadvantaged students whose parents had attained only low levels of education, this expanded access to education has led to upward educational mobility – attaining a higher level of education than their parents did. But just as economic growth does not necessarily reduce income inequality, so the expansion of access to education does not automatically result in greater equity in educational attainment. For that to happen, disadvantaged students need to benefit as much as or more than advantaged students. A recent PISA report, *Equity in Education*, explores how upward educational mobility has changed over recent decades. It finds that, despite the expansion of access, socioeconomic disparities in the completion of tertiary education remain large. However, the report also shows that when students with low-educated parents perform at high levels by age 15, as measured by PISA, their chances of completing tertiary education improve considerably.

Available at (open access): <https://doi.org/10.1787/fd5356d0-en>

Title:

Sasso, S., & Ritzen, J. (2019). Sectoral cognitive skills, R&D, and productivity: A cross-country cross-sector analysis. *Education Economics*, 27(1), 35-51. doi: 10.1080/09645292.2018.1515309

Abstract:

We focus on human capital measured by skills and analyse its relationship with R&D investments and productivity across 12 OECD economies and 17 industries. We compute a measure of sectoral human capital defined as the average cognitive skills of the workforce in each country-sector combination. The variation in labour productivity that can be explained by human capital is remarkably large when measured by the sectoral skills, whereas it appears statistically insignificant when measured by the sectoral school attainment. This suggests that using measures of sectoral cognitive skills can represent a major step forward in any future sectoral growth accounting exercise.

Available at (open access): <https://doi.org/10.1080/09645292.2018.1515309>

Title:

Scandurra, R., & Calero, J. (2019). How adult skills are configured? *International Journal of Educational Research*, 99, 1-7. doi: 10.1016/j.ijer.2019.06.004

Abstract:

This article examines the relationship between family background, education, skills use and direct

measures of literacy skills in five countries: the United States, Japan, Germany, Denmark and Spain. The main aim is to contribute to the research on skills acquisition by providing a comprehensive analysis of literacy skills. We employ a structural equation modelling and use PIAAC data. Results show that skills are configured in a highly complex manner and that significant differences emerge across the five countries, reflecting their historical and institutional characteristics. Intergenerational transmission of educational inequality is a crucial factor in shaping skills outcomes, although this factor varies considerably between countries. The effects of family background, educational attainment, and skills use in daily life on literacy respond to country specific equilibria.

Available at (open access): <https://doi.org/10.1016/j.ijer.2019.06.004>

Title:

Schleicher, A., & Schuknecht, L. (2019). Bildung, Ausbildung, Fortbildung: Herausforderungen aus internationaler Perspektive [Education, training, further education: Challenges from a international perspective]. *ifo Schnelldienst*, 72(15), 20-35. Retrieved March 4, 2020, from <http://hdl.handle.net/10419/206900>

Abstract:

In this contribution two international trends, that are of particular relevance for education policy in Germany and Europe, are pointed out: First, a high level of education remains the guarantor of prosperity and growth. But in international comparison, more and more Asian countries are taking the top positions in the OECD surveys. Some European countries are falling behind not only in relative but also in absolute terms. Secondly, technological progress and especially digitization will continue to change the world of work and require different skills than in the past. At the same time, further growth in life expectancy and working life will make lifelong learning more necessary than ever. This poses major challenges for education policy in Germany and internationally, which must be addressed in order to remain at the forefront of international education policy. [Translated on behalf of editors]

Available at (open access): <http://hdl.handle.net/10419/206900>

Title:

Schnitzlein, D. D. (2019). *The relationship between trust, cognitive skills, and democracy - evidence from 30 countries around the world*. Hannover Economic Papers (HEP) No. dp-650. Hannover: Leibniz Universität Hannover, Wirtschaftswissenschaftliche Fakultät. Retrieved February 28, 2020, from <http://hdl.handle.net/10419/20066>

Abstract:

Based on highly comparable data from the OECD PIAAC Programme, this note analyzes the relationship between generalized trust and cognitive skills among 30 countries around the world. The results show that the strength and direction of the relationship is not a universal characteristic but varies substantially among countries worldwide. A detailed descriptive analysis of this variation provides evidence that the relationship strengthens with the level of democracy in a country. In a second step, German separation and reunification is used as external variation in the level of democracy in the German PIAAC subsample. The results support the evidence from the cross-country analysis. Thus, the institutional framework in a country not only shapes an individual's level of trust but also amplifies the relationship between individual characteristics such as cognitive skills and generalized trust.

Available at (open access): <http://hdl.handle.net/10419/20066>

Title:

Schröter, H., & Bar-Kochva, I. (2019). Keyword: Reading literacy. Reading competencies in Germany and underlying cognitive skills. *Zeitschrift für Erziehungswissenschaft*, 22(1), 17-49. doi: 10.1007/s11618-018-00864-y

Abstract:

There is a general consensus that reading competencies, being a core element of basic education, are an essential prerequisite for the acquisition, organization, and application of knowledge in various subjects and domains. Thus, reading competencies represent a key factor for educational and professional success, lifelong learning, and social participation. In the first part of this article, we summarize the main findings of recent international and national large-scale assessment studies suggesting that a significant proportion of children, adolescents, and adults in Germany do not attain a sufficient level of reading competence to understand and learn from texts. Because there is evidence that a share of these poor readers may have limited basic reading abilities that underlie text comprehension, in the second part of this article we review meta-analyses on the relations between cognitive skills and reading competence. Finally, we discuss challenges for school and adult education, and mention possible perspectives for future research.

Available at: <https://doi.org/10.1007/s11618-018-00864-y>

Title:

Seward, B., Truong, K., & Kapadia, D. (2019). *Untapped pool or leaky pipeline? Female involvement in the ICT sector*. Mowat Research No. 183. Toronto: Mowat Centre. Retrieved March 5, 2020, from <http://hdl.handle.net/1807/99433>

Abstract:

There are fewer women than men in Information and Communication Technology (ICT) professions in Canada. What drives this trend? Why is this a policy problem, and what can be done to address it? This report, the first from the Research Initiative on Education and Skills (RIES), tackles these topics.

Available at (open access): <http://hdl.handle.net/1807/99433>

Title:

Sieben, S., & Lechner, C. M. (2019). Measuring cultural capital through the number of books in the household. *Measurement Instruments for the Social Sciences*, 1(1), 1-6. doi: 10.1186/s42409-018-0006-0

Abstract:

Cultural capital is frequently measured via the number of books in a respondent's household. Despite this measure's widespread use, its quality remains largely unclear. To remedy this, we conducted a comprehensive assessment of the measurement properties of two items measuring past and present objectified cultural capital via the number of books in the household of the respondent's family of origin and the respondent's current household, respectively. For this purpose, we used data (N = 3260) from the Programme for the International Assessment of Adult Competencies (PIAAC) 2012 survey in Germany and the 2015 wave of a follow-up study (PIAAC-L). We analyzed the two items' distributions (total sample and separately by age-group), test-retest reliability over 3 years (for past cultural capital only), and their convergent and divergent validity (i.e., correlations with socioeconomic status, literacy and numeracy skills, and cultural and literary activities).

Available at (open access): <https://doi.org/10.1186/s42409-018-0006-0>

Title:

Sikora, J., Evans, M., & Kelley, J. (2019). Scholarly culture: How books in adolescence enhance adult literacy, numeracy and technology skills in 31 societies. *Social Science Research*, 77, 1-15. doi: 10.1016/j.ssresearch.2018.10.003

Abstract:

A growing body of evidence supports the contention of scholarly culture theory that immersing children in book-oriented environments benefits their later educational achievement, attainment and occupational standing. These findings have been interpreted as suggesting that book-oriented socialization, indicated by home library size, equips youth with life-long tastes, skills and knowledge. However, to date, this has not been directly assessed. Here, we document advantageous effects of scholarly culture for adult literacy, adult numeracy, and adult technological problem solving. Growing up with home libraries boosts adult skills in these areas beyond the benefits accrued from parental education or own educational or occupational attainment. The effects are loglinear, with greatest returns to the growth in smaller libraries. Our evidence comes from regressions with balanced repeated replicate weights estimated on data from 31 societies which participated in the Programme for the International Assessment of Adult Competencies (PIAAC) between 2011 and 2015.

Available at: <https://doi.org/10.1016/j.ssresearch.2018.10.003>

Title:

Smith, M. C., Smith, T. J., Rose, A. D., & Ross-Gordon, J. M. (2019). Readiness to learn among adults with low skills. In *The Wiley Handbook of Adult Literacy* (pp. 171-191). Hoboken: John Wiley & Sons. doi: 10.1002/9781119261407.ch8

Abstract:

This chapter describes a population of adults—those possessing low skill proficiency in literacy, numeracy, and information and computer technology (ICT)—and explores how a specific construct, readiness to learn, relates to their skill proficiency and to their use of literacy skills in everyday life and work. These ideas are discussed within the framework of the Programme for the International Assessment of Adult Competencies (PIAAC) Survey of Adult Skills (SAS), which assessed adults' skills, skill use in different contexts, and readiness to learn. The chapter reports results for low-skilled, English-speaking adults in four countries in which the relationships between readiness to learn and (a) use of literacy skills in the workplace and everyday life, and (b) skill proficiency were analyzed. Across countries, readiness to learn was significantly, positively related to low-skilled adults' skills and skills use in everyday life and the workplace. Implications for adult education and workplace training are described.

Available at: <https://doi.org/10.1002/9781119261407.ch8>

Title:

Stadtmüller, S., Martin, S., & Zabal, A. (2019). *Das Zielpersonen-Anschreiben in sozialwissenschaftlichen Befragungen [Advance and Invitation Letters in Social Science Surveys]*. GESIS – Survey Guidelines. doi: 10.15465/gesis-sg_029

Abstract:

In social science surveys, fieldwork is usually initiated by mailing advance or invitation letters to the target persons. The objective of the advance letter is to convey the survey request and provide key information about the survey. In order to gain the target person's co-operation, the advance letter should clarify the purpose of the survey, stress its importance and communicate its seriousness. The aim of this Survey Guideline is to give some recommendations for advance letters, including both

formal and content issues. Moreover, this Guideline deals with other features that may affect how target persons perceive the advance letter. This includes, for instance, certain delivery specifications.

Available at (open access): https://doi.org/10.15465/gesis-sg_029

Title:

Stephany, F., & Lorenz, H. (2019). *Back to the future - changing job profiles in the digital age*. Kiel, Hamburg: ZBW – Leibniz Information Centre for Economics. Retrieved March 4, 2020, from <http://hdl.handle.net/10419/202035>

Abstract:

The uniqueness of human labour is at question in times of smart technologies. The 250 years-old discussion on technological unemployment reawakens. Frey and Osborne (2013) estimate that half of US employment will be automated by algorithms within the next 20 years. Other follow-up studies conclude that only a small fraction of workers will be replaced by digital technologies. The main contribution of our work is to show that the diversity of previous findings regarding the degree of job automation is, to a large extent, driven by model selection and not by controlling for personal characteristics or tasks. For our case study, we consult Austrian experts in machine learning and industry professionals on the susceptibility to digital technologies in the Austrian labour market. Our results indicate that, while clerical computer-based routine jobs are likely to change in the next decade, professional activities, such as the processing of complex information, are less prone to digital change.

Available at (open access): <http://hdl.handle.net/10419/202035>

Title:

Stijepic, D. (2019). *An international comparison of skills, traits and job mobility*. doi: 10.2139/ssrn.3466370

Abstract:

In a large international comparison of 29 countries, I study the relation between job mobility and a person's skills and traits. While cognitive skills are associated with lower job mobility, some traits are associated with higher job mobility. For instance, a one-standard-deviation increase in numeracy skills (in the willingness to learn) is estimated to reduce (to raise) the probability of having at least two jobs over a period of five years by 2.7 percentage points (by 2.7 percentage points). While there is substantial heterogeneity across countries, the relations are statistically significant in a vast majority of countries. Notably, the studied individual characteristics tend to be more closely related to job mobility in more advanced economies.

Available at (open access): <https://dx.doi.org/10.2139/ssrn.3466370>

Title:

Strakova, J., & Vesely, A. (2019). Other things being equal: Comparing literacies in the Czech and Slovak Republics. *Comparative Education Review*, 63(3), 418-438. doi: 10.1086/703869

Abstract:

Large-scale international assessments, such as PIAAC (Programme for the International Assessment of Adult Competencies) or PISA (Programme for International Student Assessment), have heightened interest in the comparative analysis of factors influencing the formation of skills and their change over time. However, such comparison has been hindered by substantial differences in

contexts that can only be partially controlled in statistical analysis (e.g., cultural, social, or geographical factors particular to jurisdictions). In this article, we analyze a “natural experiment,” trends in the development of learning outcomes in the Czech and Slovak Republics following the dissolution of the joint state in 1993. The analysis is theoretically based on an age cohort-period framework. We find that in both countries, PISA results are closely related to the future abilities of the particular age cohort (as measured in PIAAC), which supports the thesis that education has a long-lasting effect. Although both countries followed similar trajectories, we find that some noticeable trends can be explained by different policies following dissolution of the joint state.

Available at: <https://doi.org/10.1086/703869>

Title:

Sudaryana, B., Wellda, S., Ratnasari, D., Herdiyanti, H., & Siddiqa, D. (2019). The impact of digital economy towards the national economy development in Indonesia (the study case in Bandung, West Java). *International Journal of Academic Research in Business and Social Sciences*, 9(12), 409-424. doi: 10.6007/IJARBSS/v9-i12/6736

Abstract:

Indonesia is predicted to become the biggest digital economy country in Asian region. It can penetrate the amount of 130 billion US dollars or around 1, 729, 000 billion IDR. However, it will not be easy for Indonesia to successfully achieve the digital economy with this high value; there are still several major problems that must be faced by Indonesia, which is the sector of Indonesian higher level education that could not provide human resources in accordance with the industry needs, could not give consumer protection, taxation system, cyber security, and ICT infrastructure. The research used the experiment research methodology, which is the research trying to find the influence of a certain variable towards another variable in strictly controlled condition. The researcher manipulated the independent variable. This research intends to notice the causality and the influence of factors in certain condition. In the simplest form, the approach of this experiment tried to explain, control, and predict the phenomena as elaborate as possible. Quantitative model was mostly used in this experiment research. The result of the research indicates that Digital Economy Regulation and Human Resource Quality significantly influence the Development of Indonesian Economy. As well as, it is characterized by three fast-developing sectors; among them are on-demand services, financial technology (fin-tech), and e-commerce.

Available at (open access): <http://dx.doi.org/10.6007/IJARBSS/v9-i12/673>

Title:

Sørensen, K., Krassel, L., & Fritjof, K. (2019). Childhood and adulthood skill acquisition - importance for labor market outcomes. *Journal of Economics and Economic Education Research*, 20(1), 1-23.

Abstract:

Using Danish matched PISA and PIAAC data; the study investigates the return to cognitive and non-cognitive skills to labor market outcomes. It measured skills at childhood and adulthood after entering the labor market. Hence, both whether cognitive and/or non-cognitive skills relate to earnings and employment rate were measured as well as how important the timing of acquiring skills was for outcomes on the labor market. Overall it was found that cognitive skills are important for both earnings and the employment rate but that the timing of the acquisition of the skills is of less importance. On the contrary, non-cognitive skills are important for earnings independent on whether the worker had high or low cognitive skills at childhood, but only important for the employment rate for workers with high cognitive and low non-cognitive childhood skills. Overall findings suggested that both cognitive and non-cognitive skills are important but that the dynamics differ.

Available at: <https://www.abacademies.org/articles/childhood-and-adulthood-skill-acquisition--importance-for-labor-market-outcomes-7842.html>

Title:

Tamilina, L., & Tamilina, N. (2019). *Social trust formation in the workplace: Applying the job strain model to explain variations in social trust levels among employed individuals*. MPRA Paper No. 93559. Munich: Munich Personal RePEc Archive. Retrieved March 4, 2020, from <https://mpra.ub.uni-muenchen.de/93559/>

Abstract:

This study applies the job strain model (JDC-S) to social trust to analyze how workplace characteristics influence social trust formation patterns. By defining the “workplace” as consisting of (1) workload, (2) control, and (3) social support, the JDC-S model predicts job demands to inversely relate to social trust, whereas job control and social support to positively affect trust among the employed. We utilize the sample of 60250 respondents from the Programme for the International Assessment of Adult Competencies (PIAAC) public-use data to operationalize the three components and to link them to social trust scores. Our analysis provides strong empirical evidence that the three factors are not only associated with trust among employed individuals but that their impact is also contingent on the respondents’ sex and age.

Available at (open access): <https://mpra.ub.uni-muenchen.de/93559/>

Title:

Tong, T., Li, H., & Greiff, S. (2019). Human capital and leadership: The impact of cognitive and non-cognitive abilities. *Applied Economics*, 51(53), 5741-5752. doi: 10.1080/00036846.2019.1619022

Abstract:

We conduct an economic analysis about the impact of human capital on an individual’s potential of becoming a leader based on data from the Programme for the International Assessment of Adult Competencies Survey (PIAAC). Our human capital indicators include not only traditional measures such as education and experience, but also various measures of cognitive and noncognitive ability. Our cognitive ability measures include numeracy, literacy, and problem solving abilities, and non-cognitive ability measures include perseverance, motivation to learn, and social trust. We specifically investigate the effect of measurement error and reverse causality on the estimation results. We find that problem-solving ability is the most important in affecting leadership among cognitive ability measures, and perseverance shows the strongest impact among noncognitive ability measures. As a leader supervises more employees, the role of cognitive and noncognitive ability becomes more critical.

Available at: <https://doi.org/10.1080/00036846.2019.1619022>

Title:

Trapp, S., Blömeke, S., & Ziegler, M. (2019). The openness-fluid-crystallized-intelligence (OFCI) model and the environmental enrichment hypothesis. *Intelligence*, 73, 30-40. doi: 10.1016/j.intell.2019.01.009

Abstract:

The Openness-Fluid-Crystallized-Intelligence (OFCI) model describes how these different constructs interact over time. One fundamental element in the model is the Environmental Enrichment Hypothesis, which states that more Openness leads to more learning opportunities, thereby fostering fluid intelligence (Gf). Indirectly, this positive influence also has a positive effect on crystallized

intelligence (Gc). Despite empirical evidence supporting the model as a whole, little is known with regard to the actual mechanisms underlying environmental enrichment. PIAAC (Programme for the International Assessment of Adult Competencies) data (N = 5465) were used to explore possible behavioral differences that lead to enriched environments for more open people. To this end, we utilized different indicators of reading and calculating behavior. The indicator of Openness used was indeed found to be associated with differences in reading and calculating activities at work and during leisure time. These relations were also shown to be related to the indicator of Gf and indirectly to the indicator of Gc. Theoretical implications and limitations of the study are discussed.

Available at: <https://doi.org/10.1016/j.intell.2019.01.009>

Title:

Trapp, S., & Ziegler, M. (2019). How openness enriches the environment: Read more. *Frontiers in Psychology*, 10(1123), 1-12. doi: 10.3389/fpsyg.2019.01123

Abstract:

The recently proposed OFCI model and specifically the Environmental Enrichment Hypothesis state that Openness positively influences the development of cognitive abilities (Ziegler et al., 2012). It is assumed that Openness leads to engagement in more learning activities through creating an enriched environment (e.g., reading). However, despite positive evaluations of the OFCI model in general, there is little empirical research on this specific hypothesis. The current paper used a longitudinal design to test the positive impact of Openness on the frequency of reading activities in general and in the specific case of periods of unemployment. PIAAC (Programme for the International Assessment of Adult Competencies) data were used to fit structural equation models. The results show that Openness fosters greater engagement in reading activities over 3 years; a buffering function in case of unemployment could not be found. Theoretical and practical implications are discussed.

Available at (open access): <https://doi.org/10.3389/fpsyg.2019.01123>

Title:

Tverdostup, M., & Paas, T. (2019). *Valuation of human capital and the gender wage gap in Europe*. Working Paper Series No. 118. Tartu: University of Tartu. doi: 10.2139/ssrn.3460494

Abstract:

This paper investigates the gender wage gap in relation to the multi-dimensional human capital measure across 17 European countries. To date, the role of cognitive and task-specific skills had a limited empirical evidence in the gender wage gap literature. We narrow this research gap by relying on PIAAC (Program of International Assessment of Adult Competencies) data and applying Gelbach's (2016) decomposition methodology. The analysis reveals that occupation-/industry-specific work experience and task-specific cognitive and non-cognitive skills are the most rewarding human capital attainments. Work experience largely decreases the gender wage disparity in all analysed countries. Cognitive numeracy skill is another strong predictor of gender wage disparity. The effect of numeracy is rather homogeneous across countries, namely, controlling for numeracy reduces the wage gap. Unlike studies that stress the decreasing importance of human capital in gender wage gap assessments, we argue that a narrow definition of human capital may undermine the actual effect of the latter. Therefore, we conclude that human capital should be viewed as a combination of multiple characteristics and traits, each having specific valuation on the labour market, and thus, a particular role in explaining the gender wage gap.

Available at (open access): <https://doi.org/10.2139/ssrn.3460494>

Title:

Ugarov, A. (2019). *Talent misallocation across countries: Evidence from educational achievement tests*. Meeting Papers No. 1466. Minneapolis: Society for Economic Dynamics. Retrieved March 4, 2020, from <https://econpapers.repec.org/paper/redsed019/1466.htm>

Abstract:

Despite growing evidence on occupational and educational barriers in developing countries, there are few estimates of their effect on the aggregate productivity. This paper measures the magnitude of these barriers and their impact on aggregate productivity using the data on expected occupational choice of students. First, I document striking differences in the way students' skills affect occupational choice across countries. In most developing countries cognitive skills of students have a relatively little effect on prestige, skill intensity, or earning potential of expected occupations. This suggests a higher incidence of occupational barriers in developing countries. Next, I evaluate the efficiency losses associated with occupational barriers by calibrating a model of occupational choice based on the Roy (1951) framework. Workers have correlated Fréchet-distributed talents for professional occupations, non-professional occupations, and academic study as measured by academic proficiency scores. I calibrate the model by combining the data on expected occupations and skills from the PISA database with the data from nationally-representative samples of working adults. I find that developing countries can increase the productivity of workers with high school education by up to twenty percent by reducing the barriers to the level of a benchmark country (UK).

Available at (open access): <https://econpapers.repec.org/paper/redsed019/1466.htm>

Title:

Ugarov, A. S. (2019). *Essays on human capital formation in developing countries* (Dissertation). University of Arkansas. Retrieved March 4, 2020, from <https://scholarworks.uark.edu/etd/3349>

Abstract:

Differences in human capital explain approximately one-half of the productivity variation across countries. Therefore, we need to understand drivers of human capital accumulation in order to design successful development policies. My dissertation studies formation and use of human capital with emphasis on its less tangible forms, including skills, abilities and know-how. The first chapter of my dissertation explores the effects of occupational and educational barriers on human capital stock and aggregate productivity. I find that students' academic skills have very small impact on occupational choice in most developing countries. This finding suggests a higher incidence of occupational barriers in developing countries. I evaluate the productivity losses resulting from occupational barriers by calibrating a general equilibrium model of occupational choice. According to my estimation, developing countries can increase their GDP by up to twenty percent by reducing the barriers to the level of a benchmark country (US). In the second chapter of my dissertation, I study the effects of economic growth on education quality. Several models of human capital accumulation predict that incomes have a positive causal effect on human capital for given levels of education by increasing the consumption of educational goods. The paper tests this prediction by using a within country variation in incomes per-capita across different cohorts of US immigrants. Wages of US migrants conditional on years of education serve as a measure of education quality. I find that average domestic incomes experienced by migrants in age from zero to twenty years have a significant positive effect on their future earnings in the US. The third chapter studies the effects of employee-driven technology spillovers on technology adoption. It challenges the theoretical result of Franco and Filson (2006) by assuming that workers are risk averse and that the number of competitors is finite. In this more realistic scenario spillovers significantly reduce payoffs from adopting advanced technologies.

Available at (open access): <https://scholarworks.uark.edu/etd/3349>

Title:

Ulitzsch, E., Davier, M., & Pohl, S. (2019). Using response times for joint modeling of response and omission behavior. *Multivariate Behavioral Research*, 1-29. doi: 10.1080/00273171.2019.1643699

Abstract:

For adequate modeling of missing responses, a thorough understanding of the nonresponse mechanisms is vital. As a large number of major testing programs are in the process or already have been moving to computer-based assessment, a rich body of additional data on examinee behavior becomes easily accessible. These additional data may contain valuable information on the processes associated with nonresponse. Bringing together research on item omissions with approaches for modeling response time data, we propose a framework for simultaneously modeling response behavior and omission behavior utilizing timing information for both. As such, the proposed model allows (a) to gain a deeper understanding of response and nonresponse behavior in general and, in particular, of the processes underlying item omissions in LSAs, (b) to model the processes determining the time examinees require to generate a response or to omit an item, and (c) to account for nonignorable item omissions. Parameter recovery of the proposed model is studied within a simulation study. An illustration of the model by means of an application to real data is provided.

Available at: <https://doi.org/10.1080/00273171.2019.1643699>

Title:

Vézina, S., & Bélanger, A. (2019). Literacy skills as an explanation for labor market imbalances by occupational type in Canada: Microsimulation projections for 2014–2024. *Population Research and Policy Review*, doi: 10.1007/s11113-019-09560-z

Abstract:

In Canada, the immigration selection process gives great importance to education level. However, studies find that given an equivalent level of education, immigrants have significantly lower literacy skills than their Canadian-born counterparts. This research shows the importance of accounting for literacy skills in the analysis of labor supplies. Made possible by survey data from the Programme for the International Assessment of Adult Competencies (PIAAC) and a microsimulation model (LSD-C), the Canadian workforce (labor supply) is projected by many socio-economic variables, including literacy skill proficiency. The projected workforce is then distinguished according to the five major occupational types as defined by the National Occupational Classification (NOC) of Canada. The parameters used for this distribution derive from multinomial logistic regressions stratified by education level and immigration status. These regressions first account for a slough of socio-demographic variables including level of literacy (N = 15,180). The procedure is then repeated omitting literacy. A comparison of the two breakdowns shows that by factoring literacy skills into the analysis, the projected supply of labor (and skills) is more conservative. In analyzing this refined reflection of labor force supply, we show how it is more balanced and how it better matches the labor demand. This paper highlights how traditional projections and analyses of labor supply and demand, which only account for education level, overestimate the number of workers who have a proper skillset for holding professional or managerial positions. Policy implications in terms of immigrants' selection and economic integration are discussed.

Available at: <https://doi.org/10.1007/s11113-019-09560-z>

Title:

Vézina, S., Bélanger, A., Sabourin, P., & Marois, G. (2019). Literacy skills of the future Canadian working-age population: Assessing the skill gap between the foreign- and Canadian-born. *Canadian Studies in Population*, 46(1), 5-25. doi: 10.1007/s42650-019-00002-x

Abstract:

This paper presents the results of literacy proficiency projections using a microsimulation model that simultaneously projects future demographic, ethnocultural, and socioeconomic characteristics of the Canadian population. Factors linked with literacy skills of the working-age population are analyzed for both native- and foreign-born Canadians. The projection results show that literacy skills are likely to slightly decline between 2011 and 2061, as the positive effects of increasing education are canceled out by the important skill gap between native- and foreign-born Canadians. Results of the simulation suggest that plausible changes to immigrant selection policies could prevent against the associated literacy skill decline among the Canadian working-age population.

Available at: <https://doi.org/10.1007/s42650-019-00002-x>

Title:

Vickerstaff, S. A., & Horst, M. F. (2019). Training at work: The impact of internalized ageism. *Innovation in Aging*, 3(Supplement1). doi: 10.1093/geroni/igz038.010

Abstract:

It is well documented that seniors receive less work based training than younger counterparts. Studies have assessed the extent to which managers afford access to training because of stereotypes about older workers being less trainable or interested in training. Less is known about the degree to which individuals have internalised age stereotypes and self-stereotype which impacts their attitudes about training. In this work place based study, through analysis of interviews with older workers we examine the extent to which internalised ageism is an inhibitor for seeking further training. We examine the role of gender and work setting. The data includes 185 participants in five different UK organisations in blue collar, white collar, managerial, manufacturing and services sectors. There is some evidence that older workers may feel that they are less deserving and less capable of training and development with implications for policy in this field.

Available at: <https://doi.org/10.1093/geroni/igz038.010>

Title:

White, S., Lacey, A., & Ardanaz-Badia, A. (2019). *The probability of automation in England: 2011 and 2017. Estimates of the probability of automation in England, including findings, and the skills and tasks at risk of automation within jobs*. London: Office for National Statistics. Retrieved March 9, 2020, from <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/theprobabilityofautomationinengland/2011and2017>

Abstract:

Automation is of increasing importance to society, reflecting that the job market is changing composition. This article describes the methodology used by the Office for National Statistics (ONS) for producing estimates of the probability of automation for 2011 and 2017. We describe previous studies that have examined the impact of automation, before outlining the ONS approach. We present analysis of the probability of automation by demographic variables and highlight the skills and tasks that are at risk of automation within jobs.

Available at (open access): <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/theprobabilityofautomationinengland/2011and2017>

Title:

Wicht, A., Müller, N., Haasler, S., & Nonnenmacher, A. (2019). The interplay between education, skills, and job quality. *Social Inclusion*, 7(3), 254-269. doi: 10.17645/si.v7i3.2052

Abstract:

Compared to general education, vocational education and training (VET) has been shown to facilitate young people's integration into the labour market. At the same time, research suggests that VET falls short in teaching basic skills and, in turn, may lead to less adaptability to labour market changes and long-term disadvantages in individual labour market outcomes. To better understand the relationships between education, skills, and labour market outcomes, we examine to what extent job quality differs between individuals with general education and those with VET with respect to different skill levels. Furthermore, we investigate whether the relationship between type of qualification and job quality differs by skills. We broaden past research by considering four indicators of job quality: earnings, job security, job autonomy, and the match between respondents' abilities and job demands. Using data from the Programme for the International Assessment of Adult Competencies for Germany, we demonstrate that individuals with academic education and advanced VET score higher in job quality concerning earnings and job autonomy as compared to individuals with initial VET. Comparing the two higher qualified groups, academic education is more associated with higher earnings than advanced VET, while the level of job autonomy is similar. Regarding the abilities-demands match, both groups score lower than individuals with initial VET. Moreover, higher literacy skills are associated with higher levels of job quality irrespective of the type and level of formal qualification. Finally, we find no empirical evidence that skills compensate for or reinforce disadvantages in job quality derived from professional qualifications.

Available at (open access): <http://dx.doi.org/10.17645/si.v7i3.2052>

Title:

Williams, R. (2019). National higher education policy and the development of generic skills. *Journal of Higher Education Policy and Management*, 41(4), 404-415. doi: 10.1080/1360080X.2019.1606690

Abstract:

This article explores the contribution of higher education to the development of numeracy and literacy competencies. To control for other post-schooling determinants of generic skills, the analysis is confined to adults aged 20–24 years who have completed or who are enrolled in tertiary studies. The quality of incoming students is controlled for by estimating the average PISA score attributable to this cohort using a truncated distribution approach. Average tertiary competencies are obtained for 31 countries from the OECD's Programme for the Assessment of Adult Competencies (PIAAC). The empirical findings are that the PISA scores account for most (70 per cent) of the international variation in PIAAC scores. Government expenditure on higher education is found to exert a small positive effect on PIAAC scores, at least for numeracy. The level of national research activity, as measured by research publications, has a small negative effect on PIAAC scores.

Available at: <https://doi.org/10.1080/1360080X.2019.1606690>

Title:

Woessmann, L. (2019). Facing the life-cycle trade-off between vocational and general education in apprenticeship systems. An economics-of-education perspective. *Journal for educational research online*, 11(1), 31-46.

Abstract:

This paper discusses the role of vocational education, and in particular apprenticeship education,

in preparing students for the labor market, with a particular focus on a life-cycle perspective in changing economies. The basic idea is that vocational education may facilitate entry into the labor market but hurt employment opportunities later in life because of limited adaptability to changing economic environments. We summarize evidence on the changing effects of vocational education over the life cycle from the international adult achievement tests IALS and PIAAC and country-specific evidence. We then discuss policy implications for elements of future-oriented education systems, especially apprenticeship programs.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0111-pedocs-167863>

Title:

Xiao, F., Barnard-Brak, L., Lan, W., & Burley, H. (2019). Examining problem-solving skills in technology-rich environments as related to numeracy and literacy. *International Journal of Lifelong Education*, 38(3), 327-338. doi: 10.1080/02601370.2019.1598507

Abstract:

This study sought to a better understanding of the construct of problem solving in technology-rich environments and the effect of literacy and numeracy on problem solving. Data used in this study were drawn from Programme for the International Assessment of Adult Competencies US data which includes 5010 completed cases and a total of 1326 variables. The assessment of literacy, numeracy and problem-solving competencies were administrated using computer-based approaches. The result of the study showed that adults with higher numeracy and literacy competencies were more likely to have higher level of problem-solving skills. The results of the analyses also revealed that solution latency (i.e. time) were an important factor influencing problem-solving skills. This study indicates that basic mathematical skills are essential for solving problems that require interpersonal communication, computer and software knowledge, planning, and organising. The findings from this study provide several implications for researchers, educators, teachers and policy-makers.

Available at: <https://doi.org/10.1080/02601370.2019.1598507>

Title:

Yalcin, S. (2019). Competence differences in literacy, numeracy, and problem solving according to sex. *Adult Education Quarterly*, 69(2), 101-119. doi: 10.1177/0741713619827386

Abstract:

This study aimed to determine individual- and country-level latent classes in literacy, numeracy and problem-solving competencies of individuals participating in the Programme for the International Assessment of Adult Competencies 2015. Specifically, it sought to distinguish these classes in relation to individuals' sex and to identify the state of prediction of the determined latent classes by each person's level of education. The study population consisted of 116,301 adults aged 16 to 65 years in 20 countries. Multilevel latent class analysis was conducted to consider the nested data structure and determine the number of latent classes. According to the results of the multilevel latent class analysis, Turkey and Chile were in the low achievement group in all skills, while Japan was in the most successful group. Moreover, the results revealed that sex and education level had a considerable influence on certain competence levels.

Available at: <https://doi.org/10.1177/0741713619827386>

Title:

Yamashita, T., Bardo, A. R., Cummins, P. A., Millar, R. J., Sahoo, S., & Liu, D. (2019). The roles of education, literacy, and numeracy in need for health information during the second half of adulthood: A moderated mediation analysis. *Journal of Health Communication, 24*(3), 271-283. doi: 10.1080/10810730.2019.1601303

Abstract:

We examine complex pathways that link health information seeking behavior with education and health literacy (decomposed into general literacy and numeracy), and how these pathways differ by perceived health status (need) among a nationally representative sample of Americans age 50 and older (n = 2,750). Data come from the Program for International Assessment of Adult Competencies (PIAAC). Multi-group structural equation models were used to examine the use of eight health information sources (newspapers, magazines, internet, radio, TV, books, friends/family, and health professionals). Findings partially support the long-standing notion that health seeking behaviors are directly linked to educational attainment, and provide some of the first nationally representative evidence for how education functions through distinct health literacy components to shape health information seeking behaviors by health status. Findings from this moderated mediation analysis point to the importance of examining, and addressing, health literacy disparities in access to and use of health information.

Available at: <https://doi.org/10.1080/10810730.2019.1601303>

Title:

Yamashita, T., Bardo, A. R., Liu, D., & Yoo, J. W. (2019). Education, lifelong learning and self-rated health in later life in the USA. *Health Education Journal, 78*(3), 328-339. doi: 10.1177/0017896918809500

Abstract:

This study examined the mediating effects of lifelong learning on the association between self-rated health and educational attainment among a nationally representative sample of US residents aged 50 years and older. Setting: Socioeconomic disparities in health are a major public health concern in economically developed nations where improving socioeconomic status (e.g. formal educational attainment) at the population level is challenging. In the light of population ageing, alternative approaches to improve health through malleable factors are urgently needed. Recent research suggests that participation in organised learning activities – lifelong learning – could attenuate the lack of formal educational attainment on health. Methods: Data come from the 2012 wave of the US Health and Retirement Study. Structural equation models with bootstrapping were used to estimate the mediation effect of lifelong learning activity in the relationship between self-rated health and formal educational attainment. Results: Approximately 3%–5% of the effect of formal education on self-rated health was mediated by lifelong learning activity. Findings from this study support the notion that ongoing participation in organised learning activities is beneficial for health in later life. Conclusion: Lifelong learning reflects a promising autonomous and sustainable strategy to improve health in later life. Future public health and education policy as well as education institutions should consider providing more learning opportunities for older populations.

Available at: <https://doi.org/10.1177/0017896918809500>

Title:

Yamashita, T., Cummins, P. A., Millar, R. J., Sahoo, S., & Smith, T. J. (2019). Associations between motivation to learn, basic skills, and adult education and training participation among older adults

in the USA. *International Journal of Lifelong Education*, 38(5), 538-552. doi: 10.1080/02601370.2019.1666927

Abstract:

The objective of this study is to examine the associations between the motivation to learn, basic skills (i.e. literacy and numeracy), and organised adult education and training (AET) participation among the middle-aged and older adults in the USA. Rapid technological advancement and globalisation necessitate individuals to engage in lifelong learning to actively participate in society. However, little is known about the roles of motivation to learn and basic skills in the AET participation in the U.S. adult population. We obtained the data from the 2012/2014 Programme for International Assessment of Adult Competencies restricted-use file and adults aged 50 years and older ($n = 2,580$) are included. Structural equation models are used to examine (1) any AET, (2) formal AET and (3) non-formal AET participation as a function of the motivation to learn latent construct, literacy, numeracy, and other covariates. Results showed that the motivation to learn, literacy and numeracy are all positive predictors of non-formal AET participation. Only motivation to learn is associated with formal AET participation. Findings from this study may inform future interventions as well as policy changes to promote specific types of organised AET programmes among older adult population in the USA.

Available at: <https://doi.org/10.1080/02601370.2019.1666927>

Title:

Yao, K. (2019). Heterogeneous skill distribution and college major: Evidence from PIAAC. *Journal of Applied Economics*, 22(1), 504-526. doi: 10.1080/15140326.2019.1665310

Abstract:

A large literature documents the uneven distribution of labor market outcomes across majors. Students in STEM (science, technology, engineering, and mathematics) can earn more than their peers. This earnings gap can be attributed not only to the differential educational resources investment but also to heterogeneous distribution of initial cognitive skills across majors. I benefit from the rich data from the Programme for the International Assessment of Adult Competencies to examine this earnings gap in the United States and the United Kingdom. Based on my findings, this paper establishes new facts that add to the understanding of how college field premiums are generated. I show that a sizable portion of the return to majors is due to self-selection and up to two-fifths of the field premiums can be explained by basic cognitive skills. Despite the qualitatively similar impacts of numeracy and literacy skills on choosing college field of study, the pricing of numeracy is much higher than literacy in the labor market.

Available at (open access): <https://doi.org/10.1080/15140326.2019.1665310>

Title:

Yasukawa, K. (2019). The role of national media in adult literacy and numeracy policy: A case study from Australia. *Canadian Journal of Science, Mathematics and Technology Education*, 19(1), 35-47. doi: 10.1007/s42330-018-0038-8

Abstract:

In 2013, the OECD released its findings from the Survey of Adult Skills (SAS) which assessed adults' skills in literacy, numeracy, and problem-solving in technology-rich environments in 22 countries. OECD initiatives like SAS and PISA have been the subject of critical policy studies, particularly in relation to their influence on national policymaking. National media as actors in these policy contexts have been the focus of some of these policy studies. Using a methodology informed by actor network theory (ANT), this study examines the Australian media's responses to the release of the

country's SAS results, whilst making historical and international comparisons to uncover factors that mobilise the media to become a policy actor.

Available at: <https://doi.org/10.1007/s42330-018-0038-8>

Title:

Yu, C. H., Lee, H. S., Lara, E., & Gan, S. (2019). Adult learning across USA, Canada, and New Zealand: A cross-cultural study of PIAAC. *International Education Studies*, 12(5), 1-16. doi: 10.5539/ies.v12n5p1

Abstract:

Skeptics of Programme for International Student Assessment (PISA) and Trend for International Math and Science Study (TIMSS) argue that while US elementary and high school students are behind their peers in other nations, the US workforce is still excellent because of the high quality post-secondary educational institutions in the US. However, the Programme for the International Assessment of Adult Competencies (PIAAC) indicates that US adults are in fact far behind their international peers in literacy, numeracy, and technology-based problem solving. Through the use of data mining, this study explored the possible association between PIAAC scores and several constructs. Since the US, Canada, and New Zealand were considered culturally similar nations, according to cluster analysis, patterns between PIAAC scores and selected constructs were analyzed by a variety of big data analytical methods, including cluster analysis, bootstrap forest, boosted tree, and data visualization. Given that PIAAC used multiple computerized adaptive testing, the consequential plausible values were randomly selected when the ensemble approach was used. Additionally, model comparison was utilized to decide between bagging and boosting in order to select the optimal model for each sample. In these samples, cultural engagement, readiness to learn, and social trust, respectively emerged as strong predictors for learning outcomes as they were assessed by PIAAC.

Available at (open access): <https://doi.org/10.5539/ies.v12n5p1>

Title:

Zamzam, R. D. (2019). *Relationships among information communication technology skills, proficiencies in literacy, numeracy, problem-solving in technology-rich environment, enrollment in distance learning, and student-employment status of adult immigrants in the United States* (Dissertation). Keiser University.

Abstract:

Workforce education and development are necessary to prepare individuals to compete in the global market. Building individuals' key job skills ensures career success and economic growth of the United States. The purpose of this quantitative cross-sectional survey study was to describe the U.S. adult immigrants' information communication technology (ICT) skills, literacy, numeracy, and problem-solving in technology-rich environment (PS-TRE) stratified by student and employment status using the U.S. PIAAC data, 2012/2014. The research questions served to identify statistically significant ($p < 0.05$) predictors of literacy, numeracy, PS-TRE, ICT skills, open-distance education, educational attainment, employment, and income using multiple linear-logistic regression models. Descriptive statistics showed most of the active segment of adult immigrants (student-employed) were ranked the lowest in education with a high school diploma or less. A considerable proportion of the active adult immigrants performed at Level 1 or below in literacy, numeracy, and PS-TRE. A sizable number of the disconnected adult immigrants (unemployed-out of labor force) were classified as highly educated or working-age groups. Results revealed that ICT skills were a positive and significant predictor of literacy, numeracy, and PS-TRE, educational attainment, and income. There were positive and significant relationships between open-distance education and

educational attainment, participation in learning activities, and gender, with females having greater odds to enroll in open–distance education. Findings indicate that ICT skills and distance learning opportunities could be powerful and flexible training tools for U.S. adult immigrants to enhance their vocational and educational skills.

Available at: <https://search.proquest.com/openview/0821d6dad1c646cf35bef18979b4d985/1?pq-origsite=gscholar&tcbl=18750&diss=y>

Title:

Zarifa, D., Seward, B., & Milian, R. P. (2019). Location, location, location: Examining the rural-urban skills gap in Canada. *Journal of Rural Studies*, 72, 252-263. doi: 10.1016/j.jrurstud.2019.10.032

Abstract:

The elevated demands of the new knowledge economy pose particular challenges to rural and northern regions in Canada, long acknowledged by policymakers to suffer from acute human capital deficits. Rural residents obtain lower levels of education than their urban counterparts and those that do obtain post-secondary training often migrate to urban regions offering abundant employment opportunities and higher wages. Despite an emerging consensus around over skill deficits across rural regions, Canadian researchers have yet to systematically explore contemporary rural-urban differences in human capital using refined measures of literacy and numeracy skills. We ameliorate this deficiency by mapping rural-urban disparities in skills across the working age population (16–65) using Statistics Canada's 2012 Longitudinal International Study of Adults (LISA). Our results indicate that residents from smaller population centers and rural areas within Canada show significantly lower skills proficiencies. These differences across location of residence shrink considerably when controlling for education level, underscoring the need to enhance post-secondary access in rural areas.

Available at: <https://doi.org/10.1016/j.jrurstud.2019.10.032>

Title:

Zhou, K. (2019). *Education, skills, and wage outcomes among mid-career adults: A cross-national study*. (Dissertation). State University of New York at Albany.

Abstract:

Interest in the role of non-cognitive skills on successful life outcomes (such as academic performance) has increased in recent years. Policy makers in many countries have prioritized the learning of non-cognitive skills in the school curriculum and training frameworks. Although studies in labor economics have provided important insights about the impact of non-cognitive skills on earnings (e.g., Lindqvist and Vestman 2011; Heckman, Stixrud, and Urzua 2006), solid evidence about how labor markets produce or facilitate the acquisition of non-cognitive skills in different country settings is lacking. The linkage between education, skills and wages has been at the core discussion of human capital theory since Becker (1964). However, existing studies rarely look at the relative influence of non-cognitive and cognitive skills on earnings keeping in mind differences in educational attainment, socio-demographic and work-related factors. This new comparative study attempts to disaggregate the value in different human capital of prime-age full-time working adults and explores the complex relationships between educational attainment, skills, work-related factors, and socio-demographic factors that strengthen or weaken key labor market results. Furthermore, the study specifically examines how non-cognitive skills contribute to cognitive skills performance and subsequently influence labor market outcomes while controlling educational attainment, socio-demographic background, and work-related factors. It is based on a synthesis of the different strands of human capital theory, Heckman's economic theory of non-cognitive skills, and the screening

hypothesis, all of which help account for earnings differentials. Sometimes considered as rival theoretical frameworks, they are closely related to each other. In addition to bivariate analyses, three structural equation models are examined and tested using cross-sectional secondary data from the PIAAC survey on 22 OECD countries. Bivariate analyses showed that non-cognitive skills (measured as metacognitive abilities) are related to educational attainment, parents' education, cognitive skills, and hourly wages among mid-career adults. However, after controlling for variation in education, socio-demographic background, and work-related factors, the SEM analyses found that only education and occupation are robust predictors of cognitive skills. Whether and how cognitive skills and non-cognitive skills are related to monetary return vary across different education degree holders groups and across different countries. The study also discusses the policy implications of the findings as they pertain to skills policy in higher education and training.

Available at: <https://search.proquest.com/openview/7f3331ed883fd43e67bb87dc3c689fe0/1?pq-origsite=gscholar&tcb1=18750&diss=y>

2.13 Publications in 2020

Title:

Ackermann-Piek, D., Silber, H., Daikeler, J., Martin, S., & Edwards, B. (2020). Interviewer training guidelines of multinational survey programs: A total survey error perspective. *methods, data, analyses*, 14(1), 35-60. doi: 10.12758/mda.2020.01

Abstract:

Typically, interviewer training is implemented in order to minimize interviewer effects and ensure that interviewers are well prepared to administer the survey. Leading professional associations in the survey research landscape recommend the standardized implementation of interviewer training. Some large-scale multinational survey programs have produced their own training guidelines to ensure a comparable level of quality in the implementation of training across participating countries. However, the length, content, and methodology of interviewer training guidelines are very heterogeneous. In this paper, we provide a comparative overview of general and study-specific interviewer training guidelines of three multinational survey programs (ESS, PIAAC, SHARE). Using total survey error (TSE) as a conceptual framework, we map the general and study-specific training guidelines of the three multinational survey programs to components of the TSE to determine how they target the reduction of interviewer effects. Our results reveal that unit nonresponse error is covered by all guidelines; measurement error is covered by most guidelines; and coverage error, sampling error, and processing error are addressed either not at all or sparsely. We conclude, for example, that these guidelines could be an excellent starting point for new – small as well as large-scale – surveys to design their interviewer training, and that interviewer training guidelines should be made publicly available in order to provide a high level of transparency, thus enabling survey programs to learn from each other.

Available at (open access): <https://doi.org/10.12758/mda.2020.01>

Title:

Agasisti, T., Johnes, G., & Paccagnella, M. (2020). Tasks, occupations and wages in OECD countries. *International Labour Review*, 1-27. doi: 10.1111/ilr.12169

Abstract:

This paper investigates the relationships between earnings, human capital, and job tasks, exploiting internationally comparable information from the OECD Survey of Adult Skills. We use the theoretical

framework presented in Autor and Handel (2013) and extend their empirical results to 20 OECD countries. Our data allow for a richer characterisation of worker's human capital, by including both educational attainment and a measure of cognitive skills. We are able to confirm the predictive power of job tasks in explaining wage differences both between and within occupations, and to provide empirical support for the model's prediction in the vast majority of countries.

Available at (open access): <https://doi.org/10.1111/ilr.12169>

Title:

Allen, J., & Belfi, B. (2020). Educational expansion in the Netherlands: Better chances for all?. *Oxford Review of Education*, 46(1), 44-62. doi: 10.1080/03054985.2019.1687435

Abstract:

Higher education in the Netherlands has expanded rapidly in the last two decades, giving rise to concerns about possible negative effects on educational quality and the labour market value of a higher education degree. In this paper, we use data from national graduate surveys and adult literacy surveys to explore this. While no evidence was found for a negative effect of the HE expansion on graduate skill levels or unemployment risk, real graduate earnings have decreased over the past two decades relative to those of post-secondary non-tertiary graduates. This does not seem to have been driven by a shift of HE graduates into non-graduate occupations, but rather by a general decline in relative earnings in jobs at all levels. Finally, the more adverse effects of the expansion were particularly apparent for graduates with lower grades, women and graduates with a non-western migration background. These findings indicate that, despite relatively low unemployment, the HE labour market is increasingly becoming a buyers' market. In this market, graduates with attributes that buyers want – males, native Dutch graduates, high-performers – emerge as relative winners of the educational expansion.

Available at (open access): <https://doi.org/10.1080/03054985.2019.1687435>

Title:

Anghel, B., & Lacuesta, A. (2020). *Ageing, productivity and employment status*. Economic Bulletin No. 1/2020. Madrid: Banco de España. Retrieved November 16, 2020, from <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/InformesBoletinesRevistas/ArticulosAnalitcos/20/T1/descargar/Files/be2001-art2e.pdf>

Abstract:

The article analyses how labour market participation and the type of work performed change with age. Drawing on data from the OECD's Programme for the International Assessment of Adult Competencies (PIAAC), it is documented that as people age they gradually lose certain skills relating to their ability to do physical work or use new technologies, or their literacy and numeracy skills. By contrast, as they build up experience, older workers develop better planning skills and a greater ability to supervise the work of others and respond to setbacks. However, the transition between these tasks is not problem-free, especially in certain sectors, such as agriculture, small retail trade, hotels and restaurants and domestic help, which in Spain are more likely to have a higher concentration of older workers with a lower level of education than in the rest of the euro area. In this respect, larger firm size, flexible working environments, retirement schemes with certain specificities relating to skills required in different occupations and an increase in continuing training would all be conducive to a lower decline in productivity and a higher degree of employability of older workers. This is particularly important in Spain's current demographic context of a gradually ageing population.

Available at (open access): <https://EconPapers.repec.org/RePEc:bde:journl:y:2020:i:03:d:aa:n:02>

Title:

Araki, S. (2020). Educational expansion, skills diffusion, and the economic value of credentials and skills. *American Sociological Review*, 85(1), 128-175. doi: 10.1177/0003122419897873

Abstract:

Examining the economic value of education has been a central research agenda of social scientists for decades. However, prior research inadequately accounts for the discrepancy between educational credentials and skills at both the individual and societal levels. In this article, I investigate the link between credentials, skills, and labor market outcomes against a background of societal-level educational expansion and skills diffusion. Using internationally comparable OECD data for approximately 30,000 individuals in 26 countries, I find that both credentials and skills generally contribute to occupational and monetary rewards. In particular, the premium for credentials far outweighs that for skills. This is in contrast to recent arguments that skills are the key to economic success. Nevertheless, returns to credentials decline in tandem with educational expansion, whereas skills retain their premium even as they diffuse in a given society. Furthermore, skills diffusion also leads to the diminishing monetary return to high credentials. These findings suggest that skills diffusion promotes more meritocratic reward allocation via devaluing high credentials without explicit depreciation of high skills.

Available at: <https://doi.org/10.1177/0003122419897873>

Title:

Arellano-Bover, J. (2020). *The effect of labor market conditions at entry on workers' long-term skills*. IZA Discussion Papers No. 13129. Bonn: IZA – Institute of Labor Economics. Retrieved November 13, 2020, from <http://ftp.iza.org/dp13129.pdf>

Abstract:

This paper studies the impact of labor market conditions during the education-to-work transition on workers' long-term skill development. Using representative survey data on measures of work-relevant cognitive skills for adults from 19 countries, I document four main findings: i) cohorts of workers who faced higher unemployment rates at ages 18–25 have lower skills at ages 36–59; ii) unemployment rates faced at later ages (26–35) do not have such an effect; iii) the former findings hold even though, on average, people get more formal education as a response to higher unemployment in their late teens and early twenties; iv) skill inequality is affected: workers whose parents were less educated bear most of the negative effects. These findings can be rationalized by on-the-job learning during the early twenties being an important factor of skill-development, and such learning being negatively impacted by bad macroeconomic conditions. Using German panel data on skills, I show that young workers at large firms experience higher skill growth than those at small firms. This finding suggests firm heterogeneity in human capital provision to young workers as a potential mechanism since, in bad economic times, young workers disproportionately match with small firms.

Available at (open access): <http://ftp.iza.org/dp13129.pdf>

Title:

Arıkan, S., Özer, F., Şeker, V., & Ertaş, G. (2020). The importance of sample weights and plausible values in large-scale assessments. *Journal of Measurement and Evaluation in Education and Psychology*, 11, 43-60. doi: 10.21031/epod.602765

Abstract:

International large-scale assessments such as PISA (The Programme for International Student

Assessment), PIAAC (The Programme for the International Assessment of Adult Competencies) and TIMSS (Trends in International Mathematics Science Study), play a key role in determining educational policies besides their primary objectives of measuring, evaluating and monitoring the educational process. Therefore, it is critical to analyze the data gathered from the large scale assessments using scientifically accurate statistical methods as the results have the potential to influence millions of stakeholders through major policy changes. Analysis of these data that consists of hundreds of different genuine variables requires expertise and using specific methods. This study illustrates issues to be considered while analyzing PISA, PIAAC and TIMSS data by presenting relevant syntax and exemplifying the possible incorrect results that might be encountered. In Turkey, there are very limited courses that focus on large scale data analysis. Workshops are also very limited to reach major groups. The aim of this study is to raise awareness related to sample weights and plausible values. Comparative findings of the study showed that without using sample weights and plausible values there is a high probability to get incorrect results. In this study, t-test and multiple regression analyses conducted by IDB Analyzer and multilevel regression analysis by Mplus were exemplified.

Available at (open access): <https://doi.org/10.21031/epod.602765>

Title:

Asai, K., Breda, T., Rain, A., Romanello, L., & Sangnier, M. (2020). *Education, skills and skill mismatch: A review and some new evidence based on the PIAAC survey*. Rapport IPP No. 26. Paris: Institut des politiques publiques (IPP). Retrieved November 13, 2020, from <https://halshs.archives-ouvertes.fr/halshs-02514746>

Abstract:

This work was done in the context of a research partnership between the Institut des politiques publiques and the Direction de l'Animation de la Recherche, des Etudes et des Statistiques (Dares) at the French Ministry of Labor. We thank the Dares for its financial support that made it possible to realise this study. Our partners at the Dares have also provided several suggestions that dramatically improved the quality of the report. We would like to thank in particular for their useful feedback Cécile Ballini, Mathilde Gaini and Philippe Zamora. We also thank them warmly for their patience and flexibility throughout the project. We then thank warmly the IPP team for constant support with the project. We are particularly grateful to Julien Grenet as he suggested the central idea that is investigated in Chapter 4 of this report, and provided insightful comments throughout the project. Marion Monnet also deserves to be thanked for participating in the management of the project at its initial stage, and helping throughout. This report was written after the organization by the Dares and the IPP of a working group on skills and skill mismatch. We would like to thank all participants and their institutions for their feedback when we presented preliminary versions of our work to the group. We also thank the OECD which allowed us to access a lightly enriched version of the PIAAC data, which was very useful to undertake the analyses presented in the report.

Available at (open access): <https://halshs.archives-ouvertes.fr/halshs-02514746>

Title:

Aspøy, T. M. (2020). Low education, high job quality? Job autonomy and learning among workers without higher education in Scandinavia, the United Kingdom and Ireland. *European Societies*, 22(2), 188-210. doi: 10.1080/14616696.2019.1660392

Abstract:

Most comparative studies of job autonomy and learning opportunities find that workers in Scandinavian countries are better off. Recent studies have challenged these findings, showing low job quality, particularly in the lower private service sector in the Scandinavian countries. The aim of this

article is to examine whether the autonomous and learning-intensive working life of Scandinavia also applies to people without higher education. It explores if there is a gap in job autonomy and informal job learning between educational groups, and if this gap varies across the social democratic systems of Sweden, Norway and Denmark on the one hand, and the liberal systems of the United Kingdom and Ireland on the other. Drawing on quantitative micro-data from PIAAC (2011/2012), this article demonstrates that Scandinavians with no education above upper secondary school do experience greater job autonomy than their counterparts in the British Isles. Moreover, the gap between educational groups in terms of job autonomy is smaller in Scandinavia than it is in the liberal systems. Regarding informal learning opportunities, the relative disadvantage among workers without higher education seems to be associated with selection into occupations with few opportunities for informal job learning, in Scandinavia as well as the British Isles.

Available at: <https://doi.org/10.1080/14616696.2019.1660392>

Title:

Asuyama, Y. (2020). Delegation to workers across countries and industries: Interacting effects of social capital and coordination needs. *International Journal of Industrial Organization*, 69. doi: 10.1016/j.ijindorg.2020.102586

Abstract:

The degree to which firms delegate authority to non-managerial and non-supervisory workers varies substantially across countries and industries. By examining worker-level data from 14 countries, I empirically explain this variation by region-specific social capital that proxies workers' degree of self-centeredness and the industry-specific need for coordination. The empirical results provide the first confirmation of Alonso et al.'s (2008) theoretical predictions: In particular, when self-centeredness of workers is very low, the degree of delegation is always high regardless of the need for coordination. Consistent with the theory, as coordination becomes important, better horizontal communication among co-workers occurs to sustain the same delegation level.

Available at: <https://doi.org/10.1016/j.ijindorg.2020.102586>

Title:

Atasoy, R., & Güçlü, N. (2020). Evaluation of numeracy skills of adults according to the results of PIAAC 2015 in Turkey. *World Journal of Education*, 10(2), 27-49. Retrieved November 17, 2020. doi: 10.5430/wje.v10n2p27

Abstract:

In this research, it is aimed to put forward the variables that predict the numeracy skills in PIAAC of Turkey, to reveal the relationship between the numeracy skills with educational level, education level of parents, number of books in the household, and annual income. It is also aimed to evaluate the quality of educational outcomes of the Turkish National Education System (TNES). The research is designed in a descriptive-analytical method. The sampling of the study is 5199 households. Mean, t-test, correlation, and CHAID analysis were used in the analysis. In the study, the performance of the numeracy skills of adults in Turkey was found to be very low and, it was emphasized the quality problems of TNES have remained. Moreover, the most powerful predictor of numeracy skills is educational level. There is also a significant relationship between numeracy scores with education level, education level of parents, income, number of books, and computer use. It is expected to provide a new perspective to the policymakers and researchers in education about the appearance of the TNES.

Available at (open access): <https://doi.org/10.5430/wje.v10n2p27>

Title:

Avvisati, F., & Keslair, F. (2020). *REPEST: Stata module to run estimations with weighted replicate samples and plausible values*. Boston: Boston College Department of Economics. Retrieved November 16, 2020, from <https://EconPapers.repec.org/RePEc:boc:bocode:s457918>

Abstract:

REPEST estimates statistics using replicate weights (balanced repeated replication or brr weights, jackknife replicate weights,...), thus accounting for complex survey designs in the estimation of sampling variances. It is specially designed to be used with the PISA, PIAAC and TALIS datasets produced by the OECD. It also allows for analyses with multiply imputed variables (plausible values); where plausible values are used, the average estimator across plausible values is reported and the imputation error is added to the variance estimator.

Available at (open access): <https://EconPapers.repec.org/RePEc:boc:bocode:s457918>

Title:

Bacchi, C. (2020). Problem-solving as a governing knowledge: "Skills"-testing in PISA and PIAAC. *Open Journal of Political Science*, 10(1), 82-105. doi: 10.4236/ojps.2020.101007

Abstract:

This article scrutinizes critically a pervasive knowledge shaping contemporary sociopolitical relations and spaces—"problem-solving knowledge". It develops the argument that, as a governing knowledge, "problem-solving" is increasing in intensity and scope, with a range of negative and potentially dangerous effects. As a case study, the article examines how problem-solving knowledge operates in the OECD "skills" assessment programs PISA and PIAAC, with a particularly worrying connection between so-called "cognitive abilities" and labour market performance. It considers how this "turn to cognition", with its associated moralism, divides "citizens" into those who either can or who cannot solve "problems", producing "more productive" and "less productive" categories of people. More broadly, these programs illustrate how treating "problems" as self-evident referents is deeply depoliticizing, highlighting the importance of examining how governing takes place through problematization. Through tracing the emergence and functioning of "problem-solving" as a knowledge practice, the article encourages reflection on how problem-solving knowledge has come to be taken-for-granted as "truth" and on how it operates to limit political debate and to regulate political subjects.

Available at (open access): <https://doi.org/10.4236/ojps.2020.101007>

Title:

Bailey, P., Lee, M., Nguyen, T., & Zhang, T. (2020). Using EdSurvey to analyse PIAAC data. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 209-237). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_9

Abstract:

This chapter describes the use of the R package EdSurvey and its use in analysing PIAAC data. The package allows users to download public use PIAAC data, explore the codebooks, explore data, read in and edit relevant variables, and run analyses such as regression, logistic regression, and gap analysis.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_9

Title:

Balcerowicz-Szkutnik, M., Szkutnik, W., & Szkutnik, W. (2020). Sustainable development goals as a challenge for national and global development. *SHS Web Conf.*, 74(5006), 1-9. doi: 10.1051/shsconf/20207405006

Abstract:

In the article, considerations are based on the implementation of two main goals of the sustainable development strategy. The differences observed in practice in the group of countries with low and medium-low incomes in closing the poverty gap measured by income and the number of people remaining in poverty over a relatively long period can be modeled by measuring the routine intensity of tasks in a given profession. This is indirectly related to an important classical factor in the measurement of knowledge capital and may be important in the study of the relationship between the convergence strength of the analyzed group of countries and the intensity of routine work, which are always negatively correlated with each other.

Available at: <https://doi.org/10.1051/shsconf/20207405006>

Title:

Baldissera, A., & Cornali, F. (2020). Geography of human capital in Italy: A comparison between macro-regions. *Modern Italy*, 25(3), 261–277. doi: 10.1017/mit.2020.25

Abstract:

Interest in the spread of human capital has grown in recent decades, as it is acknowledged to play an increasingly important role in supporting social and economic development. This paper, starting from the distinction between education – assessed by educational attainment – and literacy proficiency – that is, what people are actually able to do with the written word – examines the distribution of these properties in Italy. Results of analysis show that while the longstanding gap between the North and the South is gradually closing with regard to the distribution of educational credentials, there is still a significant difference in the acquired level of competence. There is also an unexpected result: the regions of the North-West, once the main driver of Italy's economic development, today deploy a smaller stock of human capital than the North-East and Central macro-regions. In light of these findings, improving the education system's effectiveness and creating adequate political, institutional and legal arrangements that favour the development of human capital appear to be an absolute priority for Italy.

Available at (open access): <https://doi.org/10.1017/mit.2020.25>

Title:

Basso, G., Boeri, T., Caiumi, A., & Paccagnella, M. (2020). *The new hazardous jobs and worker reallocation*. IZA Discussion Papers No. 13532. Bonn: IZA – Institute of Labor Economics. Retrieved November 30, 2020, from <http://ftp.iza.org/dp13532.pdf>

Abstract:

This paper analyses several dimensions of workers' safety that are relevant in the context of a pandemic. We provide a classification of occupations according to the risk of contagion: by considering a wider range of job characteristics and a more nuanced assessment of infection risk, we expand on the previous literature that almost exclusively looked at feasibility of working from home. We apply our classification to the United States and to European countries and we find that roughly 50% of jobs in our sample can be considered safe, although a large cross-country variation exists, notably in the potential incidence of remote working. We find that the most economically vulnerable workers (low-educated, low-wage workers, immigrants, workers on temporary contracts, and part-

timers) are overrepresented in unsafe jobs, notably in non-essential activities. We assess the nature of the reallocation of workers from unsafe to safe jobs that is likely to take place in the years to come, and the policies that could mitigate the social cost of this reallocation.

Available at (open access): <http://ftp.iza.org/dp13532.pdf>

Title:

Bergson-Shilcock, A. (2020). *The new landscape of digital literacy: How workers' uneven digital skills affect economic mobility and business competitiveness, and what policymakers can do about it*. Washington, DC: National Skills Coalition. Retrieved November 17, 2020, from <https://m.nationalskillscoalition.org/resources/publications/file/New-Digital-Landscape-web.pdf>

Abstract:

The Covid-19 pandemic has thrown a stark spotlight on need for digital skills among a wide swath of the American workforce. But even before the pandemic, the US labor market reflected a growing demand for workers across industries to have strong digital skills. This report uses data from a rigorously designed international assessment to analyze workers' current level of digital skills, providing a breakdown of how skills differ among workers in major industries and occupations as well as demographic categories. Next, it provides a short summary of recommendations for how policymakers and business leaders can invest in upskilling to ensure that all workers have the resilience needed to respond to the continuing transformation of jobs in the US labor market, and to acquire new digital skills as necessary. This report is a companion to Digital Skills for an Equitable Recovery, which provides more detailed policy recommendations and related background.

Available at (open access): <https://www.nationalskillscoalition.org/resource/publications/the-new-landscape-of-digital-literacy/>

Title:

Biagi, F., & Sebastian, R. (2020). Technologies and "routinization". In K. F. Zimmermann (Eds.), *Handbook of Labor, Human Resources and Population Economics* (pp. 1-17). Cham: Springer International Publishing. doi: 10.1007/978-3-319-57365-6_8-2

Abstract:

This chapter presents and compares different approaches to the measurement of tasks, discussing their pros and cons and the problems that researchers encounter when testing theoretical constructs with available data. As an empirical application, the most representative framework is adopted and items across multiple data sources (EWCS, PIAAC, PDII, and O*NET) are used to generate different and comparable measures of an index of relative routine intensity (RTI) across the EU. The chapter also assesses the extent to which these data sources provide coherent pictures of the degree of routinization in 26 EU countries. Results consistently indicate that northern countries (plus Luxembourg, and the Netherlands) show the lowest values of the routinization (RTI) index, while eastern (Bulgaria, Hungary, and Slovakia, in particular) and some Mediterranean countries (Greece, Cyprus, Spain, Portugal) show the highest RTI values. One important and controversial result emerges: while PIAAC, PDII, and O*NET provide overall similar pictures (especially for abstract and manual tasks), EWCS results differ substantially from those of the other databases, especially for routine and manual tasks. Future research could explore in depth the reasons for these different patterns of consistency.

Available at: https://doi.org/10.1007/978-3-319-57365-6_8-2

Title:

Bijlsma, I., Brakel, J., Velden, R., & Allen, J. (2020). Estimating literacy levels at a detailed regional level: An application using Dutch data. *Journal of Official Statistics*, 36(2), 251-274. doi: 10.2478/jos-2020-0014

Abstract:

Policy measures to combat low literacy are often targeted at municipalities or regions with low levels of literacy. However, current surveys on literacy do not contain enough observations at this level to allow for reliable estimates when using only direct estimation techniques. To provide more reliable results at a detailed regional level, alternative methods must be used. The aim of this article is to obtain literacy estimates at the municipality level using model-based small area estimation techniques in a hierarchical Bayesian framework. To do so, we link Dutch Labour Force Survey data to the most recent literacy survey available, that of the Programme for the International Assessment of Adult Competencies (PIAAC). We estimate the average literacy score, as well as the percentage of people with a low literacy level. Variance estimators for our small area predictions explicitly account for the imputation uncertainty in the PIAAC estimates. The proposed estimation method improves the precision of the area estimates, making it possible to break down the national figures by municipality.

Available at (open access): <https://doi.org/10.2478/jos-2020-0014>

Title:

Bonomi Bezzo, F. (2020). *Essays in the economic sociology of inequality*. University of Essex, PhD Thesis. <http://repository.essex.ac.uk/id/eprint/28367>

Abstract:

Chapter 1 investigates the relationship between young people's happiness, self-perception and social interactions within the neighbourhood where they live. Using Understanding Society, we investigate how income neighbourhood deprivation impacts on youth happiness and social interactions. Using only children in social housing allows to limit the problems related to the endogeneity of the neighbourhood selection choice. The empirical findings allow us to refuse the relative deprivation hypothesis which suggests that there is not a significantly negative association between neighbourhood income and children happiness, self-perception and social interactions. In chapter 2, using the Program for the International Assessment of Adult Competencies (PIAAC) database, we investigate to what degree the association between parental background and sons' earnings is mediated by various dimensions of sons' human capital. We find that the intergenerational transmission process is wholly mediated by sons' formal education only in the US. By contrast, a significant residual association remains even after we control for all four dimensions of sons' human capital in Italy, Spain and Poland (for both parental background proxies) as well as France and the UK (just for parental education). In chapter 3 we investigate which are the effects of introducing a Universal Independence Income (UII) on inequality, poverty and the incentives to work. We compare our new benefit with various design of Universal Basic Income (UBI). The empirical analysis shows that in terms of inequality, measured in this work with the Gini coefficient, UII scenarios performs better than the baseline and much better than any UBI scenario, the UII shows a larger redistributive power and participation tax rates are much higher under UII and lower under UBI compared to the baseline, proving the UII to be the best measure to discourage work and to move the society out of the work ethic.

Available at: <http://repository.essex.ac.uk/id/eprint/28367>

Title:

Borgonovi, F., & Marconi, G. (2020). Disparities in participation in higher education among migrants: A comparative perspective in OECD countries. In J. Bhabha, W. Giles, & F. Mahomed (Eds.), *A Better Future: The Role of Higher Education for Displaced and Marginalised People* (pp. 21-39). Cambridge: Cambridge University Press. doi: 10.1017/9781108655101.002

Abstract:

Countries differ widely in the extent to which they are able to provide educational opportunities to marginalised communities and how effectively such opportunities lead to social mobility. We report new cross-country comparable data on disparities in countries that are members of the Organisation for Economic Co-operation and Development (OECD) between immigrant-heritage individuals and individuals without an immigrant background in access, participation and completion in higher education (HE). We also report between-country differences in the educational aspirations of individuals with and without an immigrant background. We compare the disadvantage immigrant-heritage individuals experience in different countries with other forms of disadvantage – with a focus on socio-economic status and urban/rural residency.

Available at: <https://doi.org/10.1017/9781108655101.002>

Title:

Calero, J., Murillo Huertas, I. P., & Raymond, J. L. (2020). Efficiency in the transformation of schooling into competences: A cross-country analysis using PIAAC data. *Bulletin of Economic Research*, <https://doi.org/10.1111/boer.12249>

Abstract:

This study (i) compares the competence levels of the adult population in a set of OECD countries; (ii) assesses the comparative efficiency with which the education system in each country transforms schooling into competences, distinguishing by educational level, and (iii) tracks the evolution of this efficiency by birth cohorts. Using PIAAC data, the paper applies standard parametric frontier techniques under two alternative specifications. The results obtained identify Finland, Sweden, Denmark and Japan as being the most efficient and Spain, the United Kingdom, Italy, Ireland and Poland as the least efficient.

Available at: <https://doi.org/10.1111/boer.12249>

Title:

Capsada-Munsech, Q. (2020). Overeducation, skills and social background: The influence of parental education on overeducation in Spain. *Compare: A Journal of Comparative and International Education*, 50(2), 216-236. doi: 10.1080/03057925.2019.1579085

Abstract:

This article focuses on the influence of social background on overeducation in Spain, understanding family socialisation as a source of knowledge and skills gain. The dramatic education expansion experienced in Spain in combination with a high percentage of low-skilled jobs has promoted overeducation occurrence to a larger extent than in other Organisation for Economic Cooperation and Development (OECD) countries. Using the Survey of Adult Skills (PIAAC) data results suggest that overeducation affects at least over a quarter of the working population. Younger and middle aged workers are more likely to be overeducated compared to the senior ones, while women are more prone to be overeducated than men. Workers whose mothers have higher education are less likely to be overeducated compared to those whose mothers have basic education, while fathers' education is practically irrelevant to predict workers' overeducation. Thus, a mother's education is the most

relevant social background indicator to predict overeducation, even when controlling for firm characteristics and skills level.

Available at: <https://doi.org/10.1080/03057925.2019.1579085>

Title:

Choi, A., Guio, J., & Escardíbul, J.-O. (2020). The challenge of mapping overeducation and over-skilling across countries: A critical approach using PIAAC. *Compare: A Journal of Comparative and International Education*, 50(2), 237-256. doi: 10.1080/03057925.2019.1600400

Abstract:

Problems of overeducation and overqualification in developed countries have attracted the attention of policymakers and researchers alike. While these phenomena have been clearly conceptualised, their measurement remains complex and controversial. This paper presents an overview of the phenomena and map overeducation and overqualification across countries. Drawing on a broad set of definitions from the literature, they quantify the intensity of overeducation and overqualification for a set of countries that participated in the first two rounds of the OECD's Program for the International Assessment of Adult Competencies (PIAAC). The results highlight marked differences across countries. However, maps differ according to the focus adopted – be it overeducation or overqualification – and are also highly sensitive to the specific definition of occupational mismatch selected. Policymakers clearly need to be cautious when interpreting overeducation/overqualification figures. The analysis also allows to further discuss the strengths and limitations of PIAAC for studying overeducation and overqualification.

Available at: <https://doi.org/10.1080/03057925.2019.1600400>

Title:

Cim, M., Kind, M., & Kleibrink, J. (2020). Occupational mismatch of immigrants in Europe: The role of education and cognitive skills. *Education Economics*, 28(1), 96-112. doi: 10.1080/09645292.2019.1677558

Abstract:

Occupational mismatch is a widespread phenomenon among immigrants in many European countries. Mismatch is predominantly measured in terms of formal education ignoring the imperfect comparability of international educational degrees. Exploiting internationally comparable cognitive skill measures from the PIAAC data, we examine whether overeducation implies only an apparent phenomenon or a genuine overqualification observed also in the form of cognitive overskilling. Our results for 11 European countries show significant differences in the incidence of formal overeducation and genuine overqualification between immigrants and natives.

Available at: <https://doi.org/10.1080/09645292.2019.1677558>

Title:

Crawford, L., & Pugatch, T. (2020). *Teacher labor markets in developing countries*. IZA Discussion Papers No. 12985. Bonn: IZA – Institute of Labor Economics. Retrieved November 16, 2020, from <http://ftp.iza.org/dp12985.pdf>

Abstract:

The types of workers recruited into teaching and their allocation across classrooms can greatly influence a country's stock of human capital. This paper considers how markets and non-market institutions determine the quantity, wages, skills, and spatial distribution of teachers in developing countries. Schools are a major source of employment in developing countries, particularly for

women and professionals. Teacher compensation is also a large share of public budgets. Teacher labor markets in developing countries are likely to grow further as teacher quality becomes a greater focus of education policy, including under the United Nations Sustainable Development Goals. Theoretical approaches to teacher labor markets have emphasized the role of non-market institutions, such as government and unions, and other frictions in teacher employment and wages. The evidence supports the existence and importance of such frictions in how teacher labor markets function. In many countries, large gaps in pay and quality exist between teachers and other professionals; teachers in public and private schools; teachers on permanent and temporary contracts; and teachers in urban and rural areas. Teacher supply increases with wages, though teacher quality does not necessarily increase. However, most evidence comes from studies of short-term effects among existing teachers. Evidence on effects in the long-term, on the supply of new teachers, or on changes in non-pecuniary compensation is scarcer.

Available at (open access): <http://ftp.iza.org/dp12985.pdf>

Title:

Cuadrado, P., Moral-Benito, E., & Solera, I. (2020). *A sectoral anatomy of the Spanish productivity puzzle*. Documentos Ocasionales No. 2006. Madrid: Banco de España. Retrieved November 16, 2020, from <https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriasadas/DocumentosOcasionales/20/Files/do2006e.pdf>

Abstract:

Income per capita in Spain relative to that of other advanced EU countries held stable at around 90% from 2000 to 2016. Stagnant labour productivity is at the root of this lack of convergence. This paper examines these developments from a sectoral perspective based on recently released EU KLEMS data. Our main findings are as follows: i) Spain has lower productivity levels vis-à-vis other EU countries in most sectors, with only 4 out of 23 sectors exhibiting higher productivity in Spain: accommodation and food services, agriculture, electricity and gas supply, and information and communication services; moreover, the allocation of employment towards low-productivity sectors accounts for half of the aggregate Spain-EU productivity gap in levels; ii) turning to the changes in the 2000-2016 period, the overall lack of convergence is driven by a divergence in productivity relative to EU countries, especially within services sectors; iii) while both ICT (Information and Communication Technology) and non-ICT capital in Spain converged towards European levels, Total Factor Productivity (TFP) divergence in most sectors explains the lack of convergence in labour productivity. Finally, we explore one potential explanation for this pattern: the TFP divergence and ICT capital convergence can be rationalised in the presence of complementarities between ICT-capital and labour force skills. Indeed, our industry-country regression analysis suggests that the dismal performance of Spanish TFP might be related to the significant deficit in the population's skills as proxied by PIAAC-OECD scores.

Available at (open access): <http://dx.doi.org/10.2139/ssrn.3565767>

Title:

Daikeler, J., Gauly, B., & Rosenthal, M. (2020). Linking PIAAC data to individual administrative data: Insights from a German pilot project. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 271-290). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_11

Abstract:

Linking survey data to administrative data offers researchers many opportunities. In particular, it enables them to enrich survey data with additional information without increasing the burden on

respondents. German PIAAC data on individual skills, for example, can be combined with administrative data on individual employment histories. However, as the linkage of survey data with administrative data records requires the consent of respondents, there may be bias in the linked dataset if only a subsample of respondents—for example, high-educated individuals—give their consent. The present chapter provides an overview of the pilot project about linking the German PIAAC data with individual administrative data. In a first step, we illustrate characteristics of the linkable datasets and describe the linkage process and its methodological challenges. In a second step, we provide an illustrative example of the use of the linked data and investigate how the skills assessed in PIAAC are associated with the linkage decision.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_11

Title:

Danner, D., Lechner, C. M., & Rammstedt, B. (2020). A cross-national perspective on the associations of grit with career success. *Compare: A Journal of Comparative and International Education*, 50(2), 185-201. doi: 10.1080/03057925.2019.1617110

Abstract:

This paper presents one of the first cross-nationally comparative studies on the economic and social returns to grit (perseverance and passion for long-term goals). Specifically, we investigated whether grit incrementally predicted objective (income) and subjective (job satisfaction) career success over and above cognitive skills and educational attainment; whether grit's association with career success was moderated by individual characteristics; whether grit's associations with career success varied across countries; and whether this variation could be explained by labour market conditions (unemployment rates). Multi-group structural equation models with data from 6,738 respondents from 19 countries revealed that grit was incrementally associated with income and job satisfaction in some but not all countries. Grit's effect sizes were mostly modest, yet there were some indications for variations by education and labour market conditions. Overall, these findings suggest that the associations between grit and career success are not uniform but vary across individuals and contexts.

Available at: <https://doi.org/10.1080/03057925.2019.1617110>

Title:

Danner, D., Lechner, C. M., Soto, C. J., & John, O. P. (2020). Modelling the incremental value of personality facets: The domains-incremental facets-acquiescence bifactor model. *European Journal of Personality*, 35(1), 67-84. doi: 10.1002/per.2268

Abstract:

Personality can be described at different levels of abstraction. Whereas the Big Five domains are the dominant level of analysis, several researchers have called for more fine-grained approaches, such as facet-level analysis. Personality facets allow more comprehensive descriptions, more accurate predictions of outcomes, and a better understanding of the mechanisms underlying trait-outcome relationships. However, several methodological issues plague existing evidence on the added value of facet-level descriptions: Manifest facet scale scores differ with respect to their reliability, domain-level variance (variance that is due to the domain factor) and incremental facet-level variance (variance that is specific to a facet and not shared with the other facets). Moreover, manifest scale scores overlap substantially, which affects associations with criterion variables. We suggest a structural equation modelling approach that allows domain-level variance to be separated from incremental facet-level variance. We analysed data from a heterogeneous sample of adults in the USA (N = 1193) who completed the 60-item Big Five Inventory-2. The results illustrate how the variance of manifest

personality items and scale scores can be decomposed into domain-level and incremental facet-level variance. The association with criterion variables (educational attainment, income, health, and life satisfaction) further demonstrates the incremental predictive power of personality facets.

Available at (open access): <https://doi.org/10.1002/per.2268>

Title:

Desjardins, R. (2020). Acquiring higher levels of education as an adult learner: implications for active ageing. In M. Slowey, H. G. Schuetze, & T. Zubrzycki (Eds.), *Inequality, Innovation and Reform in Higher Education: Challenges of Migration and Ageing Populations* (pp. 177-190). Cham: Springer International Publishing. doi: 10.1007/978-3-030-28227-1_12

Abstract:

'Active ageing' has emerged as an important response to the ageing of many societies, in part because it is thought to lead to positive outcomes such as increased employment, productivity, health and well-being into older ages. Education for adults in mid and later life can play a key role in fostering active ageing and positive outcomes. This chapter presents results of an analysis of the relationship between gaining a qualification as a mature learner (36 or over) and active ageing in later life, and examines the probability of being employed and continuing to learn in later life. The analysis is based on data made available by the 2012 Survey of Adult Skills (also known as the Programme for the International Assessment of Adult Competencies – PIAAC). Results show that adults who attain higher levels of qualifications in mid and later life are associated with an increased probability of being employed, and of participating in employer supported adult education, when they are older. The most substantial results are associated with higher education qualifications attained in mid to later life. In terms of implications for higher education systems and policy, open and flexible formal education structures at all levels may help facilitate employment of adults and continuing engagement in job-related types of informal and non-formal learning into older ages.

Available at: https://doi.org/10.1007/978-3-030-28227-1_12

Title:

Desjardins, R. (2020). Micro and macro drivers affecting adult literacy proficiency profiles across countries. *International Review of Education*, 66(2), 289-340. doi: 10.1007/s11159-020-09842-1

Abstract:

This article analyses comparative data from the 1994–1998 International Adult Literacy Survey (IALS) and the 2012 Programme for the International Assessment of Adult Competencies (PIAAC). At the micro level, the author considers factors involved in the development of an individual person's literacy from a lifecycle perspective. At the macro level, he investigates trends in literacy proficiency profiles for countries that participated in both the IALS and PIAAC studies. In a number of countries, small average declines in literacy were recorded. This apparent stagnation in overall literacy at the population level in so many member countries of the Organisation for Economic Cooperation and Development (OECD) merits a closer look at the trend data made available from IALS and PIAAC. The aim of this research is to understand the determinants of literacy proficiency in terms of (1) how they may be affecting the development of literacy from an individual lifecycle perspective, and (2) how they may be affecting the development of national profiles of literacy proficiency as countries' sociodemographic compositions, sociocultural practices and economies change over time. There are few other comparative data like these that can help to improve insights on what drives the development and maintenance of literacy in adult populations. The data suggest that macro trends in literacy practices in work-related contexts may be on the decline, an impression the author discusses in relation to the observed stagnation in literacy profiles across many of the countries for which trend

data are available. He considers the implications of his findings in relation to the upskilling and de-skilling of occupations, changes in the distribution of work tasks, and the continued measurement of practices in PIAAC.

Available at: <https://doi.org/10.1007/s11159-020-09842-1>

Title:

Desjardins, R. (2020). *PIAAC thematic review on adult learning*. OECD Education Working Papers No. 223. Paris: OECD. Retrieved November 27, 2020. doi: 10.1787/864d2484-en

Abstract:

This report focuses on the adult learning data that was collected as part of the OECD Survey of Adult Skills between 2012 and 2016, which has been a core activity of the ongoing OECD Programme for the International Assessment of Adult Competencies (PIAAC). The objectives are to: present the data on adult learning made available by PIAAC; provide an international and comparative overview of the extent of adult learning of different types along with trends, where possible, for countries and economies that have so far participated in PIAAC; reveal international and comparative patterns on the distribution of adult learning within participating countries and economies, focusing on who is and who is not participating in terms of the types of jobs they work in as well as their socio-demographic profile; assess empirically the relationship between some types of adult learning and economic as well as social outcomes; discuss systemic features of adult learning systems and their relationship with selected economic and social policy instruments; and to draw out implications of the results in relation to the continued measurement of adult learning.

Available at (open access): <https://doi.org/10.1787/864d2484-en>

Title:

Desjardins, R., & Ioannidou, A. (2020). The political economy of adult learning systems - Some institutional features that promote adult learning participation. *Zeitschrift für Weiterbildungsforschung*, 43(2), 143-168. doi: 10.1007/s40955-020-00159-y

Abstract:

Recent years have witnessed an increasing scholarly interest in the study of education, training, and skill formation from a comparative political economy perspective. The purpose of this article is to contribute to the emerging field of the political economy of adult learning systems, which seeks to understand the causes and consequences of cross-national diversity in adult learning systems. The article introduces this interdisciplinary research strand by reviewing recent work and different typologies that have emerged out of the field of comparative economics and comparative politics, which are relevant to the study of adult learning systems. The empirical evidence on cross-national patterns of organized adult learning drawn on PIAAC data suggests that existing typologies are insufficient to explain the cross-national patterns. The article discusses some specific institutional features that promote adult learning participation and points out conditions and policies that support effective adult learning systems.

Available at (open access): <https://doi.org/10.1007/s40955-020-00159-y>

Title:

Djupsjöbacka, A. (2020). *Human capital : Formation, maintenance and transmission*. Åbo Akademi University, Dissertation. Retrieved November 17, 2020, from <https://www.doria.fi/handle/10024/177030>

Abstract:

Human capital, as measured by your text-based and numerical problemsolving skills, varies between countries as well as between cohorts of individuals from the same country. The forces driving these patterns are poorly understood, however. This thesis deals with topics related to the development and maintenance of human capital in different stages of life. The research questions include: To what extent does schooling contribute to the development in students' problem-solving skills (chapter 3)? Does graduating in a slow economy affect your future cognitive performance (chapter 4)? Does retirement influence the age-trajectory in cognitive functioning among the elderly (chapter 5)? This thesis also addresses a somewhat different but related topic, by analyzing college application behaviors of high school graduates, and how these behaviors differ depending on socioeconomic background (chapter 6). Chapter 2 is the odd one out, where I present the adjusted-POLS estimator. This is a variant on the POLS estimator, suggested by Praag & Ferreri-i-Carbonell, and it is used for estimating ordered response models. In addition, I also suggest an estimator for a marginal effect, when controlling for a latent independent variable. In order to answer these questions, I mainly rely on survey data from the The Programme for the International Assessment of Adult Competencies (PIAAC) which covers tens of thousands of individuals from different OECD countries (including Russia). The identification regularly relies on exploiting different instruments as exogenous stimuli in the variable of interest. Based on the data, I argue for the following main conclusions: 1) Post-primary schooling has meaningful effects on cognitive performance later in life. The performance gap between university students and 'others' is, however, best explained by self-selection. 2) Graduating in a bad economy may have negative impacts on your future cognitive performance. This effect, however, is likely to be economically small. 3) Retiring may slow down the age-related decline in cognitive performance among men. For women, the evidence points towards a positive effect on self-perceived health. 4) When applying to college, students gravitate towards colleges located nearby, and this tendency is somewhat stronger for those from poorly educated neighborhoods. Women from poorly educated neighborhoods apply in a way that is consistent with being comparatively wage risk averse. 5) Adjusted-POLS can be a useful alternative for estimating models with ordered responses in situations where ordered probit or logit are inappropriate or inconvenient.

Available at (open access): <https://www.doria.fi/handle/10024/177030>

Title:

Dohse, D., Bachmann, M., Bickenbach, F., Bode, E., Gold, R., Grimmeiss, R., Hanley, A., Kirchherr, J., Klier, J., et al. (2020). *Analyse der industrierelevanten wirtschaftlichen Rahmenbedingungen in Deutschland im internationalen Vergleich* [Analysis of the industry-relevant economic framework conditions in Germany in an international comparison]. No. 24/19. Kiel: Institut für Weltwirtschaft (IfW). Retrieved December 21, 2020, from https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/industriestudie.pdf?__blob=publicationFile&v=4

Abstract:

Die im November 2019 von Bundeswirtschaftsminister Peter Altmaier vorgestellte „Industriestrategie 2030“ zielt darauf ab, die Wettbewerbsfähigkeit des Verarbeitenden Gewerbes in Deutschland und der EU in Zeiten tiefgreifender Umwälzungen nachhaltig zu stärken. Die zunehmende sektorale und räumliche Fragmentierung von Produktionsprozessen im Zuge der Globalisierung, die zunehmende Virtualisierung von Produkten, Produktionsprozessen und Geschäftsmodellen im Zuge der Digitalisierung und die in vielen Ländern zunehmende Skepsis gegenüber Multilateralismus und internationaler Arbeitsteilung stellen die Standortpolitik zur Sicherung der internationalen Wettbewerbsfähigkeit der deutschen und der europäischen Wirtschaft vor immer neue Herausforderungen. Insbesondere die deutsche Industrie, die traditionell besonders stark in die weltwirtschaftliche Arbeitsteilung eingebunden ist und auch besonders stark von ihr profitiert hat, steht vor

tiefgreifenden Herausforderungen, um im wirtschaftlichen und politischen Spiel der Mächte ihre international führende Rolle nicht zu verlieren. Die deutsche und europäische Wirtschaftspolitik können maßgeblich dazu beitragen, diese tiefgreifenden Herausforderungen erfolgreich zu meistern, indem sie die Rahmenbedingungen, unter denen Unternehmen und Arbeitskräfte in Deutschland wirtschaften, richtig setzen. Hierzu bedarf es einer umfassenden und kritischen Bestandsaufnahme der wichtigsten industrierelevanten Rahmenbedingungen in Deutschland im internationalen Vergleich und eines besseren Verständnisses der Einbindung der deutschen Industrie in internationale Wertschöpfungsketten. Hier setzt die vorliegende Studie an. Sie nimmt eine umfassende Bewertung der industriellen Standortqualität Deutschlands anhand zentraler Standortfaktoren vor, liefert eine Bestandsaufnahme der strukturellen Eigenschaften und Besonderheiten des Verarbeitenden Gewerbes in Deutschland, nimmt eine detaillierte Analyse seiner Einbindung in internationale Wertschöpfungsketten vor und leitet Schlussfolgerungen für eine zukunftsweisende Industriepolitik in Deutschland ab.

Available at (open access): https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/industrie studie.pdf?__blob=publicationFile&tv=4

Title:

Durda, T., Gauly, B., Buddeberg, K., Lechner, C. M., & Artelt, C. (2020). On the comparability of adults with low literacy across LEO, PIAAC, and NEPS. Methodological considerations and empirical evidence. *Large-scale Assessments in Education*, 8, 1-34. doi: 10.1186/s40536-020-00091-0

Abstract:

In Germany, three large-scale surveys—the Level One Study (LEO), the Programme for the International Assessment of Adult Competencies (PIAAC), and the National Educational Panel Study (NEPS)—provide complementary data on adults' literacy skills that can be harnessed to study adults with low literacy. To ensure that research on low-literate adults using these surveys arrives at valid and robust conclusions, it is imperative to ascertain the comparability of the three surveys' low-literacy samples. Towards that end, in the present study, we comprehensively assess the comparability of adults with low literacy across these surveys with regard to their sociodemographic and socioeconomic characteristics.

Available at (open access): <https://doi.org/10.1186/s40536-020-00091-0>

Title:

Ehlert, M. (2020). No future, no training? Explaining cross-national variation in the effect of job tasks on training participation. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 72(1), 483-510. doi: 10.1007/s11577-020-00676-1

Abstract:

Access to further training among adults on the labor market is unequally distributed. In particular, workers in occupations that are likely to be replaced by machines in the future participate less in training. This is mainly because of the job tasks they conduct: workers conducting routine tasks are more likely both to be replaced and to receive less training. As a consequence, technological change may lead to further polarization on the labor market. However, this trend may be cushioned by educational and labor market institutions. In this article, to assess the impact of institutions, the association between job tasks and participation in non-formal job-related training is analyzed in 24 countries from the first and second rounds of the Program for the International Assessment of Adult Competencies (PIAAC). Multilevel regression analysis is applied to test the influence of macro variables on the task gradient in training. The results reveal that tasks are important predictors of training participation in all countries. Comparing the effects across countries, it is found that

tracking in initial education increases inequality in training participation owing to abstract tasks. Vocational orientation, on the other hand, reduces the effect. Furthermore, collective bargaining coverage decreases the effects of tasks on training, whereas strong employment protection legislation increases them. This indicates that the inclusiveness of lifelong learning is already influenced by the initial educational system. Strong unions and dynamic labor markets further enhance access to additional training among vulnerable workers.

Available at (open access): <https://doi.org/10.1007/s11577-020-00676-1>

Title:

Erola, J., & Breuker, V. (2020). *Skills, parental background, and changes in educational institutions*. Turku: Inequalities, Interventions, and New Welfare State (INVEST). Retrieved November 27, 2020, from <https://osf.io/g6a3c/download>

Abstract:

In this study, we test how educational expansion, prolonging education, and educational reforms have contributed to the improvement of skills in developed societies in recent decades. We expect that the growing openness of the educational system is associated with higher gains in cognitive skills, but that there are several multiplicative and compensatory processes related to both family background and the educational institutions involved that can alter these trends, depending on family background. We test the assumptions with the first wave (2013) of the Program for the International Assessment of Adult Competencies (PIAAC) data, linked with birth-cohort-specific, macro-level information on the changes in educational institutions in each country. The results suggest that the growing proportion of those with a tertiary education as well as the prolonging of education are associated with the improvement of skills, partially because these changes are also associated with the increased effectiveness of education in the improvement of skills. However, the growing number of reforms in general tend to harm the skill development especially of those with poorly educated parents, even if the reforms were intended to remove educational dead-ends.

Available at (open access): <https://doi.org/10.31235/osf.io/g6a3c>

Title:

Ertl, B., Csanadi, A., & Tarnai, C. (2020). Getting closer to the digital divide: An analysis of impacts on digital competencies based on the German PIAAC sample. *International Journal of Educational Development*, 78, 1-10. doi: 10.1016/j.ijedudev.2020.102259

Abstract:

This paper takes an intersectional perspective to investigate the effect of socio-demographic variables that may constitute to digital divide. The concept of digital divide emerged from a perspective on unequal access to digital technology and relates nowadays primarily the differences in the competencies necessary to handle this technology. To investigate digital divide, the present paper uses the PIAAC framework of digital competencies which is called problem solving in technology-rich environments (PS-TRE). It introduces the approach of intersectionality that describes persons impaired by multiple inequalities. The paper analyzes the impact of these factors on PS-TRE for three subsamples of the German study: (1) employed people who use computers at work and at home, (2) employed people who use computers only at home, and (3) people that are out of the labor force. It analyzes furthermore contributions to digital divide by a comparison of these impacts with literacy and numeracy scores. While employed people with computer use at work and home only had generation as a factor for constituting digital divide, employed people with computer use only at home had migration background as a further factor. Education and cultural capital showed lower impacts on PS-TRE than on literacy and numeracy.

Available at (open access): <https://doi.org/10.1016/j.ijedudev.2020.102259>

Title:

Falck, O., Heimisch-Roecker, A., & Wiederhold, S. (2020). Returns to ICT skills. *Research Policy*. doi: 10.1016/j.respol.2020.104064

Abstract:

How important is mastering information and communication technology (ICT) on modern labor markets? We answer this question with unique data on ICT skills tested in 19 countries. Our two instrumental-variable models exploit technologically induced variation in broadband Internet availability that gives rise to variation in ICT skills across countries and German municipalities. We find statistically and economically significant returns to ICT skills. For instance, an increase in ICT skills similar to the gap between an average-performing and a top-performing country raises earnings by about 8 percent. One mechanism driving positive returns is selection into occupations with high abstract task content.

Available at: <https://doi.org/10.1016/j.respol.2020.104064>

Title:

Fan, W., & Han, S. (2020). Explaining cross-national variation in the health benefits of tertiary education: What are the roles of the skills gap and the earnings gap?. *European Sociological Review*, 36(6), 957–975. doi: 10.1093/esr/jcaa033

Abstract:

Recent studies have shown that the relationship between educational attainment and health varies across countries. To better understand the cross-national variation in the health benefits of higher education, we theorize and empirically examine two country-level factors—the skills gap and the earnings gap between adults with tertiary and intermediate education. We expect the skills gap and the earnings gap to moderate educational gradients in health through shaping information transparency and thus affecting labour market and marriage market opportunities, even though men and women may be affected in distinct ways. To test our hypotheses, we analyse a sample of 75,642 women and 68,004 men in 25 countries from the Programme for the International Assessment of Adult Competencies data. Multilevel linear regression models show that, for women but not men, the relationship between tertiary education and self-reported health is magnified in countries with a greater skills gap; for men but not women, the relationship between tertiary education and self-reported health is magnified in countries with a greater earnings gap. Combined, these results indicate that the educational system, the labour market, and the partner selection process cross-cut and amplify one another to shape the (re)production of health inequalities in gendered ways.

Available at: <https://doi.org/10.1093/esr/jcaa033>

Title:

Ford, K. S., Choi, J., & Baker, D. P. (2020). What if a college major isn't enough? Cognitive skills and the relationship between US college majors and earnings. *Industry and Higher Education*, 34(6), 410–420. doi: 10.1177/0950422220908187

Abstract:

Policy discussions in the United States on the link between college majors and earnings have underappreciated the role of cognitive skills. This study uses the Programme for the International Assessment of Adult Competencies, a unique data set that contains information on individual cognitive skills, college majors and earnings to investigate the relationships between them. The authors find

that variation in numeracy and literacy skills is significantly associated with earnings for graduates of the same major. Also, there is an interactional effect between majors and cognitive skills to explain earnings. The findings shed light on the importance of considering cognitive skills when assessing the relationship between college majors and labour market outcomes.

Available at: <https://doi.org/10.1177/0950422220908187>

Title:

Fregin, M.-C., Levels, M., & Velden, R. (2020). Labour market institutions and the challenge of allocating the right people to the right jobs: Evidence on the relation between labour market institutions and optimal skill matching from 28 industrial countries. *Compare: A Journal of Comparative and International Education*, 50(2), 257-275. doi: 10.1080/03057925.2019.1695197

Abstract:

This article provides empirical evidence on the relation between institutional characteristics of labour markets that frame allocation processes, and optimal skill matching at the individual level. We investigate the extent to which skill-based job-worker matches are associated with employment protection legislation (EPL), unemployment benefits, and enforcing and enabling activating labour market policies. Drawing on data of the OECD's Programme for the International Assessment of Adult Competencies (PIAAC), and performing cross-country analyses of 28 industrial countries, we find that EPL can explain variance in the share of optimal skill matching across countries, displaying a positive relation. We also find a negative relation between strict enforcing activating labour market policies and optimal skill matching.

Available at (open access): <https://doi.org/10.1080/03057925.2019.1695197>

Title:

Frenette, M., & Frank, K. (2020). *Automation and job transformation in Canada: Who's at risk?*. Analytical Studies Branch Research Paper Series No. 448. Ottawa: Statistics Canada. Retrieved November 27, 2020, from <https://www150.statcan.gc.ca/pub/11f0019m/11f0019m2020011-eng.pdf>

Abstract:

Recent significant advances in artificial intelligence have raised questions about the role of workers in an era when robots and algorithms are increasingly able to perform many job duties, including those previously believed to be non-automatable. The COVID-19 pandemic have added to these concerns, as businesses may turn to new automation technology to perform a broader range of work activities traditionally done by human workers. While previous studies have estimated the share of Canadian workers at high risk of automation-related job transformation, this study is the first to examine in great detail the automation risks faced by different groups of workers. This study applies an approach similar to the one developed by Frey and Osborne (2013) and Arntz, Gregory and Zierahn (2016) to Canadian data. Results suggest that, overall, 10.6% of Canadian workers were at high risk (probability of 70% or higher) of automation-related job transformation in 2016, while 29.1% were at moderate risk (probability of between 50% and 70%). Several groups had a relatively higher share of workers who were at high risk, including those who were older (55 or above), had no postsecondary credentials or postsecondary credentials in certain fields, had low literacy or numeracy proficiency, had low employment income, or were employed part time, in small firms, in certain occupations (e.g., Office support occupations), or in the manufacturing sector. One specific finding of interest is that Business, management and public administration and Health and related fields graduates faced the highest automation-related job transformation risks among postsecondary certificate and diploma holders, but they were among the groups facing the lowest risks when looking at postsecondary degree holders.

Available at (open access): <https://www150.statcan.gc.ca/pub/11f0019m/11f0019m2020011-eng.pdf>

Title:

Frenette, M., & Frank, K. (2020). *Automation and the Sexes: Is Job Transformation More Likely Among Women?*. Analytical Studies Branch Research Paper Series No. 448. Ottawa: Statistics Canada. Retrieved November 27, 2020, from <https://www150.statcan.gc.ca/pub/11f0019m/11f0019m2020015-eng.pdf>

Abstract:

Recent advances in artificial intelligence and machine-learning technologies have fuelled fears of potential job losses among some workers. While the net impact of new technology on total jobs can be negative, positive or neutral, some workers may be more affected than others depending on how easily robots and algorithms can replace them, or how easily their skills complement the new technology. In the case of women and men, it is not clear who is likely to be most affected. While women are more likely to hold a university degree (typically associated with non-routine work that is more difficult to automate), they are also less likely to specialize in technology (which may limit their work opportunities in an increasingly digital world), but more likely to work in certain occupations that may be susceptible to automation (e.g., retail sales or clerical work). The objective of this study is to estimate the automation risks faced by women and men based on an existing methodology applied to Canadian data (the Longitudinal and International Study of Adults, Wave 3). The approach also uses expert consultations in the automatability of occupations, taking into account a wide range of tasks typically associated with those occupations (thus allowing automation risks to vary within occupations). The study finds that 44.4% of women in the paid workforce faced a moderate to high risk of job transformation as a result of automation (50% probability or above), compared with only 34.8% of men. Overall, the gap remains about the same when comparing women and men with similar characteristics, such as age, education, industry and occupation. However, several characteristics are associated with greater automation risks faced by women relative to men, including being aged 55 or older, having no postsecondary qualifications or postsecondary qualifications other than a degree, having low levels of literacy or numeracy proficiency, being born in Canada, having a disability, being a part-time worker, not being in a union or covered by a collective bargaining agreement, and being employed in a small to mid-sized firm.

Available at (open access): <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2020015-eng.htm>

Title:

Garibaldi, P., Gomes, P., & Sopraseuth, T. (2020). *Output costs of education and skill mismatch*. IZA Discussion Papers No. 12974. Bonn: IZA – Institute of Labor Economics. Retrieved November 16, 2020, from <http://ftp.iza.org/dp12974.pdf>

Abstract:

We propose a simple theory of under- and over-employment. Individuals of high type can perform both skilled and unskilled jobs, but only a fraction of low-type workers can perform skilled jobs. People have different non-pecuniary values over these jobs, akin to a Roy model. We calibrate two versions of the model to match moments of 17 OECD economies, considering separately education and skills mismatch. The cost of mismatch is 3% of output on average but varies between -1% to 9% across countries. The key variable that explains the output cost of mismatch is not the percentage of mismatched workers but their wage relative to well-matched workers.

Available at (open access): <http://ftp.iza.org/dp12974.pdf>

Title:

Garibaldi, P., Gomes, P., & Sopraseuth, T. (2020). *Public employment redux*. London: Centre for Economic Policy Research (CEPR). https://cepr.org/active/publications/discussion_papers/dp.php?dpno=14321

Abstract:

The public sector hires disproportionately more educated workers. Using US microdata, we show that the education bias also holds within industries and in two thirds of 3-digit occupations. To rationalize this finding, we propose a model of private and public employment based on two features. First, alongside a perfectly competitive private sector, a cost-minimizing government acts with a wage schedule that does not equate supply and demand. Second, our economy features heterogeneity across individuals and jobs, and a simple sorting mechanism that generates underemployment – educated workers performing unskilled jobs. The equilibrium model is parsimonious and is calibrated to match key moments of the US public and private sectors. We find that the public-sector wage differential and excess underemployment account for 15 percent of the education bias, with the remaining accounted for by technology. In a counterintuitive fashion, we find that more wage compression in the public sector raises inequality in the private sector. A 1 percent increase in unskilled public wages raises skilled private wages by 0.07 percent and lowers unskilled private wages by 0.06 percent.

Available at: <https://ssrn.com/abstract=3526046>

Title:

Gasparini, L., Brambilla, I., César, A., Falcone, G., & Lombardo, C. (2020). *The risk of automation in Argentina*. CEDLAS Working Papers No. 0260. La Plata: CEDLAS, Universidad Nacional de La Plata. Retrieved November 17, 2020, from https://www.cedlas.econo.unlp.edu.ar/wp/wp-content/uploads/doc_cedlas260.pdf

Abstract:

In this paper we characterize workers' vulnerability to automation in the near future in Argentina as a function of the exposure to routinization of the tasks that they perform and the potential automation of their occupation. In order to do that we combine (i) indicators of potential automatability by occupation and (ii) worker's information on occupation and other labor variables. We find that the ongoing process of automation is likely to significantly affect the structure of employment. In particular, unskilled and semi-skilled workers are likely to bear a disproportionate share of the adjustment costs. Automation will probably be a more dangerous threat for equality than for overall employment.

Available at (open access): https://www.cedlas.econo.unlp.edu.ar/wp/wp-content/uploads/doc_cedlas260.pdf

Title:

Gauly, B., Daikeler, J., Gummer, T., & Rammstedt, B. (2020). What's my wage again? Comparing survey and administrative data to validate earning measures. *International Journal of Social Research Methodology*, 23(2), 215-228. doi: 10.1080/13645579.2019.1657691

Abstract:

One question frequently included in surveys asks about respondents' earnings. As this information serves, for example, as a basis for evaluating policy interventions, it must be of high quality. This study aims to advance knowledge about possible measurement errors in earnings data and the potential of data linkage to improve substantive conclusions. We use the German sample of the

Programme for the International Assessment of Adult Competencies (PIAAC), a subsample of which could be linked to administrative data from the German Integrated Employment Biographies (IEB). We define measurement error as the difference between administrative and survey data. Our results show differences in the ordinary least squares estimates when the administrative and survey measures of earnings were used as the respective dependent variable, which suggests that measurement error causes biased results. Learning more about the size and type of measurement error can help to correct existing biases and improve the quality of survey data.

Available at (open access): <https://doi.org/10.1080/13645579.2019.1657691>

Title:

Gauly, B., Lechner, C. M., & Reder, S. (2020). Fördern berufliche Weiterbildungen alltagsmathematische Kompetenzen im Erwachsenenalter? Evidenz aus einer deutschen Längsschnittstudie [Does job-related training benefit adult numeracy skills? Evidence from a German panel study]. In J. Schrader, A. Ioannidou, & H.-P. Blossfeld (Eds.), *Monetäre und nicht monetäre Erträge von Weiterbildung* (pp. 261-289). Wiesbaden: Springer Fachmedien. doi: 10.1007/978-3-658-25513-8_10

Abstract:

Can participation in job-related training foster adults' general skills such as numeracy? Although job-related training is typically designed to foster job- and firm-specific skills, cross-sectional evidence suggests that it may also foster general skills. However, a positive cross-sectional relationship between training and skills could reflect training effects on skills, self-selection into training of those with higher skills, or both. In this chapter, we aim to unravel these possibilities using the unique two-wave data on adults' numeracy skills from the German sample of the PIAAC study and its follow-up PIAAC-L. Whereas cross-sectional models show the expected positive association between training and numeracy, this association largely vanishes when controlling for previous levels of numeracy or relating changes in training participation to changes in numeracy. This pattern of results cast doubt on the idea of causal training effects. In contrast, numeracy predicts selection into job-related training after controlling for formal education and numerous individual and job characteristics

Available at: https://doi.org/10.1007/978-3-658-25513-8_10

Title:

Goldhammer, F., Hahnel, C., & Kroehne, U. (2020). Analysing log file data from PIAAC. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment: Analyzing PIAAC Data* (pp. 239-269). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_10

Abstract:

The OECD Programme for the International Assessment of Adult Competencies (PIAAC) was the first computer-based large-scale assessment to provide anonymised log file data from the cognitive assessment together with extensive online documentation and a data analysis support tool. The goal of the chapter is to familiarise researchers with how to access, understand, and analyse PIAAC log file data for their research purposes. After providing some conceptual background on the multiple uses of log file data and how to infer states of information processing from log file data, previous research using PIAAC log file data is reviewed. Then, the accessibility, structure, and documentation of the PIAAC log file data are described in detail, as well as how to use the PIAAC LogDataAnalyzer to extract predefined process indicators and how to create new process indicators based on the raw log data export.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_10

Title:

Green, F., & Henseke, G. (2020). Graduate employment and underemployment: Trends and prospects in high participation systems of higher education. In C. Callender, W. Locke, & S. Marginson (Eds.), *Changing Higher Education for a Changing World* (pp. 173-187). London: Bloomsbury Academic. doi: 10.5040/9781350108448.0022

Abstract:

Trends and Prospects in High Participation Systems of Higher Education Francis Green Golo Henseke The modern-day graduate labour market is sometimes conceived as a straightforward race (Goldin and Katz 2008) . It is an apt metaphor, in that virtually everywhere there has been a rising supply of graduates in the labour force following the massification of higher education, and at the same time a rising demand for college-educated workers. Moreover, competition is ingrained in both markets and races. Yet this market is not a typical micro-market, which would be expected to have an equilibrating price-mechanism ensuring that the race remains close. Any equilibrating forces for graduate labour act on a timescale of, not months but, decades; and price incentives are only one of the many factors affecting supplies and demands for graduates. It is, therefore, easy for the two sides of the market to drift apart.

Available at: <http://dx.doi.org/10.5040/9781350108448.0022>

Title:

Grollmann, P., Ulbrich, V., & Hugo, F. (2020). D2 Betriebliche Kompetenzentwicklung im internationalen Vergleich [Vocational competence development in international comparison]. In B. Berufsbildung (Eds.), (pp. 433-440). Bonn: Bundesinstitut für Berufsbildung (BIBB), from <https://www.bibb.de/datenreport/de/2020/127725.php>

Abstract:

The Data Report focuses on vocational competence development in international comparison. Analysis focuses on the activities that are intended to support employee learning and the characteristics of the work and work organization itself, which determine both the context and the goal of vocational competence development. [Notes of Editor]

Available at: https://www.bibb.de/dokumente/pdf/bibb_datenreport_2020.pdf

Title:

Grotlüschen, A., & Buddeberg, K. (2020). PIAAC and the south – Is southering the new othering? Global expansion of dominant discourses on adult literacy. *European Journal for Research on the Education and Learning of Adults*, 11(2), 167-181. doi: 10.3384/rela.2000-7426.rela9214

Abstract:

Large-scale studies such as Programme for the international assessment of adult competencies (PIAAC) are currently the most influential variant of literacy research. PIAAC is undergoing a process of regional expansion towards countries located in the geographical south. Based on the finding that large-scale studies can create stereotypes about social groups, this contribution examines the extent to which this danger also exists with regard to countries and regions. For doing so we suggest the term southering. Southering brings together the discourses about the South with the concept of othering, introduced by Said (1978). The presentation of the results as tables and world maps can result in exposing countries of the South to a pronounced deficit perspective. The contribution does not pursue the goal of questioning the legitimacy of international studies. Rather, we would like to point out the necessity of exercising due care in the interpretation of corresponding study results.

Available at (open access): <https://doi.org/10.3384/rela.2000-7426.rela9214>

Title:

Grotlüschen, A., Chachashvili-Bolotin, S., Heilmann, L., & Dutz, G. (2020). Beyond literacy and language provision: Socio-political participation of migrants and large language minorities in five countries from PIAAC R1/R2. *Journal of Adult and Continuing Education*. doi: 10.1177/1477971419898491

Abstract:

Integration is more than work and school: It consists of socio-political participation as well. Even without citizen's rights, migrants have an opinion on whether they 'have a say' in the host or dominant society. This expression – having a say – is emblematic, because it is a well-known survey question, also used in the Program for the International Assessment of Adult Competencies (PIAAC). For this article, the authors choose Austria, Canada, Germany, Israel and the USA to analyse variables on political efficacy and volunteering as indicators for socio-political participation. Using post-colonial and multiple literacy approaches, the authors examine whether migrants and language minorities feel heard. Findings show that first-generation migrants in four countries feel low political efficacy and are excluded from volunteering. However, when taking literacy proficiency into consideration, many effects for political efficacy disappear. For large language minorities, however, controlling for literacy has no effect on their socio-political exclusion.

Available at (open access): <https://doi.org/10.1177/1477971419898491>

Title:

Grotlüschen, A., Nienkemper, B., & Duncker-Euringer, C. (2020). International assessment of low reading proficiency in the adult population: A question of components or lower rungs?. *International Review of Education*, 66(2), 235-265. doi: 10.1007/s11159-020-09829-y

Abstract:

Among the United Nations' 17 Sustainable Development Goals (SDGs) launched in 2015, the fourth goal (SDG 4) is dedicated to education, and one of the ten targets within that goal specifically addresses adult literacy and numeracy skills. Efforts to reach this target involve monitoring, which in turn involves assessment. The most powerful instrument for assessing literacy proficiency is the Programme for the International Assessment of Adult Competencies (PIAAC), conducted by the Organisation for Economic Co-operation and Development (OECD). It has five hierarchically organised proficiency levels for literacy. A sixth category, labelled "below Level 1", lumps together low proficiencies at the bottom end of the proficiency continuum. To boost effective action in addressing SDG 4, the UNESCO Institute for Statistics (UIS) recently launched the Global Alliance to Monitor Learning (GAML), which aims to support national assessment strategies and to develop internationally comparable indicators and methodological measurement tools. While PIAAC Levels 1–5 are already broadly suitable for international comparison, the "below Level 1" category has so far only been assessed by individual countries (e.g. Canada, the United States, the United Kingdom and Germany) using instruments developed nationally. Focusing on the reading aspect of literacy, the authors of this article investigate how these nationally developed low proficiency assessment instruments might be adjusted to facilitate international comparability.

Available at (open access): <https://doi.org/10.1007/s11159-020-09829-y>

Title:

Grotlüschen, A., Stammer, C., & Sork, T. J. (2020). People who teach regularly: What do we know from PIAAC about their professionalization?. *Journal of Adult and Continuing Education*, 26(1), 125-148. doi: 10.1177/1477971419898493

Abstract:

Professionalization in adult education is necessary, and several initiatives are underway to improve the professional situation as well as the competences and skills of adult educators. The relevance and importance of adult education is often stated. Large-scale assessments such as the Programme for the International Assessment of Adult Competences show how important adult education is for societies and economies. They give information on participation and participants. At first glance, the Programme for the International Assessment of Adult Competences lacks detailed information on adult education institutions and professions. A second glance allows explore what people do as part of their work. Those who state that they teach regularly or occasionally will be explored here in more detail. Findings from this study reveal several characteristics of people who teach, including age, gender, academic background and industries. In particular, our analysis suggests that more than 80% of those who teach did not have formal degrees in education sciences. Moreover, those who teach frequently have higher skills, older ages and they have better job positions than those who do not teach. The majority of those who teach are males. Lastly, the results indicate that seniority and prestige in all 14 countries examined in this study are highly relevant to people who teach.

Available at: <https://doi.org/10.1177/1477971419898493>

Title:

Hampf, F., Piopiunik, M., & Wiederhold, S. (2020). *The effects of graduating from high school in a recession: College investments, skill formation, and labor-market outcomes*. CESifo Working Paper No. 8252. Munich: ifo Institute - Leibniz Institute for Economic Research. Retrieved November 13, 2020, from <https://ssrn.com/abstract=3593168>

Abstract:

We investigate the short- and long-term effects of economic conditions at high-school graduation as a source of exogenous variation in the labor-market opportunities of potential college entrants. Exploiting business cycle fluctuations across birth cohorts for 28 developed countries, we find that bad economic conditions at high-school graduation increase college enrollment and graduation. They also affect outcomes in later life, increasing cognitive skills and improving labor-market success. Outcomes are affected only by the economic conditions at high-school graduation, but not by those during earlier or later years. Recessions at high-school graduation narrow the gender gaps in numeracy skills and labor-market success.

Available at (open access): <https://ssrn.com/abstract=3593168>

Title:

Hampf, F. B. (2020). *Education, skills & labor-market success: Microeconometric analyses using large-scale skills assessments*. Ludwig-Maximilians-Universität München, Dissertation. Retrieved November 13, 2020, from https://www.ifo.de/DocDL/BeitrWiFo_89_Hampf.pdf

Abstract:

The aim of the thesis is to gain a better understanding of the relationship between education, skills and labor-market outcomes. Based on high-quality skill data from the PIAAC Survey of Adult Skills, Chapter 2 studies the effect of schooling on cognitive skills, exploiting the staggered introduction of a compulsory ninth grade in schools across German federal states. Results suggest that the additional year of schooling increased numeracy skills of basic-track students by 0.2 SD. Chapter 3 investigates the effect of economic conditions at high-school graduation on college investments, skill formation, and labor-market success. For identification, the analysis exploits business-cycle fluctuations at high-school graduation over a 20-year period across 28 developed countries as source of exogenous variation in labor-market opportunities. Findings suggest that recessions increase

college enrolment and graduation, skills, monthly wages, and participation in training activities. Chapter 4 analyzes the role of cognitive skills in explaining differences in university wage premia across countries. Using international data from PIAAC, the study provides evidence that university wage premia vary substantially across countries. Conditioning on skills reduces these differences by about one quarter. While part of the wage premium in each country captures differential selectivity into university, its extent cannot account for the cross-country differences. Results from explorative analyses suggest that part of the contribution of skills to university wage premia reflects a positive skill effect of university education. Chapter 5 analyzes data from the PIAAC Survey of Adult Skills to compare employment probabilities over the working-life cycle for individuals with vocational and general education. An initial employment advantage of vocational education relative to general education turns into a disadvantage later in life.

Available at (open access): https://www.ifo.de/DocDL/BeitrWiFo_89_Hampf.pdf

Title:

Haraldsvik, M., & Strøm, B. (2020). *Adult skills and labor market conditions during teenage years: Cross-country evidence from ALL and PIAAC*. Working Paper Series No. 3. Trondheim: Department of Economics, Norwegian University of Science and Technology. Retrieved November 17, 2020, from http://www.svt.ntnu.no/iso/WP/2020/3_20.pdf

Abstract:

Do individuals finishing compulsory school in economic downturns end up with higher skills in adulthood than comparable individuals that finish compulsory school in economic upturns? This paper answers this question by exploring data on country unemployment rates combined with individual data on educational attainment and adult skills in numeracy and literacy from the Program for the International Assessment of Adult Competencies (PIAAC) and the Adult Literacy and Life Skills Survey (ALL). We find that completed education is countercyclical, and the same pattern is found for adult skills in numeracy and literacy. The results are fairly robust across different model specifications including fixed country and cohort effects and country specific cohort trends. The results indicates that the labor market conditions at the time when young people make crucial educational decisions have long lasting effect on skills and potential earnings in adulthood.

Available at (open access): http://www.svt.ntnu.no/iso/WP/2020/3_20.pdf

Title:

Hatayama, M., Viollaz, M., & Winkler, H. (2020). *Jobs' amenability to working from home: Evidence from skills surveys for 53 countries*. Policy Research Working Papers Washington, DC: The World Bank. doi: 10.1596/1813-9450-9241

Abstract:

The spread of COVID-19 and implementation of “social distancing” policies around the world have raised the question of how many jobs can be done at home. This paper uses skills surveys from 53 countries at varying levels of economic development to estimate jobs' amenability to working from home. The paper considers jobs' characteristics and uses internet access at home as an important determinant of working from home. The findings indicate that the amenability of jobs to working from home increases with the level of economic development of the country. This is driven by jobs in poor countries being more intensive in physical/manual tasks, using less information and communications technology, and having poorer internet connectivity at home. Women, college graduates, and salaried and formal workers have jobs that are more amenable to working from home than the average worker. The opposite holds for workers in hotels and restaurants, construction, agriculture, and commerce. The paper finds that the crisis may exacerbate inequities between and within

countries. It also finds that occupations explain less than half of the variability in the working-from-home indexes within countries, which highlights the importance of using individual-level data to assess jobs' amenability to working from home.

Available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/33753/Jobs-Amenability-to-Working-from-Home-Evidence-from-Skills-Surveys-for-53-Countries.pdf?sequence=1&isAllowed=y>

Title:

Heilmann, L., Gal, I., & Grotlüschen, A. (2020). Do higher skill levels lead to better outcomes? The disproportionality between skills and outcomes for women. *GENDER – Zeitschrift für Geschlecht, Kultur und Gesellschaft*, (3), 107-123. doi: 10.3224/gender.v12i3.07

Abstract:

This paper looks at men's and women's positions in the labour market and relates them to their basic skills. In a meritocratic society higher skills are supposed to relate to higher outcomes. We question whether this relation is equally true for men and women. Using data for 13 countries from the OECD Survey of Adult Skills (PIAAC), an international large-scale assessment, this paper examines monthly wages and a person's probability to be in a managerial position. Our analyses show that, on average, men with higher skills get higher wages and have a higher probability to be in a managerial position than women with equally high skills. We show that the relation between skills and outcomes is more proportional for men than for women and that the gender pay gap does apply to women and men with similar skills. In addition, the results highlight a gap in managerial positions between men and women with the same basic skills.

Available at: <https://doi.org/10.3224/gender.v12i3.07>

Title:

Heisig, J. P., Elbers, B., & Solga, H. (2020). Cross-national differences in social background effects on educational attainment and achievement: Absolute vs. relative inequalities and the role of education systems. *Compare: A Journal of Comparative and International Education*, 50(2), 165-184. doi: 10.1080/03057925.2019.1677455

Abstract:

We use PIAAC data to study the relationship between parental education and educational success among adults from 23 advanced economies. We consider educational success in terms of both educational attainment (formal qualifications) and educational achievement (competencies) and in both absolute and relative terms (i.e. as the individual's rank in the distribution of educational success). Parental education effects are stronger for educational attainment than for achievement in all countries. Cross-national variation in the strength of social background effects follows broadly similar patterns for the different ways of measuring success, but a few countries combine relatively strong achievement with relatively weak attainment effects and vice versa. Tracking in secondary education is associated with stronger background effects for educational attainment but not for achievement. Greater prevalence of formal (non-formal) AET is associated with stronger (weaker) background effects for both attainment and achievement, while vocational orientation of upper secondary education does not matter much.

Available at: <https://doi.org/10.1080/03057925.2019.1677455>

Title:

Heisig, J. P., & Schaeffer, M. (2020). The educational system and the ethnic skills gap among the working-age population: An analysis of 16 western immigration countries. *Socius*, 6. doi: 10.1177/2378023120925717

Abstract:

Research shows that children of immigrants, the “second generation,” have comparatively high educational aspirations. This “immigrant optimism” translates into ambitious educational choices, given the second generation’s level of academic performance. Choice-driven (comprehensive) education systems, which allow the children of immigrants to follow their ambitions, are therefore regarded as facilitating their structural integration. The authors focus on an underappreciated consequence of these findings. If the second generation strives for higher qualifications than children of native-born parents with similar performance, working-age children of immigrants should have lower skills than children of native-born parents with comparable formal education. This could result in (statistical) employer discrimination and ultimately hamper integration. This pattern should be particularly pronounced in choice-driven education systems and in systems that emphasize vocational education. Two-step regression models using data on 16 countries support these expectations. The authors explore implications of these findings for comparative research on ethnic gaps in labor market attainment.

Available at (open access): <https://doi.org/10.1177/2378023120925717>

Title:

Henseke, G., & Green, F. (2020). *Singapore's graduate labour market, 2013/2017: A task-based analysis*. Centre for Learning and Life Chances in Knowledge Economies and Societies No. 68. Singapore. Retrieved November 27, 2020, from <https://www.llakes.ac.uk/sites/default/files/68>

Abstract:

The importance of higher education among the resident Singapore workforce has been increasing. Yet there are few studies that have considered the coevolution of higher education attainment in the workforce and the utilisation of graduate skills. To do so, we have drawn on the conceptual distinction between graduate jobs and non-graduate jobs. However, we have also explicitly recognised that there is considerable variation among graduate jobs. We distinguish further between 'task-warranted' and 'task-unwarranted' graduate jobs. In both types a degree is required to obtain these jobs, but in the former, task-warranted graduate jobs the job involves carrying out typical graduate-level tasks; while the latter require only low levels of graduate-level tasks. In task-unwarranted graduate jobs, employers still require a degree because it helps sort applicants for their hard-to-observe skills - the logic that lies behind signalling and credentialism. To operationalise the distinction, and to analyse the Singapore graduate labour market, we use data on task use in two surveys, one in 2013 the other in 2017.

Available at (open access): <http://hdl.voced.edu.au/10707/555568>

Title:

Hou, D., Acevedo, K., Laat, J., & Larrison, J. (2020). *Building the right skills for human capital : Education, skills, and productivity in the Kyrgyz Republic*. Washington, DC: World Bank. <http://hdl.handle.net/10986/34495>

Abstract:

Building the Right Skills for Human Capital summarizes the findings from the 2019 skills survey for the adult Kyrgyz population. The skills measures used in the survey focus on literacy, numeracy, and

problem solving in technology rich environments (PSTRE) and followed the same questions and approach as the OECD's PIAAC surveys. Most jobs in the Kyrgyz Republic require regular use of reading, writing, numeracy, and ICT skills, and higher skilled groups of people earn higher wages, suggesting that the labor market rewards higher skills. However, skills levels among the workforce are consistently low in absolute terms, among varying sociodemographic groups, and relative to countries that implemented PIAAC surveys. Results are not improving across cohorts, except for PSTRE. There is evidence that a substantial share of people is overschooled, but underskilled. The lack of quality of education is an important driver for low skills performance. The report finds that higher levels of education are associated with higher skills levels, but even among the most educated, a large share has low skills scores, which helps explain why we find that a large share can be overeducated but underskilled for the jobs they occupy. Skill levels of secondary school teachers were also assessed. Teachers outperform the general population in both literacy and numeracy but underperform compared to professionals. Overall, one-third of teachers still have low proficiency in literacy and numeracy. With regards to ICT skills, the results suggest that nearly all secondary school teachers are currently not well equipped to impart ICT skills on their students. The book concludes with a series of policy recommendations at different levels of education, from early childhood education through life-long learning, including providing upskilling opportunities for those teachers with specific skill deficiencies.

Available at (open access): <http://hdl.handle.net/10986/34495>

Title:

Huber, E., Stephens, J. D., & Alper, K. (2020). The varied sources of increasing wage dispersion. In R. Careja, P. Emmenegger, & N. Giger (Eds.), *The European Social Model under Pressure: Liber Amicorum in Honour of Klaus Armingeon* (pp. 231-252). Wiesbaden: Springer Fachmedien. doi: 10.1007/978-3-658-27043-8_14

Abstract:

Pre-tax and transfer, or market income distribution has grown more unequal over the past four decades and thus has put increasing demands for redistribution on the welfare state. We focus on one aspect of inequality, wage dispersion, investigating the factors that shape the ratio of wages at the 90th percentile to wages at the 10th percentile, and the ratio of wages at the median to wages at the 10th percentile. We analyze data for 21 advanced democracies for varying numbers of years between the 1960s and 2013, depending on data availability for both the dependent and the independent variables. We integrate a focus on structural changes in the economy with a focus on labor market institutions, partisan politics, and education policies. We argue that the same factors shape wage dispersion between both the top and the bottom and the middle and bottom, but some of those factors have a stronger effect on the distance between the bottom and the median income earner. Specifically, higher levels of capital market openness, Third World imports, and immigration are all associated with higher wage dispersion in the 90:10 and the 50:10 ratio, but these effects are much stronger for the 50:10 ratio. Among the countervailing factors, union density, wage coordination, employment legislation that regulates temporary work, and investment in human capital restrain the overall distance and the distance between the bottom and the middle of the income distribution. The effect of regulation of temporary employment, however, is stronger at the bottom.

Available at: https://doi.org/10.1007/978-3-658-27043-8_14

Title:

Iñiguez-Berrozpe, T., Elboj-Saso, C., Flecha, A., & Marcaletti, F. (2020). Benefits of adult education participation for low-educated women. *Adult Education Quarterly*, 70(1), 64-88. doi: 10.1177/0741713619870793

Abstract:

Given the double risk of exclusion caused for women with a low educational level, adult education can be a fundamental element that allows them to actively participate in their social, political, and cultural environments. Moreover, because educational level has been reported by the scientific literature to be a factor that directly favors personal benefits, such as having better health or greater employability, adult education may be an opportunity to obtain the aforementioned benefits for women with a low educational level. In this study, using the data from the Programme for the International Assessment of Adult Competencies survey, a model was developed to perform a structural equation analysis on a sample of 5,838 European women with an educational level of ISCED 0-2 and to investigate the benefits of participating in nonformal education activities. The results show that this participation provides these women with greater social and political confidence, more intense cultural participation and even better health and employability.

Available at: <https://doi.org/10.1177/0741713619870793>

Title:

Iñiguez-Berrozpe, T., Marcaletti, F., Elboj-Saso, C., & Garavaglia, E. (2020). Conceptualising, analysing and training in adults in the knowledge society. *Sociologia del lavoro*,(156), 143-169. doi: 10.3280%2FSL2020-156007

Abstract:

In this article, the authors argue that, within the framework of the current information society and the development of Industry 4.0, a revolution hinges on a stock of skills on which adults in general – and adult workers in particular – need to be trained in order to be prepared for the change and improve their employability. Within these skills, we find computational and critical thinking (CCT) as two key skills for workers which are not being developed in adult education. In this contribution, we propose a conceptualisation of both kinds of thinking, associating them with the Problem Solving in Technology Rich Environments variable of the OECD PIAAC survey. This allows us to propose a CCT training methodology for adults based on Vanek's (2017) work and to measure and analyse this relevant skill, making it easier to promote CCT teaching-learning in adult education courses.

Available at: <http://dx.doi.org/10.3280%2FSL2020-156007>

Title:

Jang, E. (2020). *Contextual understanding of literacy skills of language-minoritized bilinguals: A cross-country comparative study*. State University of New York at Buffalo, Dissertation. <https://search.proquest.com/openview/828000f9298d863922e727a117491598>

Abstract:

Research consistently finds that language-minoritized bilinguals fare worse in terms of literacy than dominant language speakers (OECD, 2015). Due to the marginalized and minoritized status of language-minoritized bilinguals in a society, their use of heritage language has been unfairly accused of being the single cause of their underperformance. While the literacy of minoritized groups cannot be fully understood by separating it from broad social contexts where power imbalance is constructed, less is understood about the contextual characteristics pertaining to these literacy gaps (Baker & Wright, 2017; Cummins, 2008; Samson & Lesaux, 2015). In light of these concerns, the current research study examines literacy disparities between young adult language-minoritized bilinguals (aged 16–24) and dominant language speakers in a cross-national context. Of central interest is the exploration of how the contextual features of host countries—immigrant integration policies and inclusive education systems in the forms of curricular differentiation and school segregation—account for the relative performance of language-minoritized bilinguals. Toward this end, two-level

hierarchical linear modeling was employed (Raudenbush & Bryk, 2002). Data were drawn from 17 OECD countries that participated in the OECD Programme for the International Assessment of Adult Competencies (PIAAC). The results indicate that the observed literacy gaps, disfavoring language-minoritized bilinguals, were the result of the interplay between the individual, family, and institutional characteristics. Language-minoritized bilinguals were more likely to perform better in countries with less externally differentiated education systems and in countries in which the education system has an internal differentiation. The findings underscore the centrality of the educational integration of language-minoritized bilinguals and inclusive education systems that ensures equitable access to a rigorous academic curriculum and equitable educational opportunities for all students.

Available at: <https://search.proquest.com/openview/828000f9298d863922e727a117491598>

Title:

Kalenda, J., & Kočvarová, I. (2020). Participation in non-formal education in risk society. *International Journal of Lifelong Education*, 1-14. doi: 10.1080/02601370.2020.1808102

Abstract:

The participation of adults in lifelong learning in the CZ has undergone significant development in the last few years, with the percentage of adults participating in non-formal education (NFE) has risen dramatically. Within this empirical context, this study conceptualises and interconnects the theory of Ulrich Beck's risk society with the main trends in contemporary NFE. Based on a secondary analysis of data from the Czech Adult Education Surveys of 2011 and 2016, we test two complementary theses derived from Beck's theory. Firstly, we explore the relevance of Beck's industrial automation thesis: Does automation play an important role in the prevalence of job-oriented NFE? Secondly, we focus on Beck's individualisation thesis: Do adults in the CZ tend to individualise more in their participation in NFE during the last decade? We found that Czech adult education system exhibits a significant level of individualisation that is not based on the classical class categories, but instead on integration into the job market as well as to a lesser extent on the ownership of cultural capital. Subsequently, individualisation is driven by market forces and dictated by company policy. According to the available data, industrial automation has only an indirect effect on participation in job-oriented NFE.

Available at: <https://doi.org/10.1080/02601370.2020.1808102>

Title:

Kalenius, A. (2020). *Are we there yet?: Equality of learning opportunity in theory and practice*. University of Helsinki, Faculty of Educational Sciences, Dissertation. Retrieved November 17, 2020, from <http://urn.fi/URN:ISBN:978-951-51-6156-7>

Abstract:

One of the fundamental questions of all societies is the possible trade-off between quality of outcomes and equality of opportunity. The question of a possible trade-off between equality of opportunity and level of outcomes has a long history in the sociology of education, and it has been seen as a fundamental question of the field. Economics literature recognises that equality of opportunity is not, unlike equality of outcomes, in a trade-off with quality of outcomes. Rather, inequalities of opportunity generate inefficiency and are thus in a trade-off with the level of outcomes. Here, building on this difference, we make a distinction between outcome trade-off and opportunity trade-off. The empirical sections of the work approach the question of equality of learning opportunity and the level of learning outcomes using IALS and PIAAC, two studies of adult skills. The ability-opportunity curve is approached, observing the association between equality of opportunity and the level

of learning outcomes for different parental education types.

Available at (open access): <http://urn.fi/URN:ISBN:978-951-51-6156-7>

Title:

Kato, S., Galán-Muros, V., & Weko, T. (2020). *The emergence of alternative credentials*. OECD Education Working Papers No. 216. Paris: OECD. Retrieved November 16, 2020, from <https://doi.org/10.1787/b741f39e-en>

Abstract:

The landscape of post-secondary education is changing with the emergence of new credentials that are engaging millions of learners. So-called “alternative credentials” – such as micro-credentials, digital badges and industry-recognised certificates – have expanded their scale considerably, as a consequence of a rising demand for upskilling and reskilling, as well as a sharp reduction in the unit cost of provision made possible by digitalisation. Higher education institutions, businesses and other institutions are actively offering alternative credentials that help learners acquire new skills, update their existing skills and signal the competencies they already have. Despite an increasing volume of these new credentials, great uncertainty persists. This working paper aims to assist policy makers across the OECD by defining terminologies, identifying the characteristics of these credentials, looking at providers and learners of these credentials, and examining how employers and governments perceive these credentials.

Available at (open access): <https://doi.org/10.1787/b741f39e-en>

Title:

Katz, R. L., Callorda, F. M., & Jung, J. (2020). *The impact of automation on employment and its social implications: Evidence from Chile*. SSRN. doi: 10.2139/ssrn.3590365

Abstract:

Building on the literature of labor implications from technological disruptions, this paper provides a comprehensive review of recent research carried out regarding the expected effects of automation on employment levels and performs diverse empirical approaches to estimate the effects for an emerging country. To illustrate the impact, the paper presents various empirical approaches to estimate jobs gains and losses using Chile as a case study. Results from the empirical estimates suggest that jobs lost to automation technology currently match the jobs being created, thereby resulting in a negligible overall impact on the labor force. However, the occupations being created require a higher number of highly educated workers. The findings therefore indicate potential social exclusion effects, as the most vulnerable groups facing high risk of losing their jobs are low-skilled, low-income workers. To counteract these effects, active public policies need to be formulated and implemented in order to achieve the potential job gains while mitigating the potential negative effects on vulnerable and disadvantaged groups.

Available at: <https://dx.doi.org/10.2139/ssrn.3590365>

Title:

Keslair, F. (2020). Analysing PIAAC data with Stata. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 149-164). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_7

Abstract:

This chapter explains the basics of analysing data from the Programme for the International Assessment of Adult Competencies (PIAAC) with Stata. It describes how to import the PIAAC datasets into

Stata, gives an overview of the different categories of variables available in these datasets, and mentions a number of features of some types of variables about which users should be aware. The different types of missing values are explained. Routines frequently used with PIAAC datasets are presented using examples. Furthermore, the chapter is devoted to the use of plausible values variables and to the computation of imputation errors and sampling errors. In particular, it presents *repest*, a Stata ado file written to facilitate the analysis of international skills assessments, such as PIAAC.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_7

Title:

Keslair, F., & Paccagnella, M. (2020). *Assessing adults' skills on a global scale: A joint analysis of results from PIAAC and STEP*. OECD Education Working Papers No. 230. Paris: OECD. Retrieved November 27, 2020. doi: 10.1787/ae2f95d5-en

Abstract:

This paper illustrates similarities and differences between two international surveys that assess adults' skills: the Programme for the International Assessment of Adult Competencies (PIAAC) and the Skills Towards Employment and Productivity (STEP) survey. In particular, the paper highlights the issues that can arise for researchers interested to jointly analyse the data from the two surveys and to compare their results. The paper finds that, in spite of the many similarities, important differences exist between PIAAC and STEP, both in the way the data are collected, and in the way the proficiency of respondents is estimated. These issues can indeed affect the cross-country comparability of results from the two surveys. There is instead little evidence that the literacy assessment used in the two surveys is not adequate to form a basis for a valid assessment of adults' proficiency on a global scale.

Available at (open access): <https://doi.org/10.1787/ae2f95d5-en>

Title:

Kevelson, M. J. C., Marconi, G., Millett, C. M., & Zhelyazkova, N. (2020). *College educated yet disconnected: Exploring disconnection from education and employment in OECD countries, with a comparative focus on the U.S.* ETS Research Report Series No. RR-20-21. Princeton: ETS Policy Evaluation & Research Center. Retrieved November 27, 2020. doi: 10.1002/ets2.12305

Abstract:

In this study, we investigated factors predictive of disconnection, or not being in education, employment, or training (NEET), among young adults with at least a 2-year college degree. We also explored the extent to which disconnection influences civic participation and well-being among NEETs with and without college degrees. The authors used 2012 and 2015 Organisation for Economic Co-operation and Development (OECD) data from the Survey of Adult Skills in the Program for the International Assessment of Adult Competencies (PIAAC) for 29 countries, including the United States, along with US 2012 data from the Education Longitudinal Study of 2002 (ELS:2002), collected by the National Center for Education Statistics (NCES). Results highlight that college-educated individuals whose parents have low levels of educational attainment actually have a higher likelihood of becoming NEET relative to college-educated individuals whose parents are more highly educated. Study findings also emphasize the influence of economic and geographic differences (country-level for OECD and county-level for United States) on NEET rates, in addition to the extent to which mothers have a higher likelihood and fathers have a lower likelihood of being NEET relative to their childless peers and the influence of country-level family leave policies on the odds of being NEET across the OECD. College field of study also emerges as an important influence on disconnection across the 29 OECD countries in the study, but not in the United States separately. Finally, comparing results

for college-educated NEETs and NEETs without degrees, we found that higher education appears to reduce the likelihood of community disengagement and reports of poor health among NEETs across the OECD countries. However, this is not the case within the United States where NEETs are less likely to be engaged in their communities and more likely to describe themselves as in poor health regardless of their educational attainment.

Available at (open access): <https://doi.org/10.1002/ets2.12305>

Title:

Khorramdel, L., Davier, M., Gonzalez, E., & Yamamoto, K. (2020). Plausible values: Principles of item response theory and multiple imputations. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 27-47). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_3

Abstract:

This chapter introduces the principles of item response theory (IRT) and the latent regression model, also called population or conditioning model, which is central for generating plausible values (multiple imputations) in PIAAC. Moreover, it is illustrated how plausible values can reduce bias in secondary analyses compared to the use of customary point estimates of latent variables by taking explanatory variables into account. An overview of standard techniques for utilizing plausible values (PVs) in the analyses of large-scale assessment data will be provided, and it will be discussed how to calculate the different variance components for statistics based on PVs, which play an important role in the interpretation of subgroup and country differences.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_3

Title:

Khorramdel, L., Pokropek, A., & Rijn, P. (2020). Special Topic: Establishing comparability and measurement invariance in large-scale assessments, part I. *Psychological Test and Assessment Modeling*, 62(1/2), 3-10. Retrieved November 27, 2020, https://www.psychologie-aktuell.com/fileadmin/Redaktion/Journale/ptam-2020-1/01_Khorramdel.pdf

Abstract:

This special issue volume presents research and applications which deal with the comparability of data and test scores in the important field of large-scale assessments (LSAs). National and International LSAs like NAEP (National Assessment of Educational Progress) administered by NCE (National Center for Education Statistics), or PISA (Programme for International Student Assessment) and PIAAC (Programme for the International Assessment of Adult Competencies) administered by the OECD (Organisation for Economic Cooperation and Development) provide important data for educational and social research and are used by policymakers around the globe. While these assessments and surveys are usually low stakes for test takers, they are high stakes for countries and economies. Their results are used for numerous group-level comparisons on the national (e.g., different school types or subpopulations within a country) and international (e.g., different countries) level and for comparisons over time when measuring and reporting trends. In LSAs, group-wise comparisons are made using cognitive variables (such as math, reading or science proficiencies) as well as non-cognitive variables (such as attitudinal variables or socioeconomic variables). Moreover, relations between variables are compared across different groups to better understand the mechanism behind social and educational systems; for example, the relation between socioeconomic status and proficiency scores might be interpreted as an indicator of inequalities.

Available at (open access): https://www.psychologie-aktuell.com/fileadmin/Redaktion/Journale/ptam-2020-1/01_Khorramdel.pdf

Title:

Kim, S. (2020). A quasi-experimental analysis of the adult learning effect on problem-solving skills. *Adult Education Quarterly*, 70(1), 6-25. doi: 10.1177/0741713619861073

Abstract:

This study builds an empirical research model that explores societal and individual antecedents of adult learning and examines the adult learning effect on problem-solving skills in the Organization for Economic Cooperation and Development (OECD) countries. Considering national differences, it uses multilevel data sources available from the Programme for the International Assessment of Adult Competencies (PIAAC) 2008-2013 and the OECD data lab. The results from this study suggest that young adults (25- to 34-year-olds) with more favorable backgrounds benefit from their social origin and occupational environment in terms of nonformal learning participation. It was also found that the participants outperform nonparticipants in the PIAAC problem-solving skill assessment. The key findings of this study advocate for the importance of policy interventions to combat the cumulative effects of multiple disadvantages in the educational trajectory from initial education to adult learning as well as to reduce the problem-solving skill gaps of young disadvantaged adults.

Available at: <https://doi.org/10.1177/0741713619861073>

Title:

Kim-Schmid, J. (2020). *The influence of skills and majors on future earnings for German university graduates*. Pennsylvania State University, Masterarbeit. Retrieved November 27, 2020, from https://etda.libraries.psu.edu/files/final_submissions/21015

Abstract:

Even though it is well substantiated that higher education can improve students' earning potential, there is also a well-documented differential in earnings among US college graduates from different majors (Berger, 1988; Carnevale, Cheah & Hanson, 2015). In a study using 2012 Programme for the International Assessment of Adult Competencies (PIAAC) data, Ford and Choi (2018) found that students' levels of general cognitive skills (i.e., literacy and numeracy) significantly influenced within major heterogeneity in earnings among U.S. college graduates, which adds nuance to the narrative about the relationship between majors and earnings. I build on and extend the Ford and Choi (2018) study by examining whether skills might also mediate the relationship between major and earnings in Germany, a country that uses relatively rigid ability-based tracking in childhood to place students into academic or vocational paths. While general cognitive skills have less of an impact on within-major heterogeneity in earnings in Germany than in the US, the reduced impact is not significant enough to indicate that a different selection mechanism might be at play in the German labor market. It is important to note that this study is descriptive in nature as well, and more research is required to examine whether there is any causal relationship between levels of general cognitive skills and labor market outcomes for university graduates.

Available at (open access): https://etda.libraries.psu.edu/files/final_submissions/21015

Title:

Kirsch, I., Yamamoto, K., & Khorramdel, L. (2020). Design and key features of the PIAAC survey of adults. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 7-26). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_2

Abstract:

This chapter gives an overview of the most important features of the Programme for the International Assessment of Adult Competencies (PIAAC) survey as it pertains to two main goals. First, only

a well-designed survey will lead to accurate and comparable test scores across different countries and languages both within and across assessment cycles. Second, only an understanding of its complex survey design will lead to proper use of the PIAAC data in secondary analyses and meaningful interpretation of results by psychometricians, data analysts, scientists, and policymakers. The chapter begins with a brief introduction to the PIAAC survey followed by an overview of the background questionnaire and the cognitive measures. The cognitive measures are then compared to what was assessed in previous international adult surveys. Key features of the assessment design are discussed followed by a section describing what could be done to improve future PIAAC cycles.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_2

Title:

Köthemann, D. (2020). How educational systems shape the relationship between social origin and educational deprivation: Cross-national analyses in the first years after finishing secondary school. *Comparative Sociology*, 19(2), 279-303. doi: 10.1163/15691330-BJA10013

Abstract:

This paper addresses how features of educational systems influence the association between social background and educational disadvantage up to the end of secondary school. Boudon's ideas about the primary effects are brought together with preschool participation and the secondary effects are argued to be strongly related to the stratification of the educational system. The analyses are based on around 35,000 respondents from 29 countries provided by PIAAC. Two-step estimations combining logistic regression models within educational systems (first step) with estimated dependent variable models between educational systems (second step) are applied. The results suggest that a higher preschool participation rate is associated with a lower dependency of educational deprivation (low achievement) on social background in the early years after finishing secondary school.

Available at: <https://doi.org/10.1163/15691330-BJA10013>

Title:

Krejčík, L., & Grotlüschen, A. (2020). Von der Umkehr des Matthäus-Effekts – Stundenintensive Weiterbildung bei geringen numeralen Kompetenzen. *Zeitschrift für Weiterbildungsforschung*, 43(2), 291-312. doi: 10.1007/s40955-020-00154-3

Abstract:

The Matthew Principle was demonstrated for participation in further education, but not for the volume of further education in the context of numeracy. Due to its interdependence with social contexts, numeracy is a relevant predictor of further training behaviour irrespective of educational attainment. By using an international comparison based on PIAAC data, the article points to a reversal of the Matthew effect for further education volumes. In the OECD average and in the majority of the Nordic countries, adults with low numeral competence who are active in further education perceive more hours of further education than those with high numeral competence. The results point to the relevance of welfare state contexts for the (re)distribution of further education time.

Available at (open access): <https://doi.org/10.1007/s40955-020-00154-3>

Title:

Krenzke, T., Mohadjer, L., Li, J., Erciulescu, A., Fay, R., Ren, W., Van de Kerckhove, W., Li, L., and Rao, J.N.K. (2020). Program for the International Assessment of Adult Competencies(PIAAC): State and County Indirect Estimation Methodology Report (NCES 2020-225). U.S. Department of Education,

National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Retrieved November 17, 2020, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020225>

Abstract:

The Program for the International Assessment of Adult Competencies (PIAAC) is a multicycle survey of adult skills and competencies sponsored by the Organization for Economic Cooperation and Development (OECD). The survey examines a range of basic skills in the information age and assesses these adult skills consistently across participating countries. PIAAC is the sixth of a series of adult skills surveys, sponsored by the National Center for Education Statistics (NCES), that have been implemented in the United States. This report describes the statistical methodology used to produce estimates of average scores and high, middle, and low proficiency levels of adult skills for every state and county in the United States.

Available at (open access): <https://files.eric.ed.gov/fulltext/ED604121.pdf>

Title:

Kwon, K., Park, J., & Byun, S. (2020). Gender, nonformal learning, and earnings in South Korea. *Compare: A Journal of Comparative and International Education*, 50(2), 202-215. doi: 10.1080/03057925.2019.1596017

Abstract:

Using data from the Programme for the International Assessment of Adult Competencies, this study examined gender differences in participation in various forms of nonformal learning – on-the-job training, distance learning, workshops and private lessons – and their relationships with earnings in South Korea. The authors found significant gender differences in participation in on-the-job training, distance learning, and workshops favouring male workers, but the reverse gender gap in participation in private lessons favouring female workers. When it came to earnings, the authors found the positive relationships between participation in distance learning and earnings and between workshops and earnings for both males and females, even after controlling for other variables. However, the positive relationship between participation in on-the-job training and earnings was observed only for females. The authors highlight some unique aspects of Korea's organisational culture that may help explain the relationships among gender, on-the-job training and earnings. Broader implications of the findings beyond South Korea are also discussed.

Available at: <https://doi.org/10.1080/03057925.2019.1596017>

Title:

Leeds, D. M., Pearson, J., Robers, S., & Scott, L. (2020). *Incarcerated adults with dependent children*. Commissioned Paper Washington, DC: PIAAC Gateway website. Retrieved November 16, 2020, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5e41932d16c3c736370cd9c2/1581355822385/2020_CNA_Incarcerated_Adults_Dependent_Children.pdf

Abstract:

This paper uses 2014 PIAAC prison data to study factors that influence the educational attainment, employment, economic mobility, and successful reentry of justice-involved parents.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/5e41932d16c3c736370cd9c2/1581355822385/2020_CNA_Incarcerated_Adults_Dependent_Children.pdf

Title:

Lewandowski, P., Park, A., & Schotte, S. (2020). *The global distribution of routine and nonroutine work*. WIDER Working Paper No. 75. Helsinki: United Nations University World Institute for Development Economics Research. Retrieved November 13, 2020, from <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2020-75.pdf>

Abstract:

Studies of the effects of technology and globalization on employment and inequality commonly assume that occupations are identical around the world in the job tasks they require. To relax this assumption, we develop a regression-based methodology to predict the countryspecific routine task intensity of occupations based on survey data collected in 46 low-, middle-, and high-income countries. We find that within the same occupation jobs in low- and middleincome countries are more routine intensive than in high-income countries. We attribute these differences mainly to lower technology use in less-developed countries. Using the predicted country-specific measures for 87 countries that together employ more than 2.5 billion workers, we find that from 2000 to 2017 the shift away from routine towards non-routine work was much slower in low- and middle-income countries than in the high-income countries, leading to an increasing gap in average routine-task intensity.

Available at (open access): <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2020-75.pdf>

Title:

Liao, D., He, Q., & Jiao, H. (2020). *Using log files to identify sequential patterns in PIAAC problem solving environments by U.S. adults' employment-related variables*. Washington, DC.: PIAAC Gateway website. Retrieved November 13, 2020, from http://piaacgateway.com/s/2020_Liao_He_Jiao_Log-Files-Sequential-Patterns.pdf

Abstract:

Adult assessments have evolved to keep pace with the changing nature of adult literacy and learning demands. As the importance of information and communication technologies (ICT) continues to grow, measures of ICT literacy skills, digital reading, and problem solving in technology-rich environments (PSTRE) are increasingly important topics for exploration through computer-based assessment (CBA). The Program for the International Assessment of Adult Competencies (PIAAC) is the first international household survey of adult skills predominantly collected using ICT skills. This international survey is conducted in over 40 countries and measures key cognitive and workplace skills including literacy, numeracy, and problem-solving in technology-rich environments (PSTRE). These skills are not only critical to individual prosperity but are also key drivers of economic growth and societal advancement (Organization for Economic Co-operation and Development). This study tackled with the association between process data and employment-related variables from three aspects. First, what employment-related variables significantly affected the success on PSTRE items, what features can be extracted from the groups formed based on significant variables, and how were the features different between groups. Second, what was the latent clustering structure of process data, and how were the clusters related to employment-related variables. The first aspect was a top-down approach, whereas the second aspect was a bottom-up approach. Lastly, whether test takers' choice of response behaviors or problem-solving strategies were consistent across multiple items, and what employment-related characteristics were shared among different consistency groups. The most important implication of the present study was that features identified from process data shed light on how much intervention a certain group of test takers might need. There was clear evidence from process data for the steps to read emails, filter the irrelevant email, and submit requests. Given sufficient evidence for each required step, further analyses could potentially

determine at which specific step an intervention was needed. It also provides the possibility of scoring complex items like PSTRE items base on process data in the future.

Available at (open access): http://piaacgateway.com/s/2020_Liao_He_Jiao_Log-Files-Sequential-Patterns.pdf

Title:

Lim, D. H., Ryu, H., & Jin, B. (2020). A latent class analysis of older workers' skill proficiency and skill utilization in South Korea. *Asia Pacific Education Review*, 21(3), 365-378. doi: 10.1007/s12564-020-09632-2

Abstract:

Accelerated aging trend has become a serious issue in meeting workforce demand in many developing and developed countries. Various workplace interventions have been sought to address this issue. The purpose of this study is to examine the extent that there is a typology of older workers whose skill proficiency and skill utilization are influenced by their perceived degree of readiness to learn and informal learning, and participation in non-formal learning in South Korea. Using the PIAAC data, this study conducted Latent Class Analysis to identify the types of older workers who achieved significantly different levels of basic skill proficiencies and skill utilization in organizational settings. From the data analysis, three types of older workers are identified: The Dormant Workers with Low Skills, The Educated Workers in the Public Sector, and The Educated Workers in Flexible Working Conditions. From the findings, practical and research implications are discussed.

Available at: <https://doi.org/10.1007/s12564-020-09632-2>

Title:

Lissitsa, S., & Chachashvili-Bolotin, S. (2020). It's not what you know but where you come from: Cognitive skills, job autonomy and latent discrimination of ethnic minorities in Israel. *International Review of Education*, 66(2), 341-362. doi: 10.1007/s11159-020-09825-2

Abstract:

Job autonomy – employees' freedom to schedule and organise their work independently according to their own experience and preferences – is a major factor in job satisfaction. However, it is not granted to many employees in Israel, and the authors of this article were interested in the reasons for this. Based on data from the Programme for the International Assessment of Adult Competencies (PIAAC), they investigated the association between cognitive skills and job autonomy among Israeli-born Jews, Arabs and immigrants from the former Soviet Union (FSU) living in Israel. They considered PIAAC data for cognitive skills in three key domains: literacy, numeracy and problem solving in technology-rich environments. In line with social homophily theory (which explains bonding tendencies among socially similar people), the authors' findings show different effects of cognitive skills on job autonomy between the three groups. Whereas cognitive skills were positively correlated with job autonomy among Israeli-born Jews and partially among Arabs, these effects were insignificant among FSU immigrants. The findings suggest that in the case of FSU immigrants, a latent form of discrimination is taking place: they are not being rewarded for their credentials and skills with job autonomy. Revealing the discrimination mechanisms affecting job autonomy among ethnic minorities in Israel may help policymakers to overcome ethnic-based inequality and alienation in the labour market. It may also assist the development of new approaches that tap into skills currently being ignored and thereby increase employees' well-being.

Available at: <https://doi.org/10.1007/s11159-020-09825-2>

Title:

Liu, Q., & Ding, R. (2020). Does poverty matter or inequality? An international comparative analysis on the intergenerational education persistence. In X. , J. Li, M. Li, Q. Liu, & H. Starkey (Eds.), *Education and Mobilities: Ideas, People and Technologies*. Proceedings of the 6th BNU/UCL IOE International Conference in Education (pp. 187-205). Singapore: Springer Nature Singapore. doi: 10.1007/978-981-13-9031-9_10

Abstract:

We undertook an international comparative study to empirically examine the similarities, differences as well as development trends of the intergenerational educational persistence, which refers to the correlation between the educational attainment of individuals and those of their parents, across 20 Organisation for Economic Co-operation and Development (OECD) member countries. We found that intergenerational educational persistence existed in all 20, but the degree varied among them. It was highest in the USA and Slovakia and lowest in Finland. Most interestingly, we demonstrated that countries with greater income inequality tend to exhibit stronger intergenerational educational persistence, while found no evidence of any correlation between the latter with some factors we always suppose they should have, like the poverty, public spending on education, etc.

Available at: https://doi.org/10.1007/978-981-13-9031-9_10

Title:

Maehler, D. B., & Konradt, I. (2020). Adult cognitive and non-cognitive skills: An overview of existing PIAAC data. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 49-91). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_4

Abstract:

As of summer 2019, more than 60 PIAAC datasets from participating countries worldwide were available for research purposes. These datasets can be differentiated, for example, in terms of their accessibility, the extent of the information provided, the population group in focus, and the design of the underlying study. PIAAC Public Use Files, for instance, are freely available and are therefore highly anonymised, whereas PIAAC Scientific Use Files are available only for scientific research purposes and provide access to more detailed variables. The majority of the PIAAC data are available as public use files, but some participating countries (e.g. Germany and the United States) have also made several scientific use files or other extended file versions available to the research community. Some of the available PIAAC datasets focus on specific population groups—for example, the incarcerated adult population in the United States. Regarding the design of the underlying studies, most available datasets are cross-sectional, but some longitudinal data already exist (e.g. PIAAC-L in Germany). The present chapter provides an overview of the structure, accessibility, and use of the PIAAC datasets available worldwide.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_4

Title:

Maehler, D. B., & Rammstedt, B. (Eds.) (2020). *Large-scale cognitive assessment: Analyzing PIAAC Data*. Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4

Abstract:

This open access methodological book summarises existing analysing techniques using data from PIAAC, a study initiated by the OECD that assesses key cognitive and occupational skills of the adult population in more than 40 countries. The approximately 65 PIAAC datasets that has been published worldwide to date has been widely received and used by an interdisciplinary research community.

Due to the complex structure of the data, analyses with PIAAC datasets are very challenging. To ensure the quality and significance of these data analyses, it is necessary to instruct users in the correct handling of the data. This methodological book provides a standardised approach to successfully implementing these data analyses. It contains examples of and tools for the analysis of the PIAAC data using different statistical approaches and software, and it offers perspectives from various disciplines. The contributing authors have hands-on experience of using PIAAC data, and/or they have conducted data analysis workshops with these data.

Available at (open access): <https://doi.org/10.1007/978-3-030-47515-4>

Title:

Maehler, D. B., & Rammstedt, B. (2020). Large-scale assessment in education: Analysing PIAAC Data. In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment: Analyzing PIAAC Data* (pp. 1-6). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_1

Abstract:

This methodological book aims to summarise existing techniques for analysing data resulting from the Programme for the International Assessment of Adult Competencies (PIAAC). The present chapter provides an overview of the programme, outlining its goal, the participating countries, the survey cycles, and the research questions that can be addressed with the available data. In addition, the structure of the textbook is described.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_1

Title:

Marius Vaag Iversen, J., & Strøm, B. (2020). Skills, employment, and labor market institutions: Evidence from PIAAC. *Labour*, 34(3), 277-304. doi: 10.1111/labr.12174

Abstract:

Hanushek et al (2015, 'Returns to Skills Around the World: Evidence from PIAAC', *European Economic Review* 73: 103) find a weak wage-skill relationship in countries with limited skill reward possibilities due to high union density, strict employment protection, and large public sector. If these factors also restrict employment possibilities and the incentives to join the labor market, a possible mirror image of the weak wage-skill relationship is a steeper employment-skill gradient. We use PIAAC data to estimate the employment-skill association, and the results for the whole sample of individuals give some indication that the employment-skill gradient is steeper in countries with strict employment rules and centralized bargaining. Our results for subgroups show imprecisely estimated employment-skill gradients for immigrants. For individuals with poor health conditions and low formal education, the estimated gradient is somewhat higher than in the whole sample in countries with high bargaining coverage, a large public sector, and centralized collective bargaining systems.

Available at (open access): <https://doi.org/10.1111/labr.12174>

Title:

Martin, S., Lechner, C., Kleinert, C., & Rammstedt, B. (2020). Literacy skills predict probability of refusal in follow-up wave: Evidence from two longitudinal assessment surveys. *International Journal of Social Research Methodology*, 1-16. doi: 10.1080/13645579.2020.1763715

Abstract:

Selective nonresponse can introduce bias in longitudinal surveys. The present study examines the role of cognitive skills (more specifically, literacy skills), as measured in large-scale assessment

surveys, in selective nonresponse in longitudinal surveys. We assume that low-skilled respondents perceive the cognitive assessment as a higher burden than higher-skilled respondents because they are more likely to experience negative feelings. We hypothesize that low-skilled respondents are more likely than high-skilled respondents to refuse to participate in a follow-up wave. We analysed data from two assessment surveys in Germany with similar study designs, target populations, and assessment instruments. Results provide support for our hypothesis. Consistently across both surveys, respondents with the lowest literacy skills had a higher probability of refusal than those with the highest literacy skills. This difference persisted even after controlling for several established predictors of nonresponse, including education.

Available at: <https://doi.org/10.1080/13645579.2020.1763715>

Title:

Martin, S., & Zabal, A. (2020). Converting nonrespondents in PIAAC Germany 2012 using responsive measures. *Survey Methods: Insights from the Field. Special issue: 'Fieldwork Monitoring Strategies for Interviewer-Administered Surveys'*, 1-13. doi: 10.13094/SMIF-2020-00009

Abstract:

Using paradata to modify design features during fieldwork is the earmark of responsive designs (Groves & Heeringa, 2006). One objective of responsive approaches is to improve the composition of the final sample by gaining the participation of nonrespondents. A simple but innovative attempt at realizing such a response intervention was undertaken during the fieldwork of PIAAC Germany 2012. Different groups of nonrespondents were identified for follow-up efforts. With a view to the outcome measures of PIAAC, basic skills of the adult population, two groups were focused: Non-nationals and sample persons with low educational attainment. To identify these groups, different sources of auxiliary data were used (sampling frame, interviewer observations, and a commercial vendor database). Non-nationals were identified using information from the sampling frame. The challenge was to identify sample persons with (presumably) low levels of education. This was achieved by selecting a set of auxiliary variables, and subsequently using classification trees to model and predict sample persons with low levels of education. The sample persons were sent carefully crafted tailored letters during the re-issue phase. Overall, the cost-benefit balance of this intervention is rather disproportionate: A high level of effort with little apparent impact on the final sample composition. Nevertheless, this explorative endeavour was worthwhile and informative. In particular, the model-based prediction of different types of sample persons can be regarded as a promising approach.

Available at (open access): <https://doi.org/10.13094/SMIF-2020-00009>

Title:

Maslov, A., & Zhong, J. (2020). *Skill mismatch of Indigenous peoples in Canada: Findings from PIAAC*. Retrieved November 16, 2020, from <https://coles.kennesaw.edu/research/docs/spring-2020/SPRING20-04.pdf>

Abstract:

Using the Programme for the International Assessment of Adult Competencies (Canadian sample) the paper examines overskilling among Indigenous off-reserve peoples and compares the outcomes to the other Canadian born. We construct several measures of skill mismatch in literacy and numeracy finding no statistically significant difference between aboriginal and non-aboriginal Canadian-born populations. We then use the developed measures in the analysis of wages and find that among First Nations, Metis and Inuit only the males of the former aboriginal group earn significantly less than their non-aboriginal Canadian-born counterparts.

Available at (open access): <http://hdl.voced.edu.au/10707/532953>

Title:

Matute, M. M., & Villanueva, E. (2020). *Task specialization and cognitive skills: Evidence from PIAAC and IALS*. IZA Discussion Papers No. 13555. Bonn: IZA – Institute of Labor Economics. Retrieved November 30, 2020, from <http://ftp.iza.org/dp13555.pdf>

Abstract:

We study how the tasks conducted on the job relate to measures of cognitive skills using data from 18 countries participating in the Programme for the International Assessment of Adult Competences (PIAAC) and from 13 countries that also participate in the International Adult Literacy Study (IALS). We document two main findings. Firstly, individual- fixed effect models suggest that low-educated workers in jobs involving a particular set of basic tasks -say, in numeric rather than reading or ICT tasks- obtain 10% of one standard deviation higher scores in the domain of the PIAAC assessment most related to those tasks than in the rest -say, numeracy relative to literacy or problem-solving scores. The estimates are weaker for workers with a high school or college degree, those with more than 10 years of experience or who are males. Secondly, a synthetic cohort analysis using repeated literacy assessments in IALS and PIAAC indicates that, among the low-educated, long-run increases in the reading task component of jobs correlate positively with increases in cohort-level literacy scores. An interpretation of our findings is that tasks conducted on the job help in building human capital. Under that interpretation, our back-of-the-envelope estimates suggest that the contribution of one year of on-the-job learning to skill formation is between a half and a fourth of an extra year of compulsory schooling.

Available at (open access): <http://ftp.iza.org/dp13555.pdf>

Title:

McGowan, M. A., Hijzen, A., Law, D., Salvatori, A., Sicari, P., & Thewissen, S. (2020). *Addressing labour market challenges in Belgium*. OECD Economics Department Working Papers No. 1602. Paris: OECD Economics Department. doi: 10.1787/8a542d68-en

Abstract:

Job creation has lowered unemployment, but the Belgian labour market still faces many challenges. Employment rates remain low, reflecting barriers to finding a job such as low levels of skills and weak work incentives. In addition, the changing nature of work will require faster adaptation of workers. In order to address these challenges, this chapter presents a detailed analysis of policy priorities, drawing notably on insights from the OECD Jobs Strategy. One priority should be that each worker has access to lifelong training, with additional allowances targeted to disadvantaged workers. To improve transitions into work, the use of tools for the profiling of individualised risks should be extended. A better combination of income support and incentives could be achieved through reforming both unemployment and in-work benefits. Reforming some aspects of employment protection legislation, such as those related to collective dismissals, and the wage formation system, would boost flexibility.

Available at (open access): <https://doi.org/10.1787/8a542d68-en>

Title:

Meitinger, K., Stadtmüller, S., Silber, H., Auriga, R., Bergmann, M., Blohm, M., Blumenberg, M., Christmann, P., Felderer, B., et al.(2020). Fieldwork monitoring in practice: Insights from 17 large-scale

social science surveys in Germany. *Survey Methods: Insights from the Field*, 1-13. doi: 10.13094/SMIF-2020-00006

Abstract:

This study provides a synopsis of the current fieldwork monitoring practices of large-scale surveys in Germany. Based on the results of a standardized questionnaire, the study summarizes fieldwork monitoring indicators used and fieldwork measures carried out by 17 large-scale social sciences surveys in Germany. Our descriptive results reveal that a common set of fieldwork indicators and measures exist on which the studied surveys rely. However, it also uncovers the need for additional design-specific indicators. Finally, it underlines the importance of a close cooperation between survey representatives and fieldwork agencies to optimize processes in fieldwork monitoring in the German survey context. The article concludes with implications for fieldwork practice.

Available at (open access): <https://doi.org/10.13094/SMIF-2020-00006>

Title:

Millar, R. J., Sahoo, S., Yamashita, T., & Cummins, P. A. (2020). Literacy skills, language use, and online health information seeking among Hispanic adults in the United States. *Patient Education and Counseling*, 103(8), 1595-1600. doi: 10.1016/j.pec.2020.02.030

Abstract:

Objective: Online health information is underutilized among Hispanics with low English proficiency in the U.S. This study examines the association between a unique measure of general English literacy, language use, and online health information seeking among Hispanic adults. **Methods:** Data for Hispanics ages 25–65 (N=700) come from the 2012/2014 Program for International Assessment of Adult Competencies (PIAAC). Binary logistic regression models were used to predict online health information seeking as a function of literacy skill scores (0–500 points) and primary language use (Spanish vs. other). **Results:** Literacy (Odds-Ratio=1.012, $p < 0.001$) was a positive predictor, while speaking Spanish at home (Odds-Ratio = 0.352, $p < 0.01$) was a negative predictor of online health information seeking. **Conclusion:** Literacy skills and language use appear to be separate contributors of online health information seeking among Hispanic adults. **Practice implications:** Online health information providers should be aware of literacy skills and Spanish language use as barriers to online health information seeking among Hispanics, particularly those who have both limited literacy skills and predominantly Spanish language use.

Available at: <https://doi.org/10.1016/j.pec.2020.02.030>

Title:

Mueller, R., & Truong, N. K. (2020). *Wage, literacy, and numeracy skills inequality: Do immigration admission categories matter?*. doi: 10.2139/ssrn.3587756

Abstract:

Using the 2012 Programme for the International Assessment of Adult Competencies (PIAAC), we explore differences in literacy and numeracy skills, and the economic returns to these skills, for Canadian immigrants and non-immigrants. The novelty of this research is disaggregating the sample into seven distinct immigrant groups (based on admission class) and second and third-generation Canadians. Our results show that no immigrant group performs as well on literacy and numeracy tests compared to those born in Canada, although young immigrants do outperform adult immigrants. Similar results are found for wages, our metric for success in the labour market. Of the immigrant subgroups, economic immigrants tend to have the highest test scores and hourly wages, with refugees having the lowest. The wage returns to these basic skills are economically significant across all quantiles. Finally, we find that the labour market rewards literacy or numeracy skills equally for

immigrants and the Canadian-born.

Available at: <https://dx.doi.org/10.2139/ssrn.3587756>

Title:

Naval, J., Silva, J. I., & Vázquez-Grenno, J. (2020). Employment effects of on-the-job human capital acquisition. *Labour Economics*, 67. doi: 10.1016/j.labeco.2020.101937

Abstract:

This paper quantifies the combined effect on-the-job training and workers' on-the-job learning decisions have on aggregate employment. Initially, we present an index of on-the-job human capital acquisition (OJHCA) based on data from the OECD program for international assessment of adult competencies. The data shows a positive relationship between the on-the-job training and on-the-job learning indexes and a strong positive correlation between the human capital index and employment rates across OECD economies. Next, we build a search and matching model that hinges on the training provided by firms as well as workers' learning. The model also includes education along with taxes that increase and decrease human capital investments. We calibrate the model to the United Kingdom and analyze the role of taxes and education to explain the variation in human capital acquired on-the-job, employment and productivity across countries. We also obtain the marginal costs in every country that reproduce the levels of on-the-job human capital as observed in the data. The model is almost able to reproduce the observed differences in employment rates between the groups of countries in the highest and lowest tertiles of the OJHCA distribution, and OJHCA accounts for forty percent of the simulated employment differences. Finally, we analyze subsidies to training costs and conclude that a 10% reduction in marginal training cost increases long-term employment by almost 0.5 percentage points.

Available at: <https://doi.org/10.1016/j.labeco.2020.101937>

Title:

Nicoletti, G., Rueden, C., & Andrews, D. (2020). Digital technology diffusion: A matter of capabilities, incentives or both?. *European Economic Review*, 128. doi: 10.1016/j.euroecorev.2020.103513

Abstract:

This paper uses data on digital technology usage covering 25 industries in 24 European countries and Turkey over the 2010-16 period to explore the covariates of industry-level digital adoption by firms across two broad sets of technologies – cloud computing and back and front office integration. The focus is on factors that potentially affect firms' capabilities and incentives to adopt – including the availability of enabling infrastructures (such as high-speed broadband internet), managerial quality and workers skills, as well as product, labour and financial market settings. Using a difference-in-difference approach we show that a number of these factors relate to technology adoption in economically sizeable ways. Diffusion of high-speed broadband internet correlates positively with adoption. Low managerial quality, lack of ICT skills and policies curbing market access, competition in services, hiring and firing and availability of venture capital are associated with lower digital technology adoption.

Available at: <https://doi.org/10.1016/j.euroecorev.2020.103513>

Title:

Nygren, H., Virolainen, M., Hämäläinen, R., & Rautopuro, J. (2020). The fourth industrial revolution and changes to working life: What supports adult employees in adapting to new technology at work?. In M. Collan & K.-E. Michelsen (Eds.), *Technical, Economic and Societal Effects of*

Manufacturing 4.0: Automation, Adaption and Manufacturing in Finland and Beyond (pp. 193-209). London: Palgrave Macmillan. doi: 10.1007/978-3-030-46103-4

Abstract:

This chapter aims to increase the current understanding of adults' individual learning pathways and needs, when they adapt to new technology. In this chapter, we review adults' overall technology-skills and depict, through chosen examples, how adults have adapted to the technological change in their working lives. We present prior research on the challenges that the Fourth Industrial Revolution poses to adults' further education, and based on the Programme for the International Assessment of Adult Competencies (PIAAC), we review adults' problemsolving skills in technology-rich environments. We analyse interviews of adults, who participated in initial education, to show how focal considerations, such as the usability of new technology, the economic or personal advantages of technology, and the social factors pertaining to the use of technology are influential for adults, when learning about and implementing new technology. Overall, the findings indicate the importance of design-based education and the need for companies to flexibly address adults with skill-shortages and adults who need to develop their problem-solving abilities in technology-rich environments.

Available at (open access): <https://doi.org/10.1007/978-3-030-46103-4>

Title:

Obrero, C. B., & Duchini, E. (2020). *Who benefits from general knowledge?*. IZA Discussion Papers No. 12995. Bonn: IZA – Institute of Labor Economics. Retrieved November 17, 2020, from <http://ftp.iza.org/dp12995.pdf>

Abstract:

While vocational education is meant to provide occupational-specific skills that are directly employable, their returns may be limited in fast-changing economies. Conversely, general education should provide learning skills, but these may have little value at low levels of education. This paper sheds light on this debate by exploiting a recent Spanish reform that postpones students' choice between these two educational pathways from age 14 to 16. To identify exogenous changes in its staggered implementation, we instrument this with the pre-reform across-province variation in the share of students in general education. Results indicate that, by shifting educational investment from vocational to general education after age 16, the reform improves occupational outcomes, and results in a significant rise in monthly wages. The effects are larger after the financial crisis, but are concentrated among middle to high-skilled individuals. In contrast, those who acquire only basic general education have worse long-term employment prospects than vocationally-trained individuals.

Available at (open access): <http://ftp.iza.org/dp12995.pdf>

Title:

OECD (2020). Skills proficiency and the labour market outcomes of migrants. *Adult Skills in Focus*, No. 12, OECD Publishing, Paris. doi: 10.1787/c29deaea-en

Abstract:

Across the OECD, the labour-market performance of foreign-born-adults tends to lag behind that of the native-born. Immigrants are not only more likely to be unemployed or inactive, but they also earn less and work in lower-skilled jobs. Differences in skills proficiency, language spoken and country of education explain a large part – albeit not the entirety – of these observed gaps. Policies should therefore aim to provide immigrants with effective language tuition, adult education and training

programmes in order to ensure the successful integration of foreign-born workers into host economies.

Available at (open access): <https://doi.org/10.1787/c29deaea-en>

Title:

Olaru, G., & Danner, D. (2020). Developing cross-cultural short scales using ant colony optimization. *Assessment*, 28(17), 199-210. doi: 10.1177/1073191120918026

Abstract:

This article demonstrates how the metaheuristic item selection algorithm ant colony optimization (ACO) can be used to develop short scales for cross-cultural surveys. Traditional item selection approaches typically select items based on expert-guided assessment of item-level information in the full scale, such as factor loadings or item correlations with relevant outcomes. ACO is an optimization procedure that instead selects items based on the properties of the resulting short models, such as model fit and reliability. Using a sample of 5,567 respondents from five countries, we selected a 15-item short form of the Big Five Inventory-2 with the goal of optimizing model fit and measurement invariance in exploratory structural equation modeling, as well as reliability, construct coverage, and criterion-related validity of the scale. We compared the psychometric properties of the new short scale with the Big Five Inventory-2 extra-short form developed with a traditional approach. Whereas both short scales maintained the construct coverage and criterion-related validity of the full scale, the ACO short scale achieved better model fit and measurement invariance across countries than the Big Five Inventory-2 extra-short form. As such, ACO can be a useful tool to identify items for cross-cultural comparisons of personality.

Available at: <https://doi.org/10.1177/1073191120918026>

Title:

Ortmanns, V. (2020). Explaining Inconsistencies in the Education Distributions of Ten Cross-National Surveys – the Role of Methodological Survey Characteristics. *Journal of Official Statistics*, 36(2), 379-409. doi: 10.2478/jos-2020-0020

Abstract:

Surveys measuring the same concept using the same measure on the same population at the same point in time should result in highly similar results. If this is not the case, this is a strong sign of lacking reliability, resulting in non-comparable data across surveys. Looking at the education variable, previous research has identified inconsistencies in the distributions of harmonised education variables, using the International Standard Classification of Education (ISCED), across surveys within the same countries and years. These inconsistencies are commonly explained by differences in the measurement, especially in the response categories of the education question, and in the harmonisation when classifying country-specific education categories into ISCED. However, other methodological characteristics of surveys, which we regard as ‘containers’ for several characteristics, may also contribute to this finding. We compare the education distributions of nine cross-national surveys with the European Union Labour Force Survey (EU-LFS), which is used as benchmark. This study analyses 15 survey characteristics to better explain the inconsistencies. The results confirm a predominant effect of the measurement instrument and harmonisation. Different sampling designs also explain inconsistencies, but to a lesser degree. Finally, we discuss the results and limitations of the study and provide ideas for improving data comparability.

Available at (open access): <https://doi.org/10.2478/jos-2020-0020>

Title:

Ositelu, M. O. (2020). *How would a 5-year restriction on pell eligibility impact incarcerated adults if the Pell Ban is lifted?*. Washington, DC: New America. Retrieved November 17, 2020, from <https://files.eric.ed.gov/fulltext/ED604978.pdf>

Abstract:

Currently, an option of Pell Grant eligibility for the Second Chance Pell (SCP) experiment is priority given to students who will be released within 5 years of enrollment in the college program. Using the 2014 U.S. PIAAC Prison Survey, conducted by the National Center for Education Statistics (NCES), this analysis evaluates the demographics of adults in prison who would be impacted by a 5-year stipulation and the validity of a 5-year threshold on incarcerated adults' enrollment, completion, and interest patterns in higher education. We find that a 5-year priority of Pell Grants for those with fewer than five years, would inevitably exclude individuals with more than five years from accessing higher education – exacerbating inequities for people of color. Furthermore, the analysis provides no evidence to suggest those closer to release are more likely to be interested in, enroll in, or complete correctional postsecondary programs.

Available at (open access): <https://files.eric.ed.gov/fulltext/ED604978.pdf>

Title:

O’Keeffe, C. (2020). Investigating adult skills assessment in ESONline: A digital ethnography. In *Doing Critical and Creative Research in Adult Education* (pp. 153-163). Leiden: Brill. doi: 10.1163/9789004420755_013

Abstract:

For several decades, the concept of adult skills and competencies has become increasingly central in discussions dealing with education reform, labour markets and international competitiveness. Many countries, and in particular, Organisation for Economic Cooperation and Development (OECD) member states, are preoccupied with the problem of mismatches or skills gaps. Much of the evidence in these discussions again especially in OECD countries is produced by tests such as the Programme for International School Assessment (PISA), and the Programme for International Assessment of Adult Competencies (PIAAC). These tests instantiate conceptual frameworks that have been specifically designed to influence policy and shape decisions about investments in educational practices (OECD, 2018). Assessment as testing, more than any other educational practice, is particularly efficient in producing data that are internationally comparable (Grek, 2013; Hamilton, 2017) and amenable to policy-based and economic calculations of human capital (Luke, 1997). As such, “policy makers across the spectrum of education, from primary schooling to adult literacy, invest trust in test scores” (Yasukawa & Black, 2016, p. x) to assess the efficacy of education systems to be able to produce adults with the requisite skills to be able to participate in the labour force and contribute to economic development (van der Velden & Ineke, 2018). Tests such as the PIAAC and PISA have, in recent years, come to rely extensively on sophisticated networks of digital technologies to produce data on educational attainment. As such, rather than focusing exclusively on the results produced by tests or how they are translated into decision-making, it is also important to develop appropriate methodologies and techniques to investigate how the data that generate these results are produced in the first place. The aim of this chapter is to explore how we research digital testing. By using an approach informed by material semiotics and digital ethnography, I will describe and analyze how Education & Skills Online or ESONline, a digital assessment tool used to measure adult competencies, is able to perform and legitimate an economic vision of what it means to be a skilled and economically valuable adult.

Available at (open access): https://doi.org/10.1163/9789004420755_013

Title:

Palczyńska, M. (2020). Wage premia for skills: The complementarity of cognitive and non-cognitive skills. *International Journal of Manpower*, 1-25. doi: 10.1108/IJM-08-2019-0379

Abstract:

Purpose The main purpose of this paper is to assess the degree of complementarity between cognitive skills and non-cognitive skills, and to evaluate their joint impact on individual wages. **Design/methodology/approach** The author uses a survey representative of the Polish working-age population with well-established measures of cognitive and non-cognitive skills. **Findings** Non-cognitive skills are important in the labour market, not only as separate factors that influence wages, but as complements to cognitive skills. Specifically, the analysis showed that the more neurotic an individual is, the lower his or her returns to cognitive skills are. Social skills were not shown to be complementary to cognitive skills in Poland unlike the recent results in the United States. **Originality/value** To the best of author's knowledge, this is the first study to provide evidence that neurotic individuals have lower returns to cognitive skills. It also tests the existence of the complementarity between social and cognitive skills.

Available at: <https://doi.org/10.1108/IJM-08-2019-0379>

Title:

Palczyńska, M., & Rynko, M. (2020). ICT skills measurement in social surveys: Can we trust self-reports?. *Quality & Quantity*, 1-27. doi: 10.1007/s11135-020-01031-4

Abstract:

Self-reports are the most common way of measuring information and communications technology (ICT) skills in social surveys. Studies comparing self-reported computer skills with objective assessments have found evidence of significant overreporting of skills, but were conducted only among non-representative groups of individuals. This paper fills an important gap by analysing the degree to which ICT skills are overreported in the working-age population of Poland, and the potential causes of this behaviour. We compare answers to Eurostat questions on ICT usage with direct assessments of the corresponding tasks. The results suggest that those individuals who are most likely to possess ICT skills are also most likely to overreport having these skills. The propensity to overreport decreases with age and increases with years of education and numeracy level; women are less likely than men to overestimate their skills. The positive relationship between the probability of a group to overreport their own skills and their expected levels of skills suggests that social desirability bias may explain this phenomenon.

Available at (open access): <https://doi.org/10.1007/s11135-020-01031-4>

Title:

Partsch, M. V., & Danner, D. (2020). Measuring self-control in international large-scale surveys: Development and validation of a four-item scale in English, French, German, Japanese, Polish, and Spanish. *European Journal of Psychological Assessment*. doi: 10.1027/1015-5759/a000618

Abstract:

Self-control – that is, the ability to control impulses, emotions, or actions in order to achieve goals – is associated with a broad range of positive life outcomes, such as educational attainment and health. The present study describes the development and validation of a four-item self-control scale in English, French, German, Japanese, Polish, and Spanish. We used a sample comprising 973 survey respondents from the United States to select the scale items, and a sample comprising 5,557 respondents from six countries to validate the short scale. Results suggest that with just four items,

self-control can be measured in a valid, partially scalar invariant, and time-efficient way, and can be adjusted for acquiescence.

Available at: <https://doi.org/10.1027/1015-5759/a000618>

Title:

Patterson, M. B. (2020). PIAAC numeracy skills and home use among adult english learners. *Adult Literacy Education*, 2(1), 2-40. <https://files.eric.ed.gov/fulltext/EJ1248996.pdf>

Abstract:

Research on adult English learners (ELs) typically (and appropriately) focuses on language-related skills. However, adult ELs may need numeracy instruction to navigate daily life or understand health information. Little is known about how ELs use numeracy skills at home and connections of skill use with related electronic numeracy skills. The purpose of this paper is to examine numeracy skill levels and home skill use of adult ELs. Employing Programme for the International Assessment of Adult Competencies (PIAAC) 2012/2014 data, the paper begins with identifying adult ELs' numeracy skill levels. The relationship of skill level with skill use is then analyzed to determine how six discrete groups of ELs at various skill levels employ numeracy skills, and to describe characteristics and backgrounds of each group for adult education instructors and interested stakeholders. The paper concludes with recommended implications for instruction from Curry's (2017) instructional guide based on the "PIAAC Numeracy Framework".

Available at (open access): <https://files.eric.ed.gov/fulltext/EJ1248996.pdf>

Title:

Pawlowski, E., & Soroui, J. (2020). Analysing PIAAC data with the International Data Explorer (IDE). In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment : Analyzing PIAAC Data* (pp. 93-115). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_5

Abstract:

This chapter introduces readers to the PIAAC International Data Explorer (IDE), an online tool for conducting analyses with the Programme for the International Assessment of Adult Competencies (PIAAC) data using a simple point-and-click interface without any special software or advanced statistical knowledge. It describes the data available in the IDE and provides an overview of how the data in the IDE is organised. It also covers the analysis types and statistical estimates available in the IDE, as well as its display and reporting options. These statistic and analysis options include averages, percentages (including proficiency level distributions), standard deviations, and percentiles, as well as significance testing, gap analysis, and regression analysis. The chapter also provides example research scenarios that illustrate how to answer questions using the IDE and how to interpret results from the IDE.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_5

Title:

Perry, K. H., Shaw, D. M., & Saberimoghaddam, S. (2020). Literacy practices and the Programme for the International Assessment of Adult Competencies (PIAAC): A conceptual critique. *International Review of Education*, 66(1), 9-28. doi: 10.1007/s11159-019-09819-9

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) assesses key skills in literacy, numeracy and problem-solving in technology-rich environments, as well as their relationship to other social outcomes for adults. PIAAC's developers claimed to better account for

adults' literacy practices than earlier international studies such as the International Assessment of Literacy Study (IALS). Through the sociocultural lens of literacy as social practice, the authors explore the tension between PIAAC's cognitive orientation and its attempt to factor in meaningful literacy practices. Specifically, they analyse PIAAC's conceptualisation of literacy practices as instantiated in the background questionnaire given to adult participants. They conclude that PIAAC's conceptualisation does not align well with current theoretical understandings of literacy practice, as evidenced by (1) its conflation of several key literacy terms, including text, genre and practice, and (2) its erasure of context, purpose and social interaction from literate practice. Thus, the authors found considerable room for improvement in the assessment of adults' actual literacy practices.

Available at: <https://doi.org/10.1007/s11159-019-09819-9>

Title:

Pesta, B., & Fuerst, J. (2020). *Measured cognitive differences among UK adults of different ethnic backgrounds: Results from national samples*. PsyArXiv. Retrieved November 17, 2020. doi: 10.31234/osf.io/3txk4

Abstract:

Ethnic differences in measured cognitive ability is of interest to social scientists, since these differences, whether or not they represent latent ability ones, can exasperate social inequalities. As such, it is important to monitor them, particularly in multi-ethnic societies. To this end, we analyzed cognitive test score data for 84,138 British adults across six national samples from the 21st century (AMP, 2000; Skills for Life, 2003; AMP, 2007; UKHLS, 2011-13; PIAAC, 2012; MCS, 2015). Grand mean cognitive scores by ethnicity (SD = 15), relative to a White mean set to 100, were: Jews, 107 (N = 77); Chinese, 98 (N = 154); South Asians, 89 (N = 4,032); and Blacks, 88 (N = 2,439). Notably, substantial heterogeneity in scores existed depending on various factors, including the type of test (e.g., verbal, numeric), ethnic subgroup (e.g., Indian, Pakistani), age group, first language spoken, and migrant generation (e.g., foreign born, UK born). As to the latter, Blacks and Asians born in the UK scored about 6-7 points higher than ones born elsewhere. Because selection tests are commonly used in the UK and also because human well-being correlates strongly with measured cognitive differences, we conclude that these effects warrant more detailed investigation.

Available at (open access): <https://doi.org/10.31234/osf.io/3txk4>

Title:

Pokropek, A., & Borgonovi, F. (2019). Linking via pseudo-equivalent group design: Methodological considerations and an application to the PISA and PIAAC assessments. *Journal of Educational Measurement*, 57(404), 527-546. doi: 10.1111/jedm.12261

Abstract:

This article presents the pseudo-equivalent group approach and discusses how it can enhance the quality of linking in the presence of nonequivalent groups. The pseudo-equivalent group approach allows to achieve pseudo-equivalence using propensity score reweighting techniques. We use it to perform linking to establish scale concordance between two assessments. The article presents Monte-Carlo simulations and a real data application based on data from the Survey of Adult Skills (PIAAC) and the Programme for International Student Assessment (PISA). Monte-Carlo simulations suggest that the pseudo-equivalent group design is particularly useful whenever there is a large overlap across the two groups with respect to balancing variables and when the correlation between such variables and ability is medium or high. The example based on PISA and PIAAC data indicates that the approach can provide reasonable accurate linking that can be used for group-level comparisons.

Available at: <https://doi.org/10.1111/jedm.12261>

Title:

Pullman, A., & Chen, M. Y. (2020). Varieties of employment: A comparison of skill-based activities at work among youth and young adults in Canada. *International Journal of Lifelong Education*, 39(5/6), 576-590. doi: 10.1080/02601370.2020.1836052

Abstract:

According to practice engagement theory within the field of adult education, everyday workplace activities offer an opportunity for skill development among youth and young adults; yet, prior research highlights the prevalence of routine and low-skill work within entry-level jobs. Utilising data from the Programme for the International Assessment of Adult Competencies (PIAAC), the objective of the following study is to demonstrate how workplace literacy, numeracy, and problem-solving activities differ among people aged 16 to 34 in Canada. Latent class analysis provides a typology of literacy, numeracy, and problem-solving activities at work and generates insight into how socio-demographic and employment factors are associated with each group. The findings highlight that employment cannot be uniformly characterised as low-skill. Rather, there are unique employment groups with differing literacy, numeracy, and problem-solving activity characteristics. Nevertheless, socio-demographic factors do matter for gaining access to employment that involves daily skill-based activities. While age, parental education, immigration background, and education level are significantly associated with the latent classes, economic and employment characteristics reduce the magnitude of these associations. Together, the results suggest that access to skill-based activities at work are more or less accessible for certain groups and connect to other aspects of early-career job quality and occupational segregation.

Available at: <https://doi.org/10.1080/02601370.2020.1836052>

Title:

Raudenská, P., & Mysíková, M. (2020). Returns to bachelor's and master's degree in tertiary education: The case of the Czech Republic after the Bologna Process. *Innovation: The European Journal of Social Science Research*, 1-17. doi: 10.1080/13511610.2020.1732198

Abstract:

The primary objective of this study was to analyse the development of the effect of the bachelor's and master's tertiary degree on both respondents' wage and socioeconomic status in the Czech labour market ten years after the Bologna Process. For the purposes of the study, structural modelling was applied using the European Union Statistics on Income and Living Conditions (EU-SILC, 2010–2017) and Programme for the International Assessment of Adult Competencies (PIAAC, 2011/12) data. The results revealed that despite a slightly decreasing direct effect of the master's degree on wages, the association between the master's degree and socioeconomic status intensified. Compared to that, the bachelor's degree exhibited a stable direct effect on wages but a decreasing effect on socioeconomic status. While relatively stable overall returns to tertiary education can be supposed based on total effects, the channels through which the stability is reached may differ for the bachelor's and master's degrees.

Available at: <https://doi.org/10.1080/13511610.2020.1732198>

Title:

Reder, S., Gauly, B., & Lechner, C. (2020). Practice makes perfect: Practice engagement theory and the development of adult literacy and numeracy proficiency. *International Review of Education*, 66(2), 267-288. doi: 10.1007/s11159-020-09830-5

Abstract:

Practice engagement theory (PET) posits that individuals' literacy proficiencies develop as a by-product of their engagement in everyday reading and writing practices and, reciprocally, that literacy proficiencies affect levels of engagement in reading and writing practices. This suggests that literacy training which increases engagement in meaningful practices might generate proficiency growth. Research has shown that this approach does indeed seem to be effective in improving (adult) learners' literacy proficiency. A number of cross-sectional comparisons of participants' and non-participants' performance in various training activities, as well as quantitative modelling of adults' proficiency growth in longitudinal studies have confirmed the theoretical assumptions of PET. The authors of this article describe the first application of PET to literacy and numeracy development in a longitudinal study of a nationally representative adult population. Their investigation followed a sample of adults initially interviewed and assessed in the German component of the Programme for the International Assessment of Adult Competencies (PIAAC), adding longitudinal data from three additional waves of the national extension study (PIAAC-L), which included repeated assessments of literacy and numeracy proficiency over a period of three years. The authors' quantitative modelling of the growth of literacy and numeracy proficiency over time provides strong support for PET. Their comparisons of how various practice engagement indexes predict growth of literacy and numeracy proficiencies indicate that reading engagement is the strongest predictor of literacy growth and maths engagement is the strongest predictor of numeracy growth. The authors conclude their article by considering their findings' implications for sustainable development, lifelong learning policy and future research into the development of adult literacy and numeracy proficiency.

Available at (open access): <https://doi.org/10.1007/s11159-020-09830-5>

Title:

Redmer, A. (2020). *Numeracy im Lebenslauf – Sekundäranalytische Betrachtungen alltagsmathematischer Grundbildung in verschiedenen Lebensphasen* [Numeracy in the life course - Everyday mathematical literacy in different life stages]. Universität Hamburg, Dissertation. Retrieved November 27, 2020, from <https://ediss.sub.uni-hamburg.de/handle/ediss/8628>

Abstract:

In this dissertation, the relevance of numeracy in the life course is analyzed and the significance of numeracy in the discourse on basic education are shown along different life phases of adults. The dissertation used data from IALS, PIAAC and CiLL for the analyses. [Note of Editors]

Available at (open access): <https://ediss.sub.uni-hamburg.de/handle/ediss/8628>

Title:

Rica, S. D. L., Gortazar, L., & Lewandowski, P. (2020). Job tasks and wages in developed countries: evidence from PIAAC. *Labour Economics*, 65. doi: 10.1016/j.labeco.2020.101845

Abstract:

This paper addresses the empirical relationship between job tasks and wages for a harmonised sample of 19 developed countries. We do so by using worker-level PIAAC data to account for task heterogeneity within occupations. Our contribution is threefold: First, we compute abstract, routine and

manual task measures that are found to be well-validated visa-vis previous research. Second, we estimate task prices, and find that a one-standard-deviation increase in abstract tasks is related to a 3.3-log-point wage premium, whereas there is a 2.6 to 2.9-log-point wage penalty for each standard deviation of routine (manual) tasks. Development factors and labour market institutions, particularly union coverage and strictness of employment protection legislation, seem to play a role in the differences in all three task prices.

Available at: <https://doi.org/10.1016/j.labeco.2020.101845>

Title:

Ripani, L., Bustelo, M., Viollaz, M., Soler, N., & Egaña del Sol, P. (2020). *Automation in Latin America: Are women at higher risk of losing their jobs?*. No. 10542. Washington D.C.: Inter-American Development Bank (IDB). doi: 10.18235/0002566

Abstract:

New technological trends, such as digitization, artificial intelligence and robotics, have the power to drastically increase economic output but may also displace workers. In this paper we assess the risk of automation for female and male workers in four Latin American countries Bolivia, Chile, Colombia and El Salvador. Our study is the first to apply a task-based approach with a gender perspective in this region. Our main findings indicate that men are more likely than women to perform tasks linked to the skills of the future, such as STEM (science, technology, engineering and mathematics), information and communications technology, management and communication, and creative problem-solving tasks. Women thus have a higher average risk of automation, and 21% of women vs. 19% of men are at high risk (probability of automation greater than 70%). The differential impacts of the new technological trends for women and men must be assessed in order to guide the policy-making process to prepare workers for the future. Action should be taken to prevent digital transformation from worsening existing gender inequalities in the labor market.

Available at (open access): <https://doi.org/10.18235/0002566>

Title:

Roessger, K. M., Roumell, E. A., & Weese, J. (2020). Rethinking andragogical assumptions in the global age: How preferences for andragogical learning vary across people and cultures. *Studies in Continuing Education*, 1-25. doi: 10.1080/0158037X.2020.1732335

Abstract:

We investigated whether andragogical assumptions and their common critiques are reflected in global PIAAC data using its motivation-to-learn (MtL) and elaboration scales. A preliminary validation study with 300 adults revealed that andragogical assumptions cluster on these scales' two factors. Using hierarchical linear modelling of PIAAC data, we then investigated whether andragogical learning preferences varied across countries, and as a function of a learner's age, gender, education level, and occupation type. We then identified six country-level predictors from relevant theory to explain cross-country variation. Preferences varied across countries, decreased with age, and increased with educational level and occupational skill. Men had stronger preferences than women. A country's cultural value dimensions and its ability to meet its citizens' basic needs explained about half of the variation in preferences across countries. Preferences for andragogical learning were highest in Western countries, and among adults with similar demographics as Knowles. Implications for research and practice are discussed.

Available at: <https://doi.org/10.1080/0158037X.2020.1732335>

Title:

Ruud, G., Grip Andries, ., & Arnoud, W. (2020). Do new ways of working increase informal learning at work?. *Personnel Review*, 1-16. doi: 10.1108/PR-10-2019-0549

Abstract:

The purpose of this paper is to provide a first investigation of how new ways of working (NWW) and their various facets relate to employee informal learning at work, while accounting for a range of known antecedents of informal learning. Design/methodology/approach The job demand–control model and the job demands–resources model underpin our hypotheses on how NWW would relate to informal learning. The hypotheses are tested using the Preacher and Hayes (2008) bootstrap method for mediation analysis, accounting for the potential mediating effect of the frequency with which employees receive feedback. Findings The analyses show that NWW positively relate to informal learning at work. This relation is mediated by the frequency with which employees receive feedback. Further analysis shows that one particular NWW facet – access to organizational knowledge – is an independent driver of informal learning, hardly mediated by receiving feedback. Practical implications The results suggest that managers who seek new ways to stimulate informal learning can do so by giving their employees more access to organizational knowledge, for instance, by leveraging the potential of modern ICT. Originality/value This empirical paper is the first study on the impact of NWW on informal learning at work. Using data on the Dutch working population, it provides novel insights for several strands of literature as well as for practitioners.

Available at (open access): <https://doi.org/10.1108/PR-10-2019-0549>

Title:

Sahoo, S., Millar, R. J., Yamashita, T., & Cummins, P. A. (2020). Literacy skills, immigration and motivation to learn among adults in the U.S. In J. P. Egan (Eds.), *Adult Education in Global Times Conference*, Vancouver, BC, USA, 2020. Ottawa: Canadian Association for the Study of Adult Education. Retrieved November 27, 2020, from <https://eric.ed.gov/?id=ED607757>

Abstract:

This study examined how literacy skills and nativity status (foreign-born vs. U.S. born) are associated with motivation to learn (MtL). Nationally representative data (N = 8,670) of adults between the ages of 18 years old and older years were obtained from the 2012/2014 Program for International Assessment of Adult Competencies (PIAAC). Structural equation models showed that higher literacy skills (0-500 points) ($b = 0.159, p < 0.05$) were associated with greater MtL. Additionally, foreign-born individuals tended to have ($b = -0.064, p < 0.05$) lower MtL than U.S.-born individuals. Limited literacy skills, educational attainment, and being an immigrant are potential barriers to motivation towards life-long learning participation among middle-aged adults.

Available at: <https://eric.ed.gov/?id=ED607757>

Title:

Sandoval-Hernandez, A., & Carrasco, D. (2020). Analysing PIAAC data with the IDB Analyzer (SPSS and SAS). In D. B. Maehler & B. Rammstedt (Eds.), *Large-Scale Cognitive Assessment: Analyzing PIAAC Data* (pp. 117-148). Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_6

Abstract:

This chapter provides readers with a step-by-step guide to performing both simple and complex analyses with data from the Programme for the International Assessment of Adult Competencies (PIAAC) using the IEA International Database (IDB) Analyzer. The IDB Analyzer is a Windows-based tool that generates SPSS and SAS syntax. Using this syntax, corresponding analyses can be

conducted in SPSS and SAS. The chapter presents the data-merging module and the analysis module. Potential analyses with the IDB Analyzer are demonstrated—for example, the calculation of percentages, averages, proficiency levels, linear regression, correlations, and percentiles.

Available at (open access): https://doi.org/10.1007/978-3-030-47515-4_6

Title:

Scandurra, R., & Calero, J. (2020). Data on adult skills formation. *Data in Brief*, 28, 1-7. doi: 10.1016/j.dib.2019.104953

Abstract:

This article features supplementary data related to the article “How are adult skills configured?” [1]. The tables show the descriptive statistics of the variables included in the model together with the measurement model and the measure of overall model fit. Moreover, the data article describes the procedures used and can be beneficial for the research community for further research on adult skills. For further information please consult linked data.

Available at (open access): <https://doi.org/10.1016/j.dib.2019.104953>

Title:

Scheeren, L. (2020). *Not on the same track? Tracking age and gender inequality in education*. University of Amsterdam, Dissertation. <https://hdl.handle.net/11245.1/83f2de24-0241-478b-af34-2a1701990ca1>

Abstract:

In the past decades a female dominance in educational attainment emerged, a phenomenon coined “the rise of women”. This dissertation focuses on the role of the educational institutional context, more specifically the tracking age, in understanding gender inequality. In four empirical studies, it is examined whether the age at which educational systems track affects gender differences in various educational outcomes. High quality repeated cross-national surveys are used, that assess respondents in several countries at different ages and educational stages. Studying various educational outcomes at different moments in the educational career across a large number of countries and birth cohorts, allows me to examine how gender gaps in education develop differently in societies with different tracking ages. This dissertation highlights the importance of the setup of the education system for gender inequality and, more specifically, shows that the age at which educational systems track affects gender differences in various educational outcomes.

Available at: <https://hdl.handle.net/11245.1/83f2de24-0241-478b-af34-2a1701990ca1>

Title:

Scherer, Ronny (2020). Analysing PIAAC data with structural equation modelling in Mplus. In *Large-Scale Cognitive Assessment : Analyzing PIAAC Data*, edited by Débora B. Maehler and Beatrice Rammstedt, 165-208. Cham: Springer International Publishing. doi: 10.1007/978-3-030-47515-4_8.

Abstract:

Structural equation modelling (SEM) has become one of the most prominent approaches to testing substantive theories about the relations among observed and/or unobserved variables. Applying this multivariate procedure, researchers are faced with several methodological decisions, including the treatment of indicator variables (e.g. categorical vs. continuous treatment), the handling of missing data, and the selection of an appropriate level of analysis. The PIAAC data pose additional issues, such as the clustering of individual-level data, the large number of participating countries, the representation of performance scores by a set of plausible values, and the differences in the

selection probabilities. Therefore, a flexible software package is required to handle them. This chapter introduces readers to analysing PIAAC data with SEM in the software Mplus by (a) presenting the key concepts behind SEM, (b) discussing the complexities of the PIAAC data and their possible handling, (c) illustrating the specification and evaluation of measurement and structural models, and (d) pointing to current developments in the areas of measurement invariance testing and multilevel SEM. Sample input and output files are provided.

Available at: https://doi.org/10.1007/978-3-030-47515-4_8

Title:

Sevilla, M.-P., & Farías, M. (2020). Labour market mismatch in emerging countries: The case of Chile. *Compare: A Journal of Comparative and International Education*, 50(2), 276-293. doi: 10.1080/03057925.2019.1675495

Abstract:

One of the most salient characteristics of the recent evolution of Chilean higher education system is its rapid expansion. Conversely, the competencies required for the workforce have been slower to emerge. This paper examines the incidence of qualification and skill mismatches across different populations, across age groups, gender, and educational levels. The discrepancy between the qualifications and skills possessed by workers, and those required to perform their jobs is measured using the Survey of Adult Skills-PIAAC and a national socioeconomic survey. Our results suggest that overeducation is increasing across time, affecting mainly younger, higher educated workers. Over-skilling is also a widespread phenomenon among this group, probably due to a crowding out process. Moreover, the high competition for accessing the best positions is leading to credential inflation. Thus, the axiom that education per se leads to a good job, which guides much student decision-making, seems increasingly diffuse and requires urgent review.

Available at: <https://doi.org/10.1080/03057925.2019.1675495>

Title:

Shields, R., & Hernandez, A. S. (2020). Mixed signals: Cognitive skills, qualifications and earnings in an international comparative perspective. *Oxford Review of Education*, 46(1), 111-128. doi: 10.1080/03054985.2019.1687436

Abstract:

The relative importance of educational qualifications and cognitive skills forms an enduring debate in research on education and the labour market. While early work in human capital theory essentially equated qualifications and skills, signalling and screening theories provided a more nuanced distinction between the two, highlighting the importance of qualifications as a way of reducing uncertainty in hiring. Recent literature argues that most formal education is largely signalling that provides minimal productivity gains. This paper seeks to inform the debate on human capital and signalling theories by examining cross-national variation in how the qualifications and cognitive skills relate to earnings. Using data from the Programme for the International Assessment of Adult Competencies (PIAAC), we analyse variation in how cognitive skills (literacy, numeracy and problem-solving) and qualifications (secondary and higher education completion) relate to earnings. Although the contributions of qualifications tend to outweigh cognitive skills, the relative contributions of each factor vary considerably across countries. This variation suggests that high levels of signalling are not inevitable and may be explained by contextual differences in education systems and labour markets. Countries with more higher education attainment have lower levels of signalling and place higher premiums on cognitive skills.

Available at: <https://doi.org/10.1080/03054985.2019.1687436>

Title:

Simard-Duplain, G., & St-Denis, X. (2020). Exploration of the role of education in intergenerational income mobility in Canada: Evidence from the Longitudinal and International Study of Adults. *Canadian Public Policy*, 46(3), 369-396. doi: 10.3138/cpp.2019-072

Abstract:

Canadian children experience a high level of intergenerational income mobility compared with US children. Moreover, their physical and mental health outcomes, school readiness, and post-secondary attendance are all less tightly associated with parental outcomes than in the United States. In this article, we investigate the role played by children's education in the intergenerational transmission of income in Canada. Existing research has produced macro-level estimates of mobility to draw comparisons over time and across places and has studied the micro-level mechanisms that underlie the relationship between parents' and children's outcomes. However, evidence on the extent to which the different factors investigated drive the broader numbers is still limited. To remedy this, we exploit the Longitudinal and International Study of Adults, a rich panel of integrated survey and administrative data covering 1982–2013. We estimate that the education level of children accounts for 40.5–50.1 percent of the correlation between their income and their parents', similar to the United States. Moreover, we discuss evidence suggesting that the greater mobility of Canadian children is linked not only to their lower returns to education but also to the weaker association between their education and their parents' income. Finally, we find that almost half of the effect linked to education is associated with the skills respondents use at work, such as reading or communication.

Available at: <https://doi.org/10.3138/cpp.2019-072>

Title:

Steurer, S. J. (2020). *How to unlock the power of prison education*. Policy Report Princeton: ETS Policy Evaluation & Research Center. Retrieved November 27, 2020, from <http://files.eric.ed.gov/fulltext/ED607341.pdf>

Abstract:

Using data from two of the most recognized studies on the incarcerated population, the "U.S. PIAAC Survey of Incarcerated Adults" and a comprehensive evaluation by the RAND Corporation for the Bureau of Justice Assistance, as well as insights from interviews with leading experts in the U.S. penal system and his own observations made over four decades working in prison education, Stephen Steurer explores the role of education in reentry planning and recidivism and presents a compelling case for why we need to take immediate steps to improve the education and skills of the incarcerated population. The paper presents a series of pragmatic and actionable recommendations across three key domains: (1) improvements in training to emphasize the critical role of education in rehabilitation efforts; (2) advancements in policy supportive of correctional education and skill development; and (3) a call for an expansion of a national research agenda to inform continuous improvements for prison educational programming.

Available at (open access): <http://files.eric.ed.gov/fulltext/ED607341.pdf>

Title:

Suchánek, J. (2020). *The risks of job automation in the regions of the Czech Republic*. Charles University, Faculty of Social Sciences, Institute of Economic Studies, Bachelor thesis. Retrieved November 30, 2020, from <https://dspace.cuni.cz/bitstream/handle/20.500.11956/120638/130291480.pdf?sequence=1>

Abstract:

This thesis estimates the risk of job automation in the regions of the Czech Republic on second level of Nomenclature of Territorial Units for Statistics (NUTS 2). We base our methodology on occupation-based approach and then proceed to implement task-based approach and use weighted Generalized Linear Model. We evaluate data from 1st Round of 1st Cycle of collection in The Survey of Adult Skills (PIAAC). After acquiring predictions for the Czech Republic, we further analyzed them in order to estimate relationship between them and 20 macro-level indicators, which we suspected of being linked to automatibility and robotisation. For that, we used individual OLS regression of predictions on these indicators and also computed Pearson correlation coefficient between share of high risk of automatibility jobs and these indicators. Then we proceeded to discuss results and derived policy suggestions for government and policy makers in order to minimize the threat automation and robotization poses. We conclude that NUTS 2 regions highly threatened by automation or robotization are Central Moravian, Northwestern and Moravian-Silesian region. We also derived that government and policy makers ought to focus in their policies to lower future long term employment losses by improving quality of educational institutions, implementing requalification programmes for workers at high risk of automation or adjusting taxes and investments so that economy performs as good as possible.

Available at (open access): <https://dspace.cuni.cz/bitstream/handle/20.500.11956/120638/130291480.pdf?sequence=1>

Title:

Sulak, T. N., Wilson, R., Renbarger, R. L., Kaul, C. R., & O'Guinn, N. (2020). The relationships between numeracy scores and soft skills in employed and unemployed Americans. *New Horizons in Adult Education and Human Resource Development*, 32(2), 19-39. doi: 10.1002/nha3.20281

Abstract:

Over the past two decades, the skills needed to be successful in the workplace have expanded beyond technical skills to include 21st-century soft skills such as critical thinking, communication, collaboration, and creativity. A structural equation model of the ATC21STM was used to investigate the relationship between 21st-century soft skills and numeracy for employed and non-employed Americans (N = 3,948) included in the Program for the International Assessment of Adult Competencies (PIAAC) data. Higher numeracy scores predicted employment while 21st-century soft skills did not. The results of this study may indicate a greater need to focus on numeracy in compulsory education as well as adult basic education.

Available at (open access): <https://doi.org/10.1002/nha3.20281>

Title:

Tang, X., Wang, Z., Liu, J., & Ying, Z. (2020). An exploratory analysis of the latent structure of process data via action sequence autoencoders. *British Journal of Mathematical and Statistical Psychology*, 74(1), 1-33. doi: 10.1111/bmsp.12203

Abstract:

Computer simulations have become a popular tool for assessing complex skills such as problem-solving. Log files of computer-based items record the human-computer interactive processes for each respondent in full. The response processes are very diverse, noisy, and of non-standard formats. Few generic methods have been developed to exploit the information contained in process data. In this paper we propose a method to extract latent variables from process data. The method utilizes a sequence-to-sequence autoencoder to compress response processes into standard numerical vectors. It does not require prior knowledge of the specific items and human-computer

interaction patterns. The proposed method is applied to both simulated and real process data to demonstrate that the resulting latent variables extract useful information from the response processes.

Available at (open access): <https://doi.org/10.1111/bmsp.12203>

Title:

Temizel, I. N. (2020). *Who is at risk of automation?: Estimating the effects of automation technologies on employment*. Delft University of Technology, Master thesis. Retrieved November 30, 2020, from <http://resolver.tudelft.nl/uuid:214f02de-edf4-46d1-b5b6-876311852982>

Abstract:

This study defines who is at risk of automation and discusses policies to ensure the vulnerable groups are seen. The study of Nedelkoska and Quintini (2018) is taken as the role model: The risk of automation for individuals across OECD countries is calculated by associating the expert assessment conducted by Frey and Osborne (2013) with individuals' skills used at work collected by PIAAC. The analysis is improved by training the model with different country datasets and including additional skills into the analysis. 14% of the total employment of 33 countries is found to be at significantly high risk of automation. Workers at the highest risk of losing their jobs are more likely to be less-educated, low-income earners who perform unskilled jobs. The risk of automation declines as the level of education increases. Therefore, this study highlights the importance of training and re-skilling the risky-groups to cope with the possible adverse effects of technological progress.

Available at (open access): <http://resolver.tudelft.nl/uuid:214f02de-edf4-46d1-b5b6-876311852982>

Title:

Tout, D. (2020). Evolution of adult numeracy from quantitative literacy to numeracy: Lessons learned from international assessments. *International Review of Education*, 66(2), 183-209. doi: 10.1007/s11159-020-09831-4

Abstract:

Historically, numeracy has tended to be forgotten and overlooked in adult education, especially compared to literacy. Yet evidence exists to show that numeracy should be made a priority, and that building the foundational numeracy skills of young people and adults is vital for their well-being in work and life in the 21st century. In the past three decades, there has been an increasing awareness of the role and importance of mathematics and numeracy skills in adult life. This concerns every adult as an individual, as a member of society and as a worker, and how proficiency in these areas is critical in underpinning the skills necessary to negotiate the challenges of 21st-century life. This article describes how this growing understanding and awareness of numeracy has been enhanced through the evolution of the assessment of numeracy in international adult skills surveys. It began with the International Adult Literacy Survey (IALS) in the 1990s, continued with the Adult Literacy and Lifeskills (ALL) survey in the mid-2000s, and in 2011 finally led to the Programme for the International Assessment of Adult Competencies (PIAAC). The latter's second cycle is due to start collecting data in 2021–2022 and the results are due to be published in 2023. The development and ongoing refinement of the theoretical frameworks and constructs that underpin these programmes and the assessments themselves, alongside the research based on the rich data of empirical and background information emerging from these surveys, have contributed significantly to our knowledge and understanding of numeracy in people's lives.

Available at: <https://doi.org/10.1007/s11159-020-09831-4>

Title:

Tout, D., Gal, I., Groenestijn, M., Manly, M., & Schmitt, M. J. (2020). *PIAAC numeracy task complexity schema: Factors that impact on item difficulty*. Camberwell, Australia: Australian Council for Educational Research (ACER). doi: 10.0.146.141/978-1-74286-609-3

Abstract:

This paper describes some lessons learned from international adult numeracy assessments that can help in understanding the challenges that people, including both adults and school students, have when solving numeracy tasks and their levels of performance on functional mathematical problems. The paper presents a theoretical schema of five factors that predict, separately and in interaction, the complexity or level of difficulty of mathematically-related assessment tasks, including tasks that incorporate texts and require literacy or reading skills, which are very common in adults' lives. The model was originally developed as part of the development of the Adult Literacy and Life-Skills survey in the mid '90s, but later adapted and effectively used within the Programme for the International Assessment of Adult Competencies (PIAAC), a.k.a. OECD Survey of Adult Skills. The five "complexity factors" described in the model are grouped into two factors addressing mainly textual aspects of tasks, and three factors addressing the mathematical aspects of tasks. These factors can assist test developers, researchers and educators in predicting task difficulty and in targeting the development of items and tasks to more efficiently cover the range of student performance and skill levels.

Available at (open access): https://research.acer.edu.au/transitions_misc/37

Title:

Tunstall, S. L. (2020). Measuring numeracy: Validity and the Programme for the International Assessment of Adult Competencies (PIAAC). *Numeracy*, 13(2), 1-39. doi: 10.5038/19364660.13.2.1348

Abstract:

A tension raised in recent scholarship is that between numeracy as a social practice and numeracy as a functional skill set. Such frameworks for conceptualizing numeracy pose a challenge to assessment because what individuals do with numeracy is not the same as what individuals can do (or express) in an assessment setting. This study builds on work related to numeracy assessment through a validity examination of a portion of a well-known assessment: the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). In following a path set out by standards for assessment, I ask: What does the PIAAC numeracy assessment claim to measure? What are the intended uses of the assessment? How are we to interpret scores with those uses in mind? And to what degree do evidence and theory support interpretations for those uses? The main finding from this work is that while score interpretations from the PIAAC numeracy assessment may be valid for the use of describing proficiency distributions for specific groups, the construct of interest—numerate behavior—is not what is measured. Moreover, evidence distinguishing what is measured from other constructs, such as the OECD's conception of literacy, is largely absent. This study contributes to existing literature on numeracy assessment by providing sources of evidence to consider in making judgments about validity for an assessment. It also suggests that, as scholars, we carefully hedge the ways that we talk about large-scale assessments, and in relation, what individuals can or cannot do based on results from such assessments.

Available at (open access): <https://doi.org/10.5038/1936-4660.13.2.1348>

Title:

Tverdostup, M. (2020). Skills utilisation and gender: Estonian case study. In B. Woźniak-Jęchorek & M. Pilc (Eds.), *Labour Market Institutions and Productivity: Labour Utilisation in Central and Eastern Europe*. Abingdon: Taylor & Francis. Retrieved November 30, 2020, from <https://www.taylorfrancis.com/chapters/skills-utilisation-gender-maryna-tverdostup/e/10.4324/9781003009658-10>

Abstract:

This chapter explores a direct measure of labour utilisation – on-the-job use of information-processing and generic skills. An actual on-the-job use of skills sheds a light on the input side of the labour market, namely, individual skills and competencies as major productive resources. This chapter focuses on Estonia as a country with Europe's highest gender wage gap. While the gender wage disparity was widely addressed in the literature, there is no empirical evidence on the actual gender gap in utilisation of productive skills. This question constitutes a focal point of this chapter. Relying on the Program of International Assessment of Adult Competencies (PIAAC) data, the analysis reveals stark gender disparities in skill utilisation. Women tend to use skills systematically less than men with comparable demographic, human capital, and employment profiles. Gendered job segregation appears to be a major observed factor driving the disparities. However, the analysis signals that unobserved forces, such as non-cognitive abilities, gender-specific job preferences, motivation, and employer discrimination may drive the remaining, unexplained gaps in skills use. The chapter draws policy attention to multi-dimensional interventions targeting gender gaps in skills utilisation, which would go beyond canonical gender quotas and affirmative action policies.

Available at: <https://www.taylorfrancis.com/chapters/skills-utilisation-gender-maryna-tverdostup/e/10.4324/9781003009658-10>

Title:

Valiente, O., & Lee, M. (2020). Exploring the OECD survey of adult skills (PIAAC): Implications for comparative education research and policy. *Compare: A Journal of Comparative and International Education*, 50(2), 155-164. doi: 10.1080/03057925.2020.1703846

Abstract:

The current special issue aims to contribute to these international debates by analysing the potential and limitations of PIAAC data for comparative research on adult skill formation and the associated policy debates. We are particularly interested in what PIAAC can tell us about existing educational and social inequalities between adults across and within countries. The seven empirical studies included in this special issue interrogate skill inequalities in relation to three domains: acquisition of skills through education (Heisig, Elbers, and Solga 2019), returns to education and training (Danner, Lechner, and Rammstedt 2019; Kwon, Park, and Byun 2019) and labour market mismatch (Capsada-Munsech 2019; Choi, Guio, and Escardibul 2019; Fregin, Levels, and van der Velden forthcoming; Sevilla and Farías 2019). The special issue consists of four cross-national comparative studies (Choi, Guio, and Escardibul 2019; Danner, Lechner, and Rammstedt 2019; Fregin, Levels, and van der Velden forthcoming; Heisig, Elbers, and Solga 2019) and three studies delving deeply into a single country analysis focusing on Spain (Capsada-Munsech 2019), South Korea (Kwon, Park, and Byun 2019), and Chile (Sevilla and Farías 2019). The selected papers show the potential of PIAAC not only for studying international patterns but also for analysing how national political economy contexts shape inequalities in adult skills. At the same time, they provide several insights into and reflections on the methodological limitations of this kind of international large-scale assessments for comparative education research and policymaking.

Available at (open access): <https://doi.org/10.1080/03057925.2020.1703846>

Title:

Vandeweyer, M., & Verhagen, A. (2020). *The changing labour market for graduates from medium-level vocational education and training*. OECD Social, Employment and Migration Working Papers No. 244. Paris: OECD. Retrieved November 30, 2020. doi: 10.1787/503bcecb-en

Abstract:

This working paper looks at the labour market outcomes of individuals who hold a medium-level VET qualification (defined as upper or post-secondary non-tertiary education with vocational orientation) today, as well as how they have changed in the past 10 to 15 years and what can be expected in the medium-term. It looks at indicators of job quality and quantity, and zooms in on the types of occupations that employ VET graduates. The outcomes of VET graduates younger than 35 years old are compared to those of general education graduates (at the same education level), tertiary education graduates and graduates without an upper secondary education degree. Finally, based on these findings, the report discusses key policy directions to improve VET graduates' access to high-quality jobs.

Available at (open access): <https://doi.org/10.1787/503bcecb-en>

Title:

Vera-Toscano, E., & Meroni, E. C. (2020). An age-period-cohort approach to the incidence and evolution of overeducation and skills mismatch. *Social Indicators Research*, 1-30. doi:10.1007/s11205-020-02514-5

Abstract:

This paper provides new evidence on the changes in the level and persistence of occupational mismatch across countries by investigating whether differences among generations (cohorts) are at the core of these changes. Using data from the 1994–1998 International Adult Literacy Survey, the 2003–2008 Adult Literacy and Life Skills Survey, and the 2011–2012 OECD Survey of Adult Skills, we estimate an age-period-cohort model in three European countries to examine the extent to which younger cohorts face a greater (smaller) risk of being occupationally mismatched in their jobs than their older counterparts. Two definitions of occupational mismatch are used, focusing on both educational attainment and literacy skills. Results indicate that countries present different patterns in the evolution of occupational mismatch from older to younger generations according to the definition employed (overeducation or skills mismatch). Different macro-economic and educational contexts may be at the core of these results, suggesting that tailored policy responses are desirable for effectively addressing the occupational mismatch problem.

Available at: <https://doi.org/10.1007/s11205-020-02514-5>

Title:

Vézina, S., & Bélanger, A. (2020). Are large surveys of adult literacy skills as comparable over time as we think?. *Large-scale Assessments in Education*, 8(1), 1-23. doi: 10.1186/s40536-020-00080-3

Abstract:

Recent literature shows that younger cohorts have lower levels of literacy ceteris paribus in Canada, the United States, Norway and other developed countries. Very few explanations are provided to justify the existence of this negative cohort effect. Yet this decline has serious implications for the economy, education system and society. In this paper, we focus on Canada and replicate the results published in the literature using the same methodology (synthetic cohorts). We use the same data from surveys of adult skills, namely the International Adult Literacy Survey (IALS), the Adult Literacy and Life Skills Survey (ALL) and the Survey of Adult Skills, a product of the OECD Programme for the

International Assessment of Adult Competencies (PIAAC). Second, we conduct further analyses to better understand the effect of time on adults' literacy skills. We then show that age has a negative effect on the literacy score, but also that a significant "period" effect (or rather a "survey" effect) can only be explained by a change in the instrument used to measure literacy skills from one survey to another. This article reveals that the negative cohort effect mentioned in the literature may be fallacious as it is exacerbated when the control for measuring instrument distortions is omitted. This paper contributes to advancing knowledge about the effect that age and cohort has on adult literacy levels in Canada. The results weaken the idea of a clear negative cohort effect; much of this effect would in fact be caused by a non-comparable methodology that systematically assigned individuals lower scores in the most recent survey cycles. These findings are important because they highlight the limitations of analyses that can be done with the synthetic cohort method using cross-sectional surveys on adult literacy skills not only in Canada, but also in all other countries where these surveys have been conducted.

Available at (open access): <https://doi.org/10.1186/s40536-020-00080-3>

Title:

Vörös, Z., Kehl, D., & Rouet, J.-F. (2020). Task characteristics as source of difficulty and moderators of the effect of time-on-task in digital problem-solving. *Journal of Educational Computing Research*, 58(8), 1494-1514. doi: 10.1177/0735633120945930

Abstract:

To be able to solve complex information problems in a digital environment is a key 21st century skill. Technology users usually expect to achieve their goals in a fast and accurate way. However, the actual relationship between time-on-task and task outcome is currently not well understood. We analyzed data from a large-scale international study in which representative samples of adults had to solve more or less complex problems using standard computer applications. Our results indicate that different task characteristics influence the relationship between problem-solving performance and time-on-task in specific ways. Spending more time on a task is more likely to compensate an average problem solver when task complexity can be attributed to intrinsic task and technology drivers than when complexity stems from the cognitive/metacognitive activities belonging to information problem-solving processes per se, especially acquiring and evaluating information. Thus, the interpretation of time-on-task should take the source of difficulty into consideration. Implications for personal and professional development are discussed.

Available at: <https://doi.org/10.1177/0735633120945930>

Title:

Wang, Z., Tang, X., Liu, J., & Ying, Z. (2020). *Subtask analysis of process data through a predictive model*. arXiv.org. Retrieved November 27, 2020, from <https://arxiv.org/abs/2009.00717>

Abstract:

Response process data collected from human-computer interactive items contain rich information about respondents' behavioral patterns and cognitive processes. Their irregular formats as well as their large sizes make standard statistical tools difficult to apply. This paper develops a computationally efficient method for exploratory analysis of such process data. The new approach segments a lengthy individual process into a sequence of short subprocesses to achieve complexity reduction, easy clustering and meaningful interpretation. Each subprocess is considered a subtask. The segmentation is based on sequential action predictability using a parsimonious predictive model combined with the Shannon entropy. Simulation studies are conducted to assess performance of the new methods. We use the process data from PIAAC 2012 to demonstrate how exploratory analysis

of process data can be done with the new approach.

Available at (open access): <https://arxiv.org/abs/2009.00717>

Title:

Westerman, J. (2020). *Motives matter : Intrinsic motivation in work learning and labor market performance*. Stockholm University, Department of Sociology, Dissertation. Retrieved November 17, 2020, from <https://www.diva-portal.org/smash/get/diva2:1423955/FULLTEXT01.pdf>

Abstract:

This dissertation examines the importance of individual work motivation for two crucial dimensions of inequality: work learning and labor market performance. The first dimension relates to learning activities at work, and the second to wage attainment and knowledge-oriented task assignment. While motivation is a broad concept, the empirical analyses focus on task involvement and the motivation to learn. Job mobility is further used to indicate a motivational strategy aimed at gaining new labor market experiences. These kinds of motivation are related to individual variation in intrinsic motivation, representing: pure curiosity and a strive for competence in novel environments, a focus on personal development rather than on proving ability, satisfaction gained from feelings of competence and autonomy during task performance, and experience of complete absorption in activities of learning and mastery. The connection between intrinsic motivation and extrinsic labor market rewards (such as wage attainment) is theorized to follow from: (a) a higher level of performance in learning activities at work, (b) consequent assignment to more productive work tasks, and (c) a rise in material rewards (wages) linked to this assignment. Variation in the extent to which intrinsic motivation can be elicited in individuals, and the extent to which intrinsic motivation is targeted toward performance related activities in the labor market, is thus expected to matter for patterns of inequality. Intrinsic motivation, as a productive factor shaping inequality, is expected to grow in importance in parallel with an increase in the labor market value of skills, and a decline in bureaucratic and closely monitored production organization. As a research agenda, the analysis of intrinsic motivation is thus crucial for understanding evolving patterns of conflict and inequality in contemporary societies. Study I analyzes the relationship between task involvement and wage attainment, and shows that task involvement is moderately associated with higher wages in two datasets: the Swedish Level-of-Living Survey (LNU) and the European Social Survey (ESS). Study II analyzes the relationship between repeated job mobility (a 'new experiences strategy') and work learning. Two datasets are used: LNU and the Swedish part of the Programme for the International Assessment of Adult Competencies (PIAAC). Results show that repeated job mobility is positively associated with several, but not all, kinds of learning activities. Study III analyzes the associations that motivation to learn shares with knowledge-oriented task assignment and wage attainment using PIAAC data for 17 European countries. Results show that the motivation to learn is strongly correlated with knowledge-oriented task assignment, and moderately correlated with wage attainment. These correlations are similar across distinct levels of numerical proficiency, and across labor market contexts.

Available at (open access): <https://www.diva-portal.org/smash/get/diva2:1423955/FULLTEXT01.pdf>

Title:

Yi, S. (2020). *Adult education and full-time professionals' problem solving skills: Insights from the survey of adult skills*. Boston College, Dissertation.

Abstract:

Sponsored by OECD, PIAAC represents the first attempt to assess adult problem solving in technology-rich environments (PS-TRE) on an international scale that is comparable cross culturally and

cross-nationally. The objectives of this study are to study (1) the distributions of PS-TRE proficiency scores across 14 selected countries and (2) within each country, the associations between PS-TRE proficiency scores and the different formats of adult education and training (AET) participation. Using data on full-time professionals (at least 25 years old) from these countries, propensity score weighting was applied to estimate the associations between the different formats of AET participation and their PS-TRE proficiency scores. To place these estimates in context, parallel analyses were conducted – one with the sample of full-time associates in the 14 selected countries and the other with full-time professionals' Literacy and Numeracy proficiency scores as measured by PIAAC. The results showed that after controlling for socio-demographic background, occupational categories, use of key information-processing skills (both at home and at work), as well as use of generic workplace skills, no consistent pattern was found across the 14 selected countries. At the individual country level, scattered significant relationships were identified. For example, in Denmark, both formats of AET participation (vs. None) are significantly and positively associated with full-time professionals' PS-TRE proficiency scores and their probability of scoring in the top quartile of the PS-TRE distribution ($p < .01$). While in the United States, Formal AET (vs. None) is significantly and positively associated with full-time associates' PS-TRE proficiency scores and their probability of scoring in the top quartile of the PS-TRE distribution ($p < .01$). The variations in relationships between the different formats of AET participation and working adults' skills proficiency across domains and samples indicate the necessity of conducting qualitative research on AET programs in individual countries. Furthermore, to provide recommendations tailored to the specific needs of each country, a fine-grained classification of AET programs based on the OECD guideline was suggested.

Available at: <https://hdl.handle.net/2345/bc-ir:108763>

Title:

Yoon, J., Hur, E. J., & Kim, M. (2020). An analysis of the factors on the problem-solving competencies of engineering employees in Korea. *Sustainability*, 12(4), 1-15. doi: 10.3390/su12041677

Abstract:

The purpose of this study is to analyze the effect of the factors on the problem-solving competency of engineering graduates. To this end, we use the 2016 Korean survey data among the Program for the International Assessment of Adult Competencies (PIAAC) survey data conducted by the Organization for Economic Co-operation and Development (OECD). In summary of the study's major results, older people and females have lower problem-solving competencies (Model 1); higher literacy and numeracy competencies lead to higher problem-solving competencies (Model 2); and those with more experiences of sharing work-related information have higher problem-solving competencies. However, those who give more presentations have lower problem-solving competencies (Model 3), and those who make frequent use of Information and Communications Technology (ICT) to send or receive e-mails or conduct real-time discussions have higher problem-solving competencies (Model 4). These results present implications from the two perspectives of "sustainability" and "integration." Sustainability is further classified into the following two perspectives: (1) sustainability from the longitudinal viewpoint of middle school, high school, and then job education, and (2) sustainability from the cross-sectional perspective of sustainable organization cultures. In addition, the implications of integration are based on common growth with other related core competencies besides problem-solving competencies.

Available at (open access): <http://dx.doi.org/10.3390/su12041677>

Title:

Yung, C.-Y., Yoowoo Lee, S., Park, E. C., & Choi, R. (2020). Factors affecting employees' problem-solving skills in technology-rich environments in Japan and Korea. *Sustainability*, 12(17), 1-16. doi: 10.3390/su12177079

Abstract:

This study conducts an analysis about the impact of basic background, cultural capital, skill use, and participation in training on employees' problem-solving proficiency in Japan and Korea based on data from the Programme for the International Assessment of Adult Competencies Survey (PIAAC). This research compared four clusters (basic background, cultural capital, participation in training, skill usage) to determine the factors affecting problem-solving skills in technology-rich environments (PSTRE) in Japan and Korea. In addition, we examined whether aging moderate the relationship between skill usage and participation in training and PSTRE. The finding shows that PSTRE is associated with the basic background, cultural capital, and skill usage. Moreover, the interaction effect between the use of skill at home and age is statistically significant in Japan. Our results provide new insights for vocational psychology and work-life research in the context of employers, employees, as well as policymakers.

Available at (open access): <https://doi.org/10.3390/su12177079>

Title:

Zhang, B., Luo, J., Chen, Y., Roberts, B., & Drasgow, F. (2020). *The road less traveled: A cross-cultural study of the negative wording factor in multidimensional scales*. doi: 10.31234/osf.io/2psyq

Abstract:

Negatively worded items (NWIs) have been found to distort the hypothesized one-factor structure of many unidimensional scales and an additional negative wording factor is needed to achieve adequate model fit. However, little is known about impact, dimensionality, and correlates of the negative wording factor for multidimensional scales. Using responses to the Big Five Inventory-2 (BFI-2) administered to nationally representative samples of Germany, Spain, France, Japan, Poland, America, and England, the present study reported on a comprehensive cross-cultural examination of the impact, dimensionality, and external correlates of negative wording factors. We further investigated whether modeling a negative wording factor affects the factor structure and criterion-related validity. It was found that NWIs blurred the factor structure of the BFI-2 in non-English-speaking countries such that factors like agreeableness was not recovered, thus rejecting configural invariance. The results also strongly supported the idea that there was a general negative wording factor across subscales of the BFI-2 and this factor was consistently related to age, gender, educational attainment and life satisfaction across countries. Moreover, modeling a negative wording factor improved the factor structure of the BFI-2 and scalar invariance was achieved. Implications of these findings were discussed.

Available at (open access): <https://doi.org/10.31234/osf.io/2psyq>

Title:

Zhang, S., Tang, X., He, Q., Liu, J., & Ying, Z. (2020). *External correlates of adult digital problem-solving behavior: Log data analysis of a large-scale assessment*. Retrieved November 27, 2020, from http://www.scientifichpc.com/processdata/docs/empirical_paper.pdf

Abstract:

Using the action sequence data (i.e., log data) from the problem solving in technology-rich environments assessment on the 2012 Programme for the International Assessment of Adult Competencies

survey, the current study examines the associations between adult digital problem-solving behavior and several demographic and cognitive variables. Action sequence features extracted using multi-dimensional scaling (Tang, Wang, He, Liu, & Ying, 2019) and sequence-to-sequence autoencoders (Tang, Wang, Liu, & Ying, 2019) were used to predict test-taker external characteristics. Features extracted from action sequences were consistently found to contain more information on demographic and cognitive characteristics than final scores. Partial least squares analyses further revealed systematic associations between behavioral patterns and demographic/cognitive characteristics.

Available at (open access): http://www.scientifichpc.com/processdata/docs/empirical_paper.pdf

Title:

Zhang, S., Wang, Z., Qi, J., Liu, J., & Ying, Z. (2020). *Accurate assessment via process data*. New York: Columbia University. Retrieved November 27, 2020, from http://scientifichpc.com/processdata/docs/partial_scoring.pdf

Abstract:

Accurate assessment of student's ability is the key task of a test. Assessments based on final responses are the standard. As the infrastructure advances, substantially more information is observed. One of such instances is process data that are collected by computer-based interactive items and contain a student's detailed interactive processes. In this paper, we show both theoretically and empirically that appropriately including such information in assessment will substantially improve relevant assessment precision. The precision is measured empirically by out-of-sample test reliability.

Available at (open access): http://scientifichpc.com/processdata/docs/partial_scoring.pdf

Title:

Zilian, S. S., & Zilian, L. S. (2020). Digital inequality in Austria: Empirical evidence from the survey of the OECD "Programme for the International Assessment of Adult Competencies". *Technology in Society*, 63, 1-14. doi: 10.1016/j.techsoc.2020.101397

Abstract:

Digitisation and rapidly emerging new technologies are transforming many aspects of life such as education, work, and leisure. These changes lead to a growing demand for new skills related to ICT use, computer literacy, internet use, or technical digital skills. However, the extensive literature on digital inequality provides evidence for significant differences in computer skills along the usual dimensions of social inequality. Due to the omnipresence of digital technologies in everyday life, it is all the more important to know the extent of digital inequality to be able to take appropriate measures to ensure that social participation does not degenerate into a question of social stratification in the Digital Age. In this paper, we provide empirical evidence for socio-economic digital inequality in Austria using survey data from the "Programme for the International Assessment of Adult Competencies" (PIAAC) conducted in 2011/2012. The data set that supports the findings of this study is available as a scientific use file (SUF) for scientific research made available by Statistics Austria free of charge after conclusion of a data use agreement. We show, for Austria, that higher socio-economic background is positively related to digital problem-solving while being female is negatively correlated. However, when controlling for ICT engagement in everyday life, the positive effect of the socio-economic background only remains significant for groups of people with a very high socio-economic background while the effect of gender becomes statistically insignificant. Furthermore, based on Eurostat data we cannot identify a uniform trend towards a decline of digital inequality since 2012. Our results indicate that disadvantaged population groups in Austria should

be encouraged and enabled to integrate ICT usage in their everyday life to reduce digital inequality.

Available at (open access): <https://doi.org/10.1016/j.techsoc.2020.101397>

2.14 Publications in 2021

Title:

Aalst, W. M. P. (2021). Hybrid intelligence: To automate or not to automate, that is the question. *International Journal of Information Systems and Project Management*, 9(2), 5-20.

Abstract:

There used to be a clear separation between tasks done by machines and tasks done by people. Applications of machine learning in speech recognition (e.g., Alexa and Siri), image recognition, automated translation, autonomous driving, and medical diagnosis, have blurred the classical divide between human tasks and machine tasks. Although current Artificial Intelligence (AI) and Machine Learning (ML) technologies outperform humans in many areas, tasks requiring common sense, contextual knowledge, creativity, adaptivity, and empathy are still best performed by humans. Hybrid Intelligence (HI) blends human intelligence and machine intelligence to combine the best of both worlds. Hence, current and future Business Process Management (BPM) initiatives need to consider HI and the changing boundaries between work done by people and work done by software robots. Consider, for example, the success of Robotic Process Automation (RPA), which demonstrates that gradually taking away repetitive tasks from workers is possible. In this viewpoint paper, we argue that process mining is a key technology to decide what to automate and what not. Moreover, using process mining, it is possible to systematically monitor and manage processes where work is distributed over human workers and software robots.

Available at (open access): <https://revistas.uminho.pt/index.php/ijispm/article/view/3540>

Title:

Anghel, B., Cuadrado, P., & Tagliati, F. (2021). Why are cognitive test scores of Spanish adults so low? the role of schooling and socioeconomic background. *Education Economics*, 1-20. doi: 10.1080/09645292.2021.1978935

Abstract:

We explore the cognitive skill gap between the adult population in Spain and in the rest of European Union countries using the Program for the International Assessment of Adult Competencies. We find that differences in schooling account for about a third of the average difference in cognitive test scores, whereas differences in socioeconomic background explain about one fourth of the average score gap. While cognitive skill gaps are increasing across the distribution of test scores, differences in educational stocks and socioeconomic factors explain a larger fraction of the gap at the bottom than at the top of the skill distribution.

Available at: <https://doi.org/10.1080/09645292.2021.1978935>

Title:

Arellano-Bover, J. (2021). Who gets their first job at a large firm? The distinct roles of education and skills. *AEA Papers and Proceedings*, 111, 465-69. doi: 10.1257/pandp.20211009

Abstract:

Young workers' early years in the labor market are a key and formative time. Using data from 31

countries, this article documents the selection of labor market entrants into large firms, which existing literature associates with propitious environments for young workers. The young and inexperienced are underrepresented at large firms compared to experienced and older workers. Entrants who do get their first job at large firms are positively selected in terms of education and cognitive skills. The patterns of large-firm selection (i.e., importance of education vs. skills) somewhat differ between Europe, East and Southeast Asia, and North America.

Available at: <https://doi.org/10.1257/pandp.20211009>

Title:

Benda, N. C., Yang, Z., Li, H., Zhang, T., & Ancker, J. S. (2021). Lower objectively and subjectively assessed numeracy are both associated with poorer self-rated health. *BMC Research Notes*, 14(321), 1-6. doi: 10.1186/s13104-021-05737-y

Abstract:

To compare an objective with a subjective numeracy assessment for association with self-reported health status, where numeracy refers to “the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions”

Available at (open access): <https://doi.org/10.1186/s13104-021-05737-y>

Title:

Bentaouet Kattan, R., Macdonald, K., & Patrinos, H. A. (2021). The role of education in mitigating automation's effect on wage inequality. *Labour*, 35(1), 79-104. doi: 10.1111/labr.12187

Abstract:

While automation has renewed the debate about labor market policy responses to inequality and job losses, less attention has been given to education policy. We present a general equilibrium model and empirical evidence showing how education mitigates wage inequality resulting from a recent, worst-case expectation of technology's ability to automate job tasks. Our model predicts that education could reduce automation's marginal effect on the wage gap between lower- and higher-skilled labor by up to 3 percentage points. Education policies that promote automation-complementing skill formation would reduce the need for costly labor market and wealth redistribution interventions later in life.

Available at: <https://doi.org/10.1111/labr.12187>

Title:

Billington, M. G., & Foldnes, N. (2021). Exploring the association between occupational complexity and numeracy. *Large-scale Assessments in Education*, 9(19), 1-28. doi: 10.1186/s40536-021-00112-6

Abstract:

The basic cognitive skill of numeracy is a recognized form of human capital, associated with economic and social well-being for individuals and for nations. In this study, we explore how occupational complexity relates to proficiency in numeracy, among adults in full-time employment. We operationalize occupational complexity by constructing three measures of task complexity: complexity with data, complexity with people and complexity with things. Data from the international OECD survey of adult skills, 2012, is employed to investigate both the distribution of these three dimensions of occupational task complexity and how these relate to numeracy in 13 countries. The analysis indicates that data occupational complexity predicts numeracy scores, when controlling for age,

gender and educational level. The findings open for a hypothesis that occupational activities may enhance basic skills in adult populations. If elaborated and supported through further studies this finding has practical implications for workplace organization and contributes to theoretical understandings of the development of basic skills in adults.

Available at (open access): <https://doi.org/10.1186/s40536-021-00112-6>

Title:

Bisello, M., Fana, M., Fernández-Macías, E., & Torrejón Pérez, S. (2021). *A comprehensive European database of tasks indices for socio-economic research*. JRC Working Papers Series on Labour, Education and Technology No. 2021/04. Seville: European Commission. Retrieved November 24, 2021, from <https://ec.europa.eu/jrc/sites/jrcsh/files/jrc124124.pdf>

Abstract:

This paper presents a new and enriched version of the European database of tasks indices across jobs in the EU15 (minus UK) economy using most recent data from European Working Conditions Survey (EWCS 2015), a European (Italian) version of the O*NET database of occupational contents (ICP 2012) and the OECD's PIAAC Survey. The database of tasks indicators was created based on a coherent and comprehensive taxonomy of tasks contents, methods and tools developed in Fernández-Macías and Bisello (2020), which builds on the original version published in Fernández-Macías et al. (2016a, 2016b) including several additional new concepts and indicators at different levels. After a detailed description of the construction of the database and an initial assessment of its internal consistency, the paper offers an analysis of the tasks distribution across occupations and sectors at the European level, providing useful insights of work content and organisational methods prevailing along the job structure. The possibility to dig into the complexity of work activities characterizing single jobs allow to identify patterns of correlation across task indices and to better understand how tasks are bundled across occupations by sectors pairs. The empirical analysis confirms that tasks are not isolated forms of labour inputs that just happen to be in productive processes but building blocks of coherently constructed jobs which are embedded in productive organisations. Any analysis of tasks which focuses on a particular type in isolation risks missing important connections with other types of task content and forms of work organisation. We hope that our contribution raises awareness of the importance of having good and detailed measures of tasks contents, consistently measured at the individual worker level and at different points in time, in order to understand better how technical change and other factors are continuously changing the nature of work and the associated skills demand and job quality. A future European tasks survey could precisely provide that.

Available at (open access): <https://ec.europa.eu/jrc/sites/jrcsh/files/jrc124124.pdf>

Title:

Bol, T., & Heisig, J. P. (2021). Explaining wage differentials by field of study among higher education graduates: Evidence from a large-scale survey of adult skills. *Social Science Research*, 99, 1-16. doi: 10.1016/j.ssresearch.2021.102594

Abstract:

Why do some fields of study in higher education yield higher wage returns in the labor market than others? Human capital perspectives suggest that differences in skills are a major source of between-fields wage differentials. We assess this explanation using data from the Programme for the International Assessment of Adult Competencies (PIAAC). Our pooled analysis of 17,590 graduates from 29 countries indicates that differences in general cognitive (literacy and numeracy) skills matter relatively little, although numeracy skills do play a meaningful role in accounting for the high wages of

STEM (science, technology, engineering, and mathematics) graduates. Specific skills, proxied by skill use on the job, explain a substantial portion of between-field wage differentials. Remarkably, we find that the sex composition of the field of study remains important after taking skills into account, particularly for explaining the wage advantage of STEM graduates. Comparative analyses grouping the 29 countries into four institutional clusters—Social-democratic, Conservative, Liberal, and Post-communist—show that these general patterns are broadly similar across different institutional contexts.

Available at: <https://doi.org/10.1016/j.ssresearch.2021.102594>

Title:

Borgonovi, F. (2021). Is the literacy achievement of teenage boys poorer than that of teenage girls, or do estimates of gender gaps depend on the test? A comparison of PISA and PIAAC. *Journal of Educational Psychology, 114*(2), 239–256. doi:10.1037/edu0000659

Abstract:

Data from international large-scale assessments (ILSAs) of schooled populations indicate that boys have considerably poorer literacy skills than girls. New evidence from a household-based ILSA—Organisation for Economic Cooperation and Development Survey of Adult Skills (PIAAC)—indicates that the gender gap in literacy is negligible, even though its assessment framework is similar to that of one of the most widely used school-based assessments, the Program for International Student Assessment (PISA). Individual-level data from 15-, 16-, and 17-year-old teens in countries that administered both assessments were used to estimate and compare literacy gender gaps in the two assessments, after accounting for differences in target population, response rates, scoring scheme, test length, mode of delivery, prevalence of items involving different stimuli in the two assessments (e.g., types of texts), and cognitive processes test-takers need to engage in to solve assessment items (e.g., accessing and retrieving information or reflecting and evaluating information presented in the text). These differences explain only part of the differences across the two studies in estimated literacy gender gaps: Even when these factors are considered, gender gaps remain large in PISA and small (though imprecisely estimated) in PIAAC. The potential roles of test-taking motivation and administration conditions in explaining differences across the studies and implications for research and policy are discussed. (PsycInfo Database Record (c) 2021 APA, all rights reserved)

Available at: <https://doi.apa.org/doi/10.1037/edu0000659>

Title:

Borgonovi, F., Choi, A., & Paccagnella, M. (2021). The evolution of gender gaps in numeracy and literacy between childhood and young adulthood. *Economics of Education Review, 82*, 1-18. doi:10.1016/j.econedurev.2021.102119

Abstract:

Numeracy and literacy are important foundation skills which command significant wage premia in modern labour markets. The existence of gender differences in these skills is therefore of potential concern, and has spurred a large amount of research, especially with respect to numeracy skills. Still, little is known about the moment in which such gaps emerge, how they evolve, and if this evolution differs across countries. We use data from large scale international assessments to follow representative samples of birth-cohorts over time, and analyse how gender gaps in numeracy and literacy evolve from age 10 to age 27. We find that the advantage of boys in numeracy is small at age 10, but grows considerably between age 15 and 27. The gender gap in literacy follows a very different pattern: it is small at age 10, large and in favour of girls at age 15, and negligible by age 27.

Available at: <https://doi.org/10.1016/j.econedurev.2021.102119>

Title:

Brun-Schammé, A., & Rey, M. (2021). *A new approach to skills mismatch*. OECD Productivity Working Papers No. 24. Paris: OECD Publishing. doi: 10.1787/e9563c2a-en

Abstract:

Skills mismatch - the sub-optimal use of an individual's skills in their occupation - can be a source of dissatisfaction for workers and a brake for productivity growth. In our view, a difference in the level of skills within an occupation is not sufficient to infer that a skills mismatch exists. Since skills-mismatch is the result of a disparity between the supply and demand of labour, the quantifying of skills-mismatch must therefore be based on the mechanisms involved in this disparity. We propose to include in our measurement the level of education and field of study, which are key markers of an individual's skill level in the labour market. This makes it possible to identify, among individuals whose skill level differs from others within an occupation, those whose training profile can (or cannot) explain this situation. Through using the OECD PIAAC 2012 survey, this paper first identifies with data for France, individuals who present an apparent skills mismatch according to the framework proposed. Following an international comparison of "apparent skills mismatch rates", we conclude this study by observing how the different groups identified differ in terms of how they perceive their employment situation as well as their individual characteristics.

Available at (open access): <https://doi.org/10.1787/e9563c2a-en>

Title:

Byrne, K., & Plekhanov, A. (2021). Education reforms and adult skills: Evidence from Estonia. *Economics of Education Review*, 82, 1-10. doi: 10.1016/j.econedurev.2021.102106

Abstract:

This paper studies the impact of education reforms in Estonia in the 1990s on adult skills using the OECD PIAAC surveys. Estonia implemented extensive education reforms in the early 1990s throughout Estonian-speaking schools while Russian-speaking schools were exposed to less comprehensive reforms, which were implemented later. A large minority of Estonia's population at the time was enrolled in Russian-speaking schools providing a unique opportunity to measure the impact of education reforms on literacy, numeracy and problem-solving skills among adults by comparing improvements in PIAAC performance among Estonian and Russian speakers. Difference-in-difference estimation suggests that the reforms led to an adult skill dividend of around 15 to 30 percent of a standard deviation. This translates to a wage (productivity) premium of around 5 to 12 percent.

Available at: <https://doi.org/10.1016/j.econedurev.2021.102106>

Title:

Børing, P., & Grøgaard, J. B. (2021). Do older employees have a lower individual productivity than younger employees? *Journal of Population Ageing*, 1-29. doi: 10.1007/s12062-020-09323-1

Abstract:

We examine the relationship between employees' age and their individual productivity potential (IPP). IPP is measured by individual characteristics which are related to skills utilisation at work. Using PIAAC data for 27 European and non-European countries, we find that the oldest employees have a lower IPP score than the middle-aged employees in 17 of the 27 countries. It seems to be most demanding for the oldest workers to keep up with the IPP of younger workers in countries with high average skill loss for the oldest age group or high average skills level for all age groups (or both). The significant positive effects of formal education and the absence of significant effects of skills on the IPP score in many of the countries (the individual level), are easier to adapt to the human capital

perspective on the importance of formal education than to the perspective of the signalling theory.

Available at (open access): <https://doi.org/10.1007/s12062-020-09323-1>

Title:

Cammeraat, E., Samek, L., & Squicciarini, M. (2021). *Management, skills and productivity*. OECD Science, Technology and Industry Policy Papers No. 101. Paris: OECD Publishing. doi: 10.1787/007f399e-en

Abstract:

This paper studies how industries' investment in organisational capital (OC) and workforce skills relate to productivity, building on OECD estimates of OC, output data from the OECD Structural Analysis (STAN) database, and both cognitive and task-based skill indicators from the OECD Programme for the International Assessment of Adult Competencies (PIAAC). The paper finds that at the industry level, workers' numeracy and endowment of skills related to science, technology, engineering and mathematics (STEM) correlate positively with productivity, and that the positive correlation of STEM skills with productivity is generally larger for OC workers. The paper also finds evidence that skills dispersion harms industry performance. A gap between the ICT skills of OC and non-OC workers seems to trigger a "lost in translation" type of mechanism, whereby communication and information flows become less fluid and impinge upon the economic performance of sectors, correlating negatively with productivity.

Available at (open access): <https://doi.org/10.1787/007f399e-en>

Title:

Cathles, A., Ou, D., Sasso, S., Setrana, M., & Veen, T. (2021). Where do you come from, where do you go? Assessing skills gaps and labour market outcomes for young adults with different immigration backgrounds. *International Journal of Educational Development*, 86, 1-14. doi: 10.1016/j.ijedudev.2021.102466

Abstract:

Using PISA and PIAAC data from twelve OECD countries, we examine the gap in cognitive skills among immigrants and natives and evaluate how those differences have evolved over time. We also consider how demographics, family background and school quality explain the development of cognitive skills of young people with immigrant backgrounds. The results show, first, that some convergence in skills occurs between second-generation immigrants and natives over time. Second, demographics, family background and school quality variables all contribute to the achievement gaps across different groups.

Available at: <https://doi.org/10.1016/j.ijedudev.2021.102466>

Title:

Combiér, C. (2021). *The invisible effects of automation: Assessing the impact of technological progress on skill mismatch. Evidence from PIAAC*. Departement of Economics. Ecole normale supérieure de Lyon. doi: 10.13140/RG.2.2.16992.20485

Abstract:

This paper fills a gap in the literature by assessing the impact of automation on skill mismatch, i.e. on over-skilling and under-skilling. I first build up a theoretical framework in order to disentangle the potential mechanisms through which automation may affect skill mismatch. From then on relying on the OECD PIAAC data and on various methodologies, I show that automation is positively

correlated with over-skilling while negatively correlated with under-skilling. I finally show that in countries with a “rigid” labor market automation has larger effects on skill mismatch, whereas in countries with “flexible” labor markets automation seems not to be a source of skill mismatch. This finding brings first evidence that by easing the reallocation of the workforce, flexibilization policies attenuate the impact that computerization may have on over-skilling and under-skilling.

Available at: <http://dx.doi.org/10.13140/RG.2.2.16992.20485>

Title:

Damelang, A., Ebensperger, S., & Stumpf, F. (2021). Immigrant's labour market disadvantages across Western Europe: The role of composition and context. *Journal of International Migration and Integration*, 22(4), 1525-1550. doi: 10.1007/s12134-021-00823-3

Abstract:

This paper examines why some Western European countries are more successful in integrating immigrants into the labour market than others. Using data from the Programme for the International Assessment of Adult Competencies (PIAAC), we show how the country-specific immigrant composition and context of reception contribute to immigrants' disadvantages across receiving countries. Because the data provide extensive information about relevant characteristics that were often considered unobservable, we can comprehensively model the immigrant composition in receiving countries. We find considerable cross-country differences in immigrants' disadvantages, both in terms of employment and occupational status. Multivariate analyses highlight that a large part of this variation is explained by differences in immigrant compositions, whereas we find little evidence for context effects. Counterfactual simulations corroborate that the extent to which countries succeed with integrating immigrants into the labour market strongly depends on the composition of the immigrants that they receive.

Available at (open access): <https://doi.org/10.1007/s12134-021-00823-3>

Title:

Dudaitė, J., & Dačiulytė, R. (2021). Lifelong learning in six Central European countries. *New Educational Review*, 64, 134-147. doi: 10.15804/tner.2021.64.2.11

Abstract:

The aim of the article is to compare the situation of lifelong learning in Central European countries. Six countries were selected for the study: Poland, Lithuania, Estonia, Slovenia, the Slovak Republic, and the Czech Republic. The research is based on data from the International Survey of Adult Skills (OECD PIAAC). Respondents 30 years old and over were selected for analysis because a significant proportion of younger people have not yet completed their formal studies. According to the analysis, Estonian adults are most often involved in lifelong learning activities, while representatives from the Slovak Republic are the least involved. In all countries, those with above high school education are the most likely to participate in lifelong learning activities compared to those with lower than high school education and with high school education. In different countries, different kinds of learning activities prevail.

Available at (open access): <https://tner.polsl.pl/e64/a11.pdf>

Title:

Engelhardt, L., Goldhammer, F., Lüdtke, O., Köller, O., Baumert, J., & Carstensen, C. H. (2021). Separating PIAAC competencies from general cognitive skills: A dimensionality and explanatory analysis. *Studies in Educational Evaluation*, 71, 1-9. doi: 10.1016/j.stueduc.2021.101069

Abstract:

This study aims to investigate how test scores from PIAAC (Programme for the International Assessment of Adult Competencies) can be interpreted, by comparing the PIAAC competencies literacy and numeracy to reasoning and perceptual speed. Dimensionality analyses supported, that the PIAAC competencies can be separated into a common factor overlapping with reasoning and perceptual speed, and domain-specific factors. For the common and specific factors, relations to other variables were analyzed. The nested factor for PIAAC literacy was as expected unrelated to age, positively related to learning opportunities during one's lifetime, and positively related to literacy skill use. The nested factor for PIAAC numeracy was also as expected unrelated to age, against expectation unrelated to learning opportunities during one's lifetime, and as expected positively related to numeracy skill use. Results support the validity of the intended test score interpretation for PIAAC literacy, while results for PIAAC numeracy were less clear.

Available at (open access): <https://doi.org/10.1016/j.stueduc.2021.101069>

Title:

Fadel, C. (2021). *Assessing countries' competencies: The 4D index: Ranking of skills, character and meta-learning*. CSE leading education series. Discussion Paper No. 03. Victoria: Centre for Strategic Education. Retrieved November 24, 2021, from <https://curriculumredesign.org/wp-content/uploads/Assessing-countries-competencies-CCR-CSE-Leading-Education-Series3-06-2021.pdf>

Abstract:

This report is not a Research Paper; it is a Discussion Paper. It is intended to advance the imperative for multidimensional assessments of countries' competencies. The authors fully and openly recognise the methodological challenges – in conceptualisation, in data sources, in construction and in establishing validity. This paper does not claim to have resolved those challenges.

Available at (open access): <https://curriculumredesign.org/wp-content/uploads/Assessing-countries-competencies-CCR-CSE-Leading-Education-Series3-06-2021.pdf>

Title:

Falck, O., Heimisch-Roecker, A., & Wiederhold, S. (2021). Returns to ICT skills. *Research Policy*, 50(7), 1-17. doi: 10.1016/j.respol.2020.104064

Abstract:

How important is mastering information and communication technology (ICT) on modern labor markets? We answer this question with unique data on ICT skills tested in 19 countries. Our two instrumental-variable models exploit technologically induced variation in broadband Internet availability that gives rise to variation in ICT skills across countries and German municipalities. We find statistically and economically significant returns to ICT skills. For instance, an increase in ICT skills similar to the gap between an average-performing and a top-performing country raises earnings by about 8 percent. One mechanism driving positive returns is selection into occupations with high abstract task content.

Available at: <https://doi.org/10.1016/j.respol.2020.104064>

Title:

Feinberg, I. (2021). Building a culture of health literacy during COVID-19. *New Horizons in Adult Education and Human Resource Development*, 33(2), 60-64. doi: 10.1002/nha3.20316

Abstract:

One in five Americans reads at elementary school levels (U.S. Department of Education et al., 2020). These low literacy skills include the technical part of reading (phonemic awareness, phonics, fluency) and the essential component of comprehension, the cognitive process readers use to understand what they have read. This means over 66 million people cannot read or understand most of the health materials that are currently written about COVID-19. If people do not understand what is being said, whether due to technical reading skills or poor comprehension, they will not be able to follow guidelines and instructions, know when to contact their health provider, or how to protect themselves and their families during this pandemic. We have learned that protective COVID-19 behaviors like wearing a mask and social distancing protect both the individual and the community. Adults who read at elementary levels (low literacy) are also likely to have low health literacy which are the skills that allow one to access, understand, and use health information. If we allow adults with low literacy to fail at COVID-19 safeguards and inadvertently share this illness broadly throughout communities, we will all fail. The link between adult education and health literacy is a critical component of improving health outcomes for adults with low literacy. Individual skills such as reading, understanding numeracy issues like risk or probability, locating health information, and verbal communication skills are fundamental to improving health literacy, and can be successfully taught in adult education and English as a second language classes.

Available at: <https://doi.org/10.1002/nha3.20316>

Title:

Ghirelli, C., González-Piñero, A., Herrera, J. L., & Hurtado, S. (2021). *Weather, mobility and the evolution of the COVID-19 pandemic*. Banco de España Working Paper No. 2109. Madrid: Banco de España. doi: 10.2139/ssrn.3801826

Abstract:

We estimate the effective reproduction number (R_t) of the current Covid-19 pandemic, with US daily infections data between February and September of 2020, at the county level. This is then used to estimate the effect of weather and mobility on the spread of the pandemic. We find a strong and significant effect of the weather: lower temperatures are associated with a higher R_t , and this effect is bigger at temperatures below 0°C . At low temperatures, precipitations are also associated with a higher R_t . We also find that mobility reductions related to certain types of locations (retail and recreation, transit stations, and workplaces) are effective at reducing R_t , but it is an increase of the time spent in parks that helps reduce the spread of the pandemic. The negative effect of increased general mobility is bigger in counties with higher population density, worse numeracy and literacy PIAAC scores, or a lower share of employment in the services sector. Quantitatively, our estimates imply that a 20°C fall in temperatures from summer to winter would increase R_t by +0.35, which can be the difference between a well controlled evolution and explosive behavior; and, if this can't be neutralized through general improvements in the fight to stop the pandemic, the additional reduction in mobility that would be needed to compensate for this would be equivalent to returning, from the more relaxed levels observed in the summer, back to the strictest mobility reductions recorded in the US in April.

Available at (open access): <https://dx.doi.org/10.2139/ssrn.3801826>

Title:

Goldhammer, F., Hahnel, C., Kroehne, U., & Zehner, F. (2021). From byproduct to design factor: On validating the interpretation of process indicators based on log data. *Large-scale Assessments in Education*, 9(20), 1-25. doi: 10.1186/s40536-021-00113-5

Abstract:

International large-scale assessments such as PISA or PIAAC have started to provide public or scientific use files for log data; that is, events, event-related attributes and timestamps of test-takers' interactions with the assessment system. Log data and the process indicators derived from it can be used for many purposes. However, the intended uses and interpretations of process indicators require validation, which here means a theoretical and/or empirical justification that inferences about (latent) attributes of the test-taker's work process are valid. This article reviews and synthesizes measurement concepts from various areas, including the standard assessment paradigm, the continuous assessment approach, the evidence-centered design (ECD) framework, and test validation. Based on this synthesis, we address the questions of how to ensure the valid interpretation of process indicators by means of an evidence-centered design of the task situation, and how to empirically challenge the intended interpretation of process indicators by developing and implementing correlational and/or experimental validation strategies. For this purpose, we explicate the process of reasoning from log data to low-level features and process indicators as the outcome of evidence identification. In this process, contextualizing information from log data is essential in order to reduce interpretative ambiguities regarding the derived process indicators. Finally, we show that empirical validation strategies can be adapted from classical approaches investigating the nomothetic span and construct representation. Two worked examples illustrate possible validation strategies for the design phase of measurements and their empirical evaluation.

Available at (open access): <https://doi.org/10.1186/s40536-021-00113-5>

Title:

Gong, H. J., & Hong, J. E. (2021). Does postsecondary education attainment matter in community service engagement? Evidence from across 18 OECD countries. *Education Sciences*, 11(3), 1-17. doi: 10.3390/educsci11030096

Abstract:

This study is concerned with the central issues of community service engagement (CSE) in 21st century democratic societies around the world. To examine the factors influencing postsecondary education attainment's relationship to CSE, this study utilized data from the Organization for Economic Co-operation and Development (OECD) countries using ordinary least square (OLS) and two-level hierarchical linear modeling (HLM) methods, including various factors for each country's individual and country levels. The results show that attainment in postsecondary education at the individual level and investment and enrollments in tertiary education both have an influence on increasing CSE in 18 OECD countries. The present study is expected to contribute to an understanding of the relationship between postsecondary education and CSE across the world.

Available at (open access): <https://doi.org/10.3390/educsci11030096>

Title:

Graves, J., & Kuehn, Z. (2021). Specializing in growing sectors: Wage returns and gender differences. *Labour Economics*, 70, 1-31. doi: 10.1016/j.labeco.2021.101994

Abstract:

Matching individual data with national statistics for eight high-income OECD countries, we test whether those who specialized in fields of study when related sectors were growing earn higher wages later in life. We estimate 2-3% higher hourly wages for these individuals compared to others of similar characteristics and abilities who made their specialization choices under comparable macroeconomic conditions but when related sectors were not growing. We then test for heterogeneity in both who chooses fields of study associated with growing sectors, as well as in the wage

impacts of doing so. We find that men are less likely to specialize in growing fields because they avoid traditionally female fields that have grown more over recent decades (i.e. health care and education). While for men with at least a bachelor's degree, specializing in traditionally female fields is associated with lower wages, this is not the case for men with vocational degrees, for whom non-wage factors must drive their reluctance towards female fields. Countries where men are less likely to specialize in growing fields are characterized by more traditional gender norms but also larger reductions in gender wage gaps.

Available at (open access): <https://doi.org/10.1016/j.labeco.2021.101994>

Title:

Greiff, S., Graesser, A., Iliescu, D., Rouet, J.-F., Scheiter, K., Scherer, R., Gottschling, J., & Dörendal, J. (2021). PIAAC Cycle 2 assessment framework: Adaptive problem solving. In OECD (Eds.), *The Assessment Frameworks for Cycle 2 of the Programme for the International Assessment of Adult Competencies* (pp. 155-203). Paris: OECD Publishing. doi: 10.1787/3a14db8b-en

Abstract:

This chapter defines the concept of adaptive problem solving (APS) in the second cycle of PIAAC. The concept of APS accounts for the fact that we need to be vigilant, adaptive, and willing to modify our plans when interacting with the social, physical, and technological world of the 21st century. In this framework chapter, the cognitive and metacognitive processes that successful people engage into when solving problems and when adapting to changing conditions are described. In this, the PIAAC assessment of APS draws from a large set of information contexts and task dimensions that drive overall APS performance and individual proficiency levels. Several example items, considerations on item scoring and data capturing as well as a thorough discussion of the relation between APS and other competencies provide a comprehensive overview of the APS measurement framework for PIAAC.

Available at: <https://doi.org/10.1787/3a14db8b-en>

Title:

Grotlüschen, A., & Buddeberg, K. (2021). PIAAC and the South – is southering the new othering? Global expansion of dominant discourses on adult literacy. In A. Grotlüschen & L. Heilmann (Eds.), *Between PIAAC and the New Literacy Studies: What adult education can learn from large-scale assessments without adopting the neo-liberal paradigm* (pp. 153-170). Münster: Waxmann. doi: 10.31244/9783830991885

Abstract:

The last decades have witnessed the growth in importance of international largescale assessment studies (ILSA). Evidence based policies call for large datasets, which allow analysing differences between and within countries regarding educational achievements. The discussion about the sustainable development goals (SDG) by the United Nations reinforces the need to measure skills. The authors of this paper themselves are in charge of a national assessment survey and intensively used the datasets of the Programme for the International Assessment of Adult Competencies (PIAAC) for secondary analyses in the last years. We take the high degree of attention towards international large-scale assessments as the starting point to reflect about another aspect of PIAAC. This contribution refers to the regional distribution of the assessment. Looking at the three rounds of the survey one might observe a regional expansion. Participating countries in the first round were mainly located in the geographical North. Meanwhile there is a still small but growing number of countries in the southern part of the globe in PIAAC rounds 2 and 3 (OECD, 2019, p. 19).

Available at (open access): <http://doi.org/10.31244/9783830991885>

Title:

Grotlüschen, A., & Heilmann, L. (2021). *Between PIAAC and the new literacy studies. What adult education can learn from large-scale assessments without adopting the neo-liberal paradigm*. Münster; New York: Waxmann. doi: 10.25656/01:21944

Abstract:

With this book we present a selection of articles that critically deal with (internationally comparative) large-scale assessments. We acknowledge that studies such as PIAAC are often designed, financed and implemented on the basis of neo-liberal worldviews. Nevertheless, we would like to use the articles that are presented here to show the various ways in which adult and continuing education can benefit and learn from the knowledge that they generate. In PIAAC, for example, there are huge differences between the surveyed variables and the theoretical frameworks on literacies and literacy practices that the New Literacy Studies (NLS) have brought out. This book features eleven articles, which – with the NLS’s theoretical considerations and points of criticism in mind – find new and alternative evaluations and interpretations of the data. Not only can they show effects of marginalization on a large scale, but the data can also provide information about mechanisms of power in relation to literacy and basic competencies. (DIPF/Orig.)

Available at: <https://doi.org/10.25656/01:21944>

Title:

Grotlüschen, A., & Heilmann, L. (2021). Why do we believe that large-scale assessments have something to offer for adult and continuing education? In A. Grotlüschen & L. Heilmann (Eds.), *Between PIAAC and the New Literacy Studies: What adult education can learn from large-scale assessments without adopting the neo-liberal paradigm* (pp. 7-13). Münster: Waxmann. doi: 10.31244/9783830991885

Abstract:

We live in an age of international large-scale assessments that offer the education sector internationally comparable information and data for the different educational levels of participating countries. The Programme for the International Assessment of Adult Competences (PIAAC) launched its first cycle results and datasets in 2013. The survey builds on two international predecessors – the International Adult Literacy Survey (IALS) from the mid-1990s and the Adult Literacy and Lifeskills (ALL) Survey in the mid_2000s. Unlike other countries, Germany was unable to benefit fully from the IALS data due to major coding errors in the dataset. Moreover, Germany did not participate in ALL because, at that time, PIAAC was already under way. This led to the conclusion that the Germans are latecomers, starting from a national Level-One Survey (LEO) in 2010 and needing to catch up with the international discourse where more or less everyone is already familiar with adult large-scale assessments.

Available at (open access): <http://doi.org/10.31244/9783830991885>

Title:

Gurkan, G., Benjamini, Y., & Braun, H. (2021). Defensible inferences from a nested sequence of logistic regressions: A guide for the perplexed. *Large-scale Assessments in Education*, 9(16), 1-24. doi: 10.1186/s40536-021-00111-7

Abstract:

Employing nested sequences of models is a common practice when exploring the extent to which one set of variables mediates the impact of another set. Such an analysis in the context of logistic regression models confronts two challenges: (i) direct comparisons of coefficients across models

are generally biased due to the changes in scale that accompany the changes in the set of explanatory variables, (ii) conducting a large number of tests induces a problem of multiplicity that can lead to spurious findings of significance if not heeded. This article aims to illustrate a practical strategy for conducting analyses in the face of these challenges. The challenges—and how to address them—are illustrated using a subset of the findings reported by Braun (Large-scale Assess Educ 6(4):1–52, 2018. 10.1186/s40536-018-0058-x), drawn from the Programme for the International Assessment of Adult Competencies (PIAAC), an international, large-scale assessment of adults. For each country in the dataset, a nested pair of logistic regression models was fit in order to investigate the role of Educational Attainment and Cognitive Skills in mediating the impact of family background and demographic characteristics on the location of an individual's annual income in the national income distribution. A modified version of the Karlson–Holm–Breen (KHB) method was employed to obtain an unbiased estimate of the true differences in the coefficients between nested logistic models. In order to address the issue of multiplicity, a recent generalization of the Benjamini–Hochberg (BH) False Discovery Rate (FDR)-controlling procedure to hierarchically structured hypotheses was employed and compared to two conventional methods. The differences between the changes in coefficients calculated conventionally and with the KHB adjustment varied from negligible to very substantial. When combined with the actual magnitudes of the coefficients, we concluded that the more proximal factors indeed act as strong mediators for the background factors, but less so for Age, and hardly at all for Gender. With respect to multiplicity, applying the FDR-controlling procedure yielded results very similar to those obtained by applying a standard per-comparison procedure, but quite a few more discoveries in comparison to the Bonferroni procedure. The KHB methodology illustrated here can be applied wherever there is interest in comparing nested logistic regressions. Modifications to account for probability sampling are practicable. The categorization of variables and the order of entry should be determined by substantive considerations. On the other hand, the BH procedure is perfectly general and can be implemented to address multiplicity issues in a broad range of settings.

Available at (open access): <https://doi.org/10.1186/s40536-021-00111-7>

Title:

Hämäläinen, R., Nissinen, K., Mannonen, J., Lämsä, J., Leino, K., & Taajamo, M. (2021). Understanding teaching professionals' digital competence: What do PIAAC and TALIS reveal about technology-related skills, attitudes, and knowledge? *Computers in Human Behavior*, 117, 1-15. doi: 10.1016/j.chb.2020.106672

Abstract:

In an ever-evolving technological landscape that challenges teaching professionals' digital competence, this study complements previous studies by providing an overall picture of teaching professionals' digital competence. We employed regression models on two large-scale assessment data sets on teachers from 11 countries—namely, the Teaching and Learning International Survey (TALIS; n = 50,800) and the Programme for the International Assessment of Adult Competencies (PIAAC; n = 2590)—to investigate through the theoretical lens of digital competence how teaching professionals' skills, attitudes and knowledge distribute and relate, and how they are associated with personal and contextual factors. Our results found notable variation in teaching professionals' skills and knowledge but less variety in attitudes. The respondents generally recognised the importance of digital technologies in teaching regardless of their background. Older professionals often showed weak skills, but they also recognised the need for professional development in using digital technologies. An important result of this study is a better understanding of digital competence from the teaching professional's perspective. Our findings contribute to further developing theories and practices related to teaching professionals' skills, attitudes and knowledge.

Available at (open access): <https://doi.org/10.1016/j.chb.2020.106672>

Title:

He, Q., Borgonovi, F., & Paccagnella, M. (2021). Leveraging process data to assess adults' problem-solving skills: Using sequence mining to identify behavioral patterns across digital tasks. *Computers & Education*, 166, 1-15. doi: 10.1016/j.compedu.2021.104170

Abstract:

This paper illustrates how process data can be used to identify behavioral patterns in a computer-based problem-solving assessment. Using sequence-mining techniques, we identify patterns of behavior across multiple digital tasks from the sequences of actions undertaken by respondents. We then examine how respondents' action sequences (which we label "strategies") differ from optimal strategies. In our application, optimality is defined ex-ante as the sequence of actions that content experts involved in the development of the assessment tasks identified as most efficient to solve the task given the range of possible actions available to test-takers. Data on 7462 respondents from five countries (the United Kingdom, Ireland, Japan, the Netherlands, and the United States) participating in the Problem Solving in Technology-Rich Environment (PSTRE) assessment, administered as part of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), indicate that valuable insights can be derived from the analysis of process data. Adults who follow optimal strategies are more likely to obtain high scores in the PSTRE assessment, while low performers consistently adopt strategies that are very distant from optimal ones. Very few high performers are able to solve the items in an efficient way, i.e. by minimizing the number of actions and by avoiding undertaking unnecessary or redundant actions. Women and adults above the age of 40 are more likely to adopt sub-optimal problem-solving strategies.

Available at: <https://doi.org/10.1016/j.compedu.2021.104170>

Title:

Hecker, I., & Briggs, A. (2021). *Overlooked and underconnected. Exploring disparities in digital skill levels by race among older youth in the US*. Brief Washington, DC: Urban Institute. Retrieved November 24, 2021, from <https://www.urban.org/research/publication/overlooked-and-under-connected-exploring-disparities-digital-skill-levels-among-older-youth-color-us>

Abstract:

Young people are often overlooked in discussions about digital skills gaps because they are considered "digital natives" who do not require digital skills training. Using 2017 data from the Programme for the International Assessment of Adult Competencies survey, this research highlights a number of disparities in digital skill levels among Americans aged 16-24, including that many older youth have no or low digital skills and digital skill levels are disproportionately lower for youth of color than white youth. It also describes how philanthropy and the public sector can invest in digital skills training in communities in ways that promote equity, by supporting additional research about what drives digital skills gaps and exploring public-sector interventions such as efforts to make broadband internet and computer access public utilities.

Available at (open access): <https://www.urban.org/research/publication/overlooked-and-under-connected-exploring-disparities-digital-skill-levels-among-older-youth-color-us>

Title:

Hecker, I., Spaulding, S., & Kuehn, D. (2021). *Digital skills and older workers. Supporting success in training and employment in a digital world*. Research Report Washington, DC: Urban Institute.

Retrieved November 24, 2021, from <https://www.urban.org/research/publication/digital-skills-and-older-workers>

Abstract:

The acceleration of the shift to online and remote learning and working brings new opportunities, but it also brings the potential for further inequities in the labor market. Older workers stand to benefit greatly from the expanded access that online and remote learning and working provides. This report documents some of the barriers and opportunities that exist for older workers accessing online programs, with a focus on their digital skill levels. We analyze data from the 2017 Programme for the International Assessment of Adult Competencies survey to explore the digital skill levels of older workers and how older workers' characteristics are associated with digital skill levels. We also analyze American Community Survey data to understand how older workers' poverty status and access to broadband, internet, and computers and other devices is associated with digital skill levels. Our analysis is complemented by information collected during interviews with leaders of programs to support digital skill training for older adults. We find that although many Americans lack digital skills, older Americans have lower levels of digital skills than the average American, and digital skill levels for older Americans from historically oppressed groups are lower still. There are opportunities to support the development of digital skills for older workers to allow them leverage their other skills and improve economic outcomes.

Available at (open access): <https://www.urban.org/research/publication/digital-skills-and-older-workers>

Title:

Heilmann, L. (2021). Making a case for more feminist approaches in quantitative research. How commonly used quantitative approaches in adult education research marginalise and oversimplify diverse and intersectional populations. *European journal for Research on the Education and Learning of Adults*, 12(2), 179-191. doi: 10.25656/01:22502

Abstract:

In contrast to qualitative and theoretical approaches, the mainstream of quantitative research often still finds it difficult to incorporate modern concepts of diversity and intersectionality into its work. This article aims to highlight various aspects in which large studies and their evaluations marginalise or ignore certain parts of the population. In surveying data, large-scale surveys like the Programme for the International Assessment of Adult Competencies (PIAAC) often not only operate on a binary gender concept but also do not differentiate between a person gender identity and their social gender. In addition, commonly used methods keep unequal distributions invisible. Nonbinary people are virtually invisible, unequal benefits for women remain hidden and the intersectional diversity inside the broad gender categories poses challenges to the mainstream of quantitative research in adult education. Therefore, there is a need for a feminist approach to statistical methods and quantitative research and in particular a feminist approach to a careful and critical interpretation. (DIPF/Orig.)

Available at (open access): <https://doi.org/10.25656/01:22502>

Title:

Hoidn, S., & Šťastný, V. (2021). Labour market success of initial vocational education and training graduates: A comparative study of three education systems in Central Europe. *Journal of Vocational Education & Training*, 1-25. doi: 10.1080/13636820.2021.1931946

Abstract:

This paper compares within-country programmes of initial vocational education and training (IVET) in Austria, the Czech Republic and Germany and their outcomes. Specifically, it aims to analyse and

compare the labour market success of graduates of different tracks at the ISCED 3 level in both early and later stages of their careers. The comparison is based on the analysis of PIAAC 2013 OECD study data. A composite multidimensional indicator was constructed to measure labour market success and subsequently used as a dependent variable in regression models. The results indicate that in the systems with dual IVET at the ISCED 3 level (Germany and Austria), graduates are indeed more successful at the labour market than their counterparts with other ISCED 3 tracks. However, their advantage diminishes in later stages of the career. Additionally, in Austria, the success of dual education young graduates is mediated by individual characteristics. In the system with only school-based IVET (the Czech Republic), this track does not guarantee substantively higher labour market success for young graduates compared to other ISCED 3 tracks and also to those with lower education. Czech apprentices in the later stages of career succeed even less than those with below ISCED 3 education.

Available at (open access): <https://doi.org/10.1080/13636820.2021.1931946>

Title:

Icardi, R. (2021). Returns to workplace training for male and female employees and implications for the gender wage gap: A quantile regression analysis. *International Journal for Research in Vocational Education and Training*, 8(1), 21-45. doi: 10.13152/IJRVET.8.1.2

Abstract:

Existing studies have explored the association between workplace training and wages suggesting that training participation may have a positive association with wages. However, we still know very little about whether this association varies between men and women. Through its potential positive association with wages, training may balance wage differences between men and women. In addition, the gender wage gap varies across the wage distribution. Differences in the association between training participation and wages for men and women across the earnings spectrum may offer an explanation as to why the discrepancy in female/male earnings is larger at some point of the wage distribution compared to others. Approach: Using data from the Programme for International Assessment of Adult Competencies (PIAAC) and unconditional quantile regression, this paper examines whether the association between workplace training and wages differs between men and women at different points of the wage distribution across 14 European countries. To partly control for endogeneity in training participation, detailed measures of cognitive skills have been included in the models. Findings: Findings show gender differences in the association between training and wages across the wage distribution. In most countries, results indicate larger training coefficients for women than men at the lower end of the wage spectrum whereas they are larger for men at the top. This pattern holds across most countries with the only exception of Liberal ones, where women benefit less than men across the entire wage spectrum. Conclusions: The findings of this work reveal that distributional variations in returns to workplace training follow a similar pattern across industrialized countries, despite their different institutional settings. Moreover, differences in training coefficients of men and women at different parts of the wage distribution suggest that training could reduce gender wage differences among low earners and potentially widen the gap in wages among individuals at the top of the wage distribution.

Available at (open access): <https://doi.org/10.13152/IJRVET.8.1.2>

Title:

Ioannidou, A., & Parma, A. (2021). Risk of job automation and participation in adult education and training: Do welfare regimes matter? *Adult Education Quarterly*, 1-26. doi: 10.1177/07417136211026635

Abstract:

This study explores the relation between risk of job automation and participation in adult education and training (AET) and examines variation in that relation across welfare regimes distinguishing between situational and institutional barriers. Using microdata of PIAAC, we analyze participation in formal or nonformal AET for job-related reasons in relation to the risk of automation of the respondents' occupation after controlling for main sociodemographic characteristics. Logistic regression models are run on respondents from 14 European countries representing different welfare regimes: Denmark, Norway, and Sweden (Scandinavian countries); Italy, Greece, and Spain (Southern European); Czech Republic, Slovakia, and Poland (Central and Eastern Europe), Belgium, France, and Germany (Continental); and United Kingdom and Ireland (Anglo-Saxon countries). Our findings confirm that workers in occupations at high risk of automation were found to be consistently less likely to participate in job-related AET, quite irrespective of welfare regime.

Available at: <https://doi.org/10.1177/07417136211026635>

Title:

Jongbloed, J., & Giret, J.-F. (2021). Untangling the roles of low skill and education in predicting youth NEET statuses: negative signalling effects in comparative perspective. *Compare: A Journal of Comparative and International Education*, 1-19. doi: 10.1080/03057925.2021.1951664

Abstract:

Education determines life chances across the globe, but human capital and skill formation offer context-specific advantages in the labour market during the transition from school to work. Our study focuses specifically on the varying effects of low skill on youth 'not in employment, education or training' (NEET) statuses via educational attainments. Using Programme for the International Assessment of Adult Competencies (PIAAC) data, we estimate the extent to which country-specific relative low skill levels affect young people's probability of reporting long-term NEET statuses across contexts. We find that low skill and education have differing effects on the probabilities of reporting NEET statuses cross-nationally. We also conduct mediation analyses to examine to what extent the negative signalling effects of low education explain the impacts of skill disadvantages on NEET statuses. We find that the indirect effect of low skill through education is particularly important in countries with vocationally oriented education systems.

Available at: <http://dx.doi.org/10.1080/03057925.2021.1951664>

Title:

Kirsch, I., Sands, A., Robbins, S., Goodman, M., & Tannenbaum, R. (2021). *Buttressing the middle: A case for reskilling and upskilling America's middle-skill workers in the 21st Century*. Policy Report Princeton: ETS Center for Research on Human Capital and Education. Retrieved November 24, 2021, from <https://www.ets.org/s/research/pdf/buttressing-policy-report.pdf>

Abstract:

This new report from the ETS Center for Research on Human Capital and Education argues that the education and skills individuals possess have become increasingly important to their overall quality of life. As technology and automation continue to alter the workplace and the nature of work, the ability of individuals to acquire and augment their skills will remain a key challenge. Changes in the nature of work over this period have led to what economists refer to as "employment polarization." The share of employment in well-paid, middle-skill occupations such as manufacturing has declined while the share in the upper and lower ends of the occupational skill distribution has increased. In addition, the relative earnings around the middle of the wage distribution have declined precipitously, leaving these workers with relatively small wage gains. The important question raised here—

and one that has become even more urgent due to the COVID-19 pandemic—is what to do about this phenomenon.

Available at (open access): <https://www.ets.org/s/research/pdf/buttredding-policy-report.pdf>

Title:

Kyröläinen, A.-J., & Kuperman, V. (2021). Predictors of literacy in adulthood: Evidence from 33 countries. *PLOS ONE*, *16*(3), 1-14. doi: 10.1371/journal.pone.0243763

Abstract:

What makes a literate person? What leads to literacy gains and losses within and between individuals and countries? This paper provides new evidence that helps answer these questions. The present comparative analysis of literacy is based on large representative samples from the Survey of Adult Skills conducted in 33 countries, with 25–65 year old participants. We provide, for the first time, estimates of relative importance for a comprehensive set of experiential factors, motivations, incentives, parental influence, demands of workplace, and other predictors of influence. We sketch a configuration of factors that predicts an “ideal” reader, i.e., the optimal literacy performance. Moreover, we discover a pivotal role of the age effect in predicting variability between countries. Countries with the highest literacy scores are the ones where literacy decreases with age the most strongly. We discuss this finding against current accounts of aging effects, cohort effects and others. Finally, we provide methodological recommendations for experimental studies of aging in cognitive tasks like reading.

Available at (open access): <https://doi.org/10.1371/journal.pone.0243763>

Title:

Lechner, C. M., Gauly, B., Miyamoto, A., & Wicht, A. (2021). Stability and change in adults' literacy and numeracy skills: Evidence from two large-scale panel studies. *Personality and Individual Differences*, *180*, 1-12. doi: 10.1016/j.paid.2021.110990

Abstract:

We investigated the development of literacy (reading competence) and numeracy (mathematical competence) across three to six years of adulthood. Data came from two large-scale multi-wave surveys: the PIAAC-longitudinal Study (PIAAC-L, $N = 2779$) and the National Educational Panel Study (NEPS; $N = 3140$). We examined mean-level change ($\Delta T_1, T_2$) and rank-order consistencies ($r_{T1, T2}$) in the total population and in sociodemographic subgroups defined by age, gender, and education. To account for measurement error, we employed plausible values (PV) methodology. Results revealed that literacy and numeracy are highly but not perfectly rank-order stable ($.61 \leq r \leq .85$ in the total population). Mean-level change was negligible for both skills and studies, but there were considerable individual differences in change. Apart from moderate mean-level gains in literacy in young adults (18–29 years) and losses among the highly educated (in NEPS), there were few subgroup differences in mean-level change or rank-order consistency, and most differences did not replicate across studies. Our findings suggest that adults' literacy and numeracy are malleable throughout adulthood and can change even over a three- to six-year period. Individual difference in change dominate the picture and warrant further investigation. Our findings can serve as a benchmark against which to compare future longitudinal findings. (PsyInfo Database Record (c) 2021 APA, all rights reserved)

Available at: <https://doi.org/10.1016/j.paid.2021.110990>

Title:

Lee, H., & Lee, J.-W. (2021). Patterns and determinants of intergenerational educational mobility: Evidence across countries. *Pacific Economic Review*, 26(1), 70-90. doi: 10.1111/1468-0106.12342

Abstract:

This study analyses the patterns and determinants of the intergenerational persistence of education attainment. Internationally comparable data are used by age cohort for parents' and children's education levels for 30 countries. The intergenerational regression coefficients are estimated by explicitly considering the bias from the censored regressor, and they show that educational mobility has worsened over generations in most countries. However, the degree of change varies considerably across countries and over time. Country-cohort panel regressions are performed using the estimates of intergenerational educational mobility and covariates. The results show that intergenerational educational mobility tends to decrease with income inequality, inflation and credit constraints. However, it increases with per capita GDP and public expenditure on primary education relative to that on tertiary education.

Available at: <https://doi.org/10.1111/1468-0106.12342>

Title:

Leschnig, L., Schwerdt, G., & Zigova, K. (2021). *Central exams and adult skills: Evidence from PIAAC*. CESifo Working Paper No. 8899. Munich: Center for Economic Studies and Ifo Institute (CESifo). Retrieved November 24, 2021, from <http://hdl.handle.net/10419/232496>

Abstract:

Central exams are often hypothesized to favorably affect incentive structures in schools. Indeed, previous research provides vast evidence on the positive effects of central exams on student test scores. But critics warn that these effects may arise through the strategic behavior of students and teachers, which may not affect human capital accumulation in the long run. Exploiting variation in examination types across school systems and over time, we provide the first evidence that central exams positively affect adult skills. However, our estimates are small compared to the existing estimates for students, which may indicate some fade-out in the effect on skills over time.

Available at (open access): <http://hdl.handle.net/10419/232496>

Title:

Maehler, D. B., Jakowatz, S., & Konradt, I. (2021). *PIAAC Bibliography - 2008-2020*. GESIS Papers 2021/06. Mannheim: GESIS – Leibniz-Institut für Sozialwissenschaften. doi: 10.21241/ssoar.72521

Abstract:

The bibliography provides an overview of publications between 2008 – 2020 based on the Programme for the International Assessment of Adult Competencies (PIAAC).

Available at (open access): <https://doi.org/10.21241/ssoar.72521>

Title:

Martinaitis, u., Christenko, A., & Antanavičius, J. (2021). Upskilling, deskilling or polarisation? Evidence on change in skills in Europe. *Work, Employment and Society*, 35(3), 451-469. doi: 10.1177/0950017020937934

Abstract:

What are the directions of change in the complexity of work and the required skill levels of the labour force in Europe? Three prominent strands of literature suggest conflicting expectations? upskilling,

deskilling and polarisation. This question is answered by employing a novel work complexity indicator that measures how tasks are performed at work according to three dimensions: routinisation of tasks, autonomy at work and continuous skill-building. The measurements rely on the European Working Conditions Surveys carried out in 2005, 2010 and 2015. The results show that the European labour markets witness upskilling with some polarisation, although there are significant cross-national differences. They also show that, individually, neither shifts in work complexity within occupations (deskilling hypothesis), nor changes in employment structure (the focus of the upskilling and polarisation hypotheses) can provide an adequate view of trends in the European labour markets. Instead, both vectors of change should be analysed collectively.

Available at: <https://doi.org/10.1177/0950017020937934>

Title:

Martínez-Matute, M., & Villanueva, E. (2021). Task specialization and cognitive skills: Evidence from PIAAC and IALS. *Review of Economics of the Household*, 1-35. doi: 10.1007/s11150-021-09587-2

Abstract:

We study how the tasks conducted on the job relate to measures of cognitive skills using data from 18 countries participating in the Programme for the International Assessment of Adult Competences (PIAAC) and from 13 countries that also participate in the International Adult Literacy Study (IALS). We document two main findings. Firstly, individual-fixed effect models suggest that low-educated workers specializing in a particular set of basic tasks -say, in numeric relative to reading or ICT tasks- obtain 10% of one standard deviation higher scores in the domain of the PIAAC assessment most related to those tasks than in the rest -say, numeracy relative to literacy or problem-solving scores. Secondly, a synthetic cohort analysis using repeated literacy assessments in IALS and PIAAC indicates that, among the low-educated, long-run increases in the reading task component of jobs correlate positively with increases in cohort-level literacy scores. The results are stronger among low-skilled workers with less working experience or females -i.e., the set of workers who have had less time to sort in the labor market. An interpretation of our findings is that tasks conducted on the job help in building human capital but are imperfect substitutes of formal schooling.

Available at (open access): <https://doi.org/10.1007/s11150-021-09587-2>

Title:

Mueller, R. E., & Truong, N. T. K. (2021). Wage and basic skills inequality between immigrants by immigration admission categories and Canadian non-immigrants. *Empirical Economics*, 1-52. doi: 10.1007/s00181-021-02084-6

Abstract:

Using the 2012 Programme for the International Assessment of Adult Competencies (PIAAC), we explore differences in literacy and numeracy skills, and the economic returns to these skills, for Canadian immigrants and non-immigrants. The novelty of this research is disaggregating the sample into seven distinct immigrant groups (based on admission class) and second- and third-generation Canadians. Our results show that no immigrant group performs as well on literacy and numeracy tests compared to those born in Canada, but that young immigrants do outperform adult immigrants. Similar results are found for wages, our metric for success in the labour market. Of the immigrant subgroups, economic immigrants tend to have the highest test scores and hourly wages, with refugees having the lowest. The wage returns to these basic skills are economically significant across all quantiles. Finally, we find that the labour market rewards literacy or numeracy skills equally for immigrants and the Canadian-born.

Available at: <https://doi.org/10.1007/s00181-021-02084-6>

Title:

Neri, N. C., Wagner, J., & Retelsdorf, J. (2021). What makes mathematics difficult for adults? The role of reading components in solving mathematics items. *Educational Psychology, 41*(9), 1199-1219. doi: 10.1080/01443410.2021.1964438

Abstract:

Although it is widely known that reading plays a significant role in mathematics performance, it remains unclear how specific reading component skills and item characteristics are associated with adults' mathematics performance. The aim of this study was to investigate reading component skills (printed vocabulary, sentence processing, passage comprehension), characteristics of mathematics items (picture/table, complex verb forms, number of prepositions, lexical density), and the possible interaction effects thereof on mathematics performance. The sample consisted of 368 German adults (age: $M = 50.45$; 59% female). Our results showed main effects on performance from adults' reading component skills and item characteristics. Furthermore, interaction effects between passage comprehension and two item characteristics on mathematics performance emerge. Implications include enhancing adults' reading component skills.

Available at (open access): <https://doi.org/10.1080/01443410.2021.1964438>

Title:

Organisation for Economic Cooperation and Development (OECD) (2021). *The assessment frameworks for Cycle 2 of the Programme for the International Assessment of Adult Competencies*. Paris: OECD Publishing. doi: 10.1787/4bc2342d-en

Abstract:

The OECD's Programme for the International Assessment of Adult Competencies (PIAAC) represents a comprehensive international comparative assessment of the information processing skills of adults vital for the full participation in social and economic life in the 21st century. PIAAC is now in its second cycle and continues a series of international assessments of adult skills that began in the mid-1990s with the International Adult Literacy Survey (IALS). The Assessment Frameworks for Cycle 2 of PIAAC provide an essential background for understanding the skills assessed by the PIAAC assessment and for interpreting the results of the study. The Assessment Frameworks define and describe the skills assessed in the study – literacy, numeracy and problem solving – and outline the key features of the assessment of these skills. In addition, the relationship between Cycle 2 of PIAAC and previous assessments of these skills among the adult population is explained and an overview is provided of the changes that have occurred in the conceptualisation of these skills in the different international assessments of adult skills implemented over the last two decades.

Available at (open access): <https://doi.org/10.1787/4bc2342d-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2021). *Education at a glance 2021*. Paris: OECD Publishing. doi: 10.1787/b35a14e5-en

Abstract:

Education at a Glance is the authoritative source for information on the state of education around the world. It provides data on the structure, finances and performance of education systems across OECD countries and a number of partner economies. More than 100 charts and tables in this publication – as well as links to much more available on the educational database – provide key information on the output of educational institutions; the impact of learning across countries; access, participation and progression in education; the financial resources invested in education; and

teachers, the learning environment and the organisation of schools. The 2021 edition includes a focus on equity, investigating how progress through education and the associated learning and labour market outcomes are impacted by dimensions such as gender, socio-economic status, country of birth and regional location. A specific chapter is dedicated to Target 4.5 of the Sustainable Development Goal 4 on equity in education, providing an assessment of where OECD and partner countries stand in providing equal access to quality education at all levels. Two new indicators on the mechanisms and formulas used to allocate public funding to schools and on teacher attrition rate complement this year's edition.

Available at (open access): <https://doi.org/10.1787/b35a14e5-en>

Title:

Organisation for Economic Cooperation and Development (OECD) (2021). *OECD skills strategy Kazakhstan*. Paris: OECD Publishing. doi: 10.1787/39629b47-en

Abstract:

Skills are the key to shaping a better future and central to the capacity of countries and people to thrive in an increasingly interconnected and rapidly changing world. Megatrends such as globalisation, technological advances and demographic change are reshaping work and society, generating a growing demand for higher levels of skills and new sets of skills. OECD Skills Strategy projects provide a strategic and comprehensive approach to assess countries' skills challenges and opportunities and help them build more effective skills systems. The OECD works collaboratively with countries to develop policy responses that are tailored to each country's specific skills needs. The foundation of this approach is the OECD Skills Strategy Framework, which allows for an exploration of what countries can do better to: 1) develop relevant skills over the life course; 2) use skills effectively in work and in society; and 3) strengthen the governance of the skills system. This report, *OECD Skills Strategy Kazakhstan: Assessment and Recommendations*, identifies opportunities and makes recommendations to improve the activation of skills of vulnerable populations, foster greater participation in adult learning of all forms, build an effective skills information system, and strengthen the governance of skills policies in Kazakhstan.

Available at (open access): <https://doi.org/10.1787/39629b47-en>

Title:

Olaghere, A., Kremer, K. P., & Fong, C. J. (2021). Learning opportunities while incarcerated: Association of engagement in literacy and numeracy activities with literacy and numeracy skills. *Adult Education Quarterly*, 71(3), 232-250. doi: 10.1177/0741713620988505

Abstract:

Little is known about which educational activities are most associated with incarcerated adults' literacy and numeracy skills. The present study examines whether informal engagement in reading, writing, and numeracy activities (e.g., reading newspapers or using calculators) is associated with incarcerated adults' literacy and numeracy skills. Using the 2014 Program for the International Assessment of Adult Competencies (PIAAC) U.S. Prison Study, numeracy/literacy skills were predicted from engagement in reading, writing, and numeracy activities. Literacy skills were higher among incarcerated persons who engaged in an increasing amount of writing activities along with those who completed postsecondary coursework in prison. Literacy skills and numeracy skills were not significantly associated with engagement in reading activities and numeracy activities, respectively. Findings highlight promising strategies for restructuring prison education.

Available at: <https://doi.org/10.1177/0741713620988505>

Title:

Peluffo, C., & Viollaz, M. (2021). Intra-household exposure to labor market risk in the time of Covid-19: Lessons from Mexico. *Review of Economics of the Household*, 19(2), 327-351. doi: 10.1007/s11150-020-09541-8

Abstract:

The ability to work from home can be critical during pandemics. We calculate an index that measures the possibility of working from home based on the characteristics of the pre-Covid-19 pandemic distribution of occupations and on internet access at home, using microdata for Mexico. Focusing on households with two partners employed in nonessential occupations, we show that there is high within-household correlation in the possibility of working remotely, which is likely to be positively associated with job stability during the pandemic. Poor families, with low access to formal credit and who rely heavily on informal mechanisms for consumption smoothing have lower chances of working remotely than richer families with higher access to formal credit. High within-household correlation in the work-from-home index restricts the likelihood of intra-household risk-sharing and consumption smoothing, and is likely to contribute to an increase in inequality.

Available at: <https://doi.org/10.1007/s11150-020-09541-8>

Title:

Petó, R., & Reizer, B. (2021). Gender differences in the skill content of jobs. *Journal of Population Economics*, 34(3), 825-864. doi: 10.1007/s00148-021-00825-6

Abstract:

There is significant heterogeneity in actual skill use within occupations even though occupations are differentiated by the task workers should perform during work. Using data on 12 countries which are available both in the Programme for the International Assessment of Adult Competencies survey and International Social Survey Program, we show that women use their cognitive skills less than men even within the same occupation. The gap in skill intensity cannot be explained by differences in worker characteristics or in cognitive skills. Instead, we show that living in a partnership significantly increases the skill use of men compared with women. We argue that having a partner affects skill use through time allocation as the gender penalty of partnered women is halved once we control for working hours and hours spent on housework. Finally, we do not find evidence of workplace discrimination against women.

Available at: <https://doi.org/10.1007/s00148-021-00825-6>

Title:

Pichler, D., & Stehrer, R. (2021). *Breaking through the digital ceiling: ICT skills and labour market opportunities*. Working Paper No. 193. Vienna: Vienna Institute for International Economic Studies. Retrieved November 24, 2021, from <https://wiiw.ac.at/breaking-through-the-digital-ceiling-ict-skills-and-labour-market-opportunities-dlp-5597.pdf>

Abstract:

This paper analyses the impact of ICT-skills on individuals' labour market mobility patterns, in particular job-to-job, employment- to-unemployment and unemployment-to-employment transitions. Based on the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) and longitudinal EU-SILC data, individuals' labour market outcomes are examined over the period 2011-2017 in nine EU countries and the UK. Our results indicate that individuals with strong ICT skills have better opportunities and are therefore not only more likely to change jobs more frequently but are also less likely to face unemployment. Furthermore, ICT skills support unemployment exit

towards medium and high digital occupations. A certain minimum level of ICT skills also supports unemployment exit towards low digital occupations but seems to make employment in such occupations less likely once this threshold is crossed. Overall, ICT skills have less predictive power for transition towards medium digital occupations. Thus, while ICT skills appear to improve labour market opportunities significantly, it seems that there are still jobs that require relatively few ICT skills.

Available at (open access): <https://wiiw.ac.at/breaking-through-the-digital-ceiling-ict-skills-and-labour-market-opportunities-dlp-5597.pdf>

Title:

Pivovarova, M., & Powers, J. M. (2021). *Do immigrants experience education-job mismatch? New evidence from the U.S. PIAAC*. Commissioned Paper Washington, DC: PIAAC Gateway. Retrieved November 24, 2021, from https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/60b7ccde2a2ef7287828adeb/1622658271688/2021_Pivovarova_Powers_Immigrants_Education-Job_Mismatch.pdf

Abstract:

This project has been funded by the American Institutes for Research through a contract with the National Center for Education Statistics (NCES) of the U.S. Department of Education. This report is based on PIAAC data released in September 2016. The views expressed in this paper do not necessarily reflect the views or policies of the American Institutes for Research, National Center for Education Statistics, or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement of same by the U.S. Government.

Available at (open access): https://static1.squarespace.com/static/51bb74b8e4b0139570ddf020/t/60b7ccde2a2ef7287828adeb/1622658271688/2021_Pivovarova_Powers_Immigrants_Education-Job_Mismatch.pdf

Title:

Provasnik, S. (2021). Process data, the new frontier for assessment development: Rich new soil or a quixotic quest? *Large-scale Assessments in Education*, 9(1), 1-17. doi: 10.1186/s40536-020-00092-z

Abstract:

This paper presents the concepts and observations in the author's keynote address at the May 2019 "Opportunity versus Challenge: Exploring Usage of Log-File and Process Data in International Large-Scale Assessments" conference in Dublin, Ireland. This paper recaps briefly some key points that emerged at the December 2018 ETS symposium on process data in Washington, DC, and suggests some common terminology and concepts for facilitating future meaningful discussion. It then borrows some concepts from evolutionary biologists to take a critical look at process data and some of its ethical implications before turning to discuss major applications for and challenges of using process data and logfiles. The second half of this paper then maps out the terrain in which process data emerges as a "byproduct" of the shift from paper-and-pencil testing to digital-based assessments (DBA) and looks closely at how process data interacts with the development and operationalization of assessment systems. This interaction suggests new, fresh ways of improving national and international assessment system processes, and ultimately the measurement of cognitive skills, while venturing into the new frontiers opened with process data.

Available at (open access): <https://doi.org/10.1186/s40536-020-00092-z>

Title:

Pullman, A., Gauly, B., & Lechner, C. M. (2021). Short-term earnings mobility in the Canadian and German context: the role of cognitive skills. *Journal for Labour Market Research*, 55(10), 1-19. doi: 10.1186/s12651-021-00292-2

Abstract:

It is well-established that human capital contributes to unequal levels of earnings mobility. Individuals with higher levels of human capital, typically measured through education, earn more on average and are privy to greater levels of upward change over time. Nevertheless, other factors may have an incremental effect over education, namely cognitive ability and the skill demands of employment. To deepen insight into whether these aspects contribute to earnings mobility over a four-year period, the present study examines positional change in Canada and Germany—two contexts typified as examples of liberal and coordinated market economies. A series of descriptive indices and relative change models assess how different measures of human capital are associated with earnings mobility. The results indicate that, while individuals with higher cognitive skills experience greater earnings stability and upward mobility in both countries, there is only an incremental effect of skills on mobility in Germany once we account for educational credentials. The results also provide evidence on the role of skill demands for earnings mobility; in both countries, advanced skills at work are associated with greater short-term mobility, even while controlling for cognitive ability and other factors. Together the results showcase how longitudinal data containing detailed measures of human capital allow for deeper insight into what facilitates earnings mobility.

Available at (open access): <https://doi.org/10.1186/s12651-021-00292-2>

Title:

Pullman, A., & Krejcik, L. (2021). Literacy, numeracy, and digital practices at home among NEET individuals in Germany: How are they associated with future work and school? *Zeitschrift für Pädagogik, Beiheft*, (1), 133-152. doi: 10.3262/ZPB2101133

Abstract:

For adults who are not in education, employment, or training (NEET), an important source of their informal learning is literacy, numeracy, and digital (LND) practices at home. By analyzing data from the Programme for the International Assessment of Adult Competencies (PIAAC) and the longitudinal follow-ups in Germany, this study provides insight into the literacy, numeracy, and problem solving in technology-rich environments skill profile of NEET individuals and examines if LND activities at home contribute to their level of skill in these areas. Additional longitudinal analysis examines the association between the probability of being NEET two and four years later and initial level of LND activities at home. Together, the results demonstrate that literacy, numeracy, and problem-solving skills are lower among NEET individuals and LND activities partially account for their difference in average skill levels compared to non-NEET people. Over time, LND activities at home have a small association with a lower probability of being NEET two years later but minimal to no association four years later.

Available at: <https://doi.org/10.3262/ZPB2101133>

Title:

Rammstedt, B., Gauly, B., & Zabal, A. (2021). Adult literacy and weak readers in PIAAC Cycle 1. *Zeitschrift für Pädagogik Beiheft*, 67(1), 88-108. doi: 10.3262/ZPB2101088

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC), which was

initiated by the Organisation for Economic Co-operation and Development (OECD), assesses key skills of the adult population in an internationally comparable way. Over 35 countries with quite different degrees of economic development participated in the three rounds of the first cycle of PIAAC. This paper gives an overview of the average adult literacy skills by country and across countries and discusses the results from a German perspective. Furthermore, it explores how certain macro-economic indicators relate to the participating countries' average adult literacy skills. PIAAC also provides information on adults with very low levels of literacy, thus enabling us to examine this group – the weak readers – more closely. Here too, we compare the proportion of weak readers across countries and examine how it relates to key country characteristics. In addition, we investigate which individual characteristics are associated with low reading skills. The paper concludes with a preview of the upcoming second cycle of PIAAC, which promises to yield additional and enhanced high-quality international data for further analyses.

Available at: <https://doi.org/10.3262/ZPB2101088>

Title:

Reichenberg, O. (2021). In and Out of Control: How Class and Occupation Conditions the Relationship between Job Skills and Job Control (Task Discretion) in Four Western European Countries. *Comparative Sociology*, 20(4), 530-562. doi: 10.1163/15691330-12341536

Abstract:

The present study aimed to predict job control (i.e., task discretion) based on class and occupation with skill use as a (hypothesized) mechanism in four Western European countries by using the OECD adult skill survey (PIAAC). The countries were Denmark, Belgium, Italy, and the United Kingdom (UK). The study used a Bayesian approach that included multilevel models combined with measurement models. The study uses the international standard classification of occupations with two digits (clustering variable) as well as the European socioeconomic classification (ESeC) measured with three social classes. The results indicate that greater worker technical skills (computer use) and social skills (e.g., negotiate and influence) predict higher levels of job control. Social classes interact with skills to predict job control (except Belgium). Occupational computer skills predict job control (in Belgium and Italy). In conclusion, the study supports predictions by neo-Durkheimians, neo-Weberians, New Structuralists, and relational approaches to inequality.

Available at: <https://doi.org/10.1163/15691330-12341536>

Title:

Rouet, J.-F., Britt, M. A., Gabrielsen, E., Kaakinen, J., Richter, T., & Lennon, M. (2021). PIAAC Cycle 2 assessment framework: Literacy. In OECD (Eds.), *The Assessment Frameworks for Cycle 2 of the Programme for the International Assessment of Adult Competencies* (pp. 39-64). Paris: OECD Publishing. doi: 10.1787/4bc2342d-en.

Abstract:

Literacy skills play an essential part in adults' personal, social and professional life. In addition, the spread of digital technologies further emphasises the importance of reading literacy. As a set of cognitive abilities, literacy involves: accessing texts, or passages within texts, that match readers' tasks and needs; understanding the literal contents of text(s) and drawing adequate inferences both within and across texts; and evaluating texts and their sources for accuracy, soundness, and relevance, as well as reflecting on authors' purposes and strategies. The PIAAC assessment of literacy draws from a broad range of contexts and text types, from personal narratives to descriptions and arguments. It is designed as a set of scenarios involving one or several texts and a set of questions using various response formats. The main factors expected to drive item difficulty and to define

proficiency levels are identified in this framework document.

Available at (open access): doi.org/10.1787/4bc2342d-en.

Title:

Saar, E., & Martma, L. (2021). The safety net and the diversion effects of vocational upper-secondary education in European countries. *Journal of Education and Work*, 34(4), 429-442. doi: 10.1080/13639080.2021.1953692

Abstract:

This paper presents a comparative analysis of the effect of different educational orientations at the upper-secondary level on labour market outcomes across European countries. The study separates safety net effect and the diversion effect of Vocational Education and Training (VET). Using PIAAC data, we show cross-national differences in the early career advantages of vocational qualifications. The results indicate that vocational effects vary according to outcome. In general, negative effects on occupational status are consistent with earlier research. The safety net function of VET is only observable in a few countries. We also studied the impact of different institutional level characteristics. The analysis of the impact of macro-level characteristics reveals VET's safety net effect is observable only in countries with the highest occupational specificity of VET. At the same time, work-based VET is increasing its diversion effect. Crucial issues are the differences in general competencies between graduates of VET and general upper-secondary school graduates. The major differences are the simultaneous weakening of VET's safety net effect and the strengthening of the diversion effect.

Available at: <https://doi.org/10.1080/13639080.2021.1953692>

Title:

Santiago Wolf, L. H. (2021). *Selectivity and effectiveness of worker training across age cohorts: An international analysis*. (Master's thesis). Vienna University of Economics and Business.

Abstract:

Training is of major importance to provide workers with the necessary skills in fast changing working environments. However, training gains, willingness, and needs are affected by age. Likewise, theory predicts decreasing returns to training investments with lifetime. The present study analyses heterogeneities in selection and effectiveness of training for workers across age groups. Using data from the Programme for the International Assessment of Adult Competencies (PIAAC), the study shows that selection criteria such as education or job responsibility are less significant for workers in entry age, aged below 35 years, as compared to older workers. Disadvantages in training participation are found for young women. As suggested by the related literature, selection is shown to bias the assessment of training outcomes. Applying entropy balancing, a propensity reweighting method, selection bias is accounted for and the impact of training on digital skills is evaluated. Positive training effects on the reporting of digital competence are found for workers across all age groups. The findings suggest that in increasingly digitized labor markets training is an effective measure to equip workers of all age with the required skills, yet inequalities in training access exist.

Available at: Library of Vienna University of Economics and Business

Title:

Scandurra, R., & Alberio, M. (2021). A classification of factors affecting adults' skills distribution. *SAGE Open*, 11(2), 1-14. doi: 10.1177/21582440211019738

Abstract:

This article explores cross-country patterns in how conditions relating to family background, education, and the labor market are related to literacy and numeracy skills. It seeks to assess whether these patterns are in agreement with models of skills formation as identified in the political economy literature. The novelty of this article resides in a reexamination of the findings in the literature of skills formation and education and training system with new data on adults' skills. This research uses a two-step approach: first it applies Shapley decomposition variance on adult skills and then each country scores are clustered to search for common pattern and regularities in skills formation. This leads us to single out common regularities among groups of countries in the way skills are structured and distributed. We find three main typologies and different subgroups within them that are compatible with the literature on skills formation models.

Available at (open access): <https://doi.org/10.1177/21582440211019738>

Title:

Scheeren, L., & Bol, T. (2021). Gender inequality in educational performance over the school career: The role of tracking. *Research in Social Stratification and Mobility*, <https://doi.org/10.1016/j.rssm.2021.100661>

Abstract:

Previous studies have shown an association between the tracking age and gender inequality in educational performance and attainment, but it remains unclear when and how tracking affects the gender gap in educational outcomes. As differences between boys and girls are not constant across the school-career, tracking early or later in the school career might have different consequences. We examine how gender gaps develop over the school career and how this development differs between early- and late-tracking countries. Microdata on educational achievement and attainment from several cross-national surveys (PIRLS, TIMSS, PISA, PIAAC and ESS), are combined with country-level information on the tracking age. Using a differences-in-differences design, we find that differentiation between educational tracks, irrespective of the age at which it occurs, is beneficial for girls. However, this positive effect is larger when educational systems track late than when they track early, suggesting that compared to early tracking, tracking later is more favourable for female students.

Available at: <https://doi.org/10.1016/j.rssm.2021.100661>

Title:

Schiewek, C. (2021). *Regionale Analyse des Automatisierungspotenzials in NRW*. [Regional analysis of the automation potential in NRW]. (Master's thesis). Ruhr-University Bochum.

Abstract:

Based on the German PIAAC data (Rammstedt et al., 2016) the master's thesis explored the automation potential in the federal state of North Rhine Westphalia. [Note from editors]

Available at: Library of Ruhr-University Bochum

Title:

Shin, D.-H., & Bills, D. (2021). Trends in educational and skill mismatch in the United States. *Social Sciences*, 10(395), 1-36. doi: 10.3390/socsci10100395

Abstract:

We examined trends in the incidence and correlates of educational and skill mismatch in the United

States. We focused on trends over time in the associations between various types of mismatch and a range of factors including contextual conditions. We explored whether contextual conditions at the transitional period from school to jobs increase or decrease the probability of mismatch and whether such relationships persist throughout the working career. Our central questions were how the incidence of and relationship between educational and skill mismatch in the U.S. changed between 1994, 2003, and 2012 and how this differed by age, gender, immigration status, educational attainment, and occupation. We used three cross-sectional surveys that had not previously been implemented for such an effort. These were the International Adult Literacy Survey (IALS) in 1994, the Adult Literacy and Life-skills (ALL) survey in 2003, and the Program for the International Assessment of Adult Competencies (PIAAC) in 2012. Repeated cross-sectional data provided us with substantial analytic leverage. Our findings point toward the key role of occupational or positional factors rather than individual worker characteristics as being most implicated in trends in mismatch. We describe the importance of our results for labor market theories.

Available at: <https://doi.org/10.3390/socsci10100395>

Title:

Smith, M. L., Hamplová, D., Kelley, J., & Evans, M. D. R. (2021). Concise survey measures for the Big Five personality traits. *Research in Social Stratification and Mobility*, 73, 1-11. doi: 10.1016/j.rssm.2021.100595

Abstract:

With a few notable exceptions, sociologists, economists, and public opinion researchers have generally neglected the role of personality in status attainment, well-being, and related research on non-cognitive skills. This is partly because the existing measurement instruments for the well-known Big Five personality traits are far too long for inclusion in the large nationwide (as opposed to clinical) surveys where status attainment and well-being are typically analyzed. Accordingly, with the goal of identifying a powerful, concise collection of items measuring key personality traits, we included the classical full 60-item NEO-5 personality test measurements in a special follow-up to the Czech edition of the Program for the International Assessment of Adult Competencies (PIAAC; $n = 2198$). Using classical measurement techniques of factor analysis, supplemented by structural equation analyses which also take into account correlations with criterion variables, we assess the value of the different potential items. We arrive at a concise set that, for general social science as opposed to clinical purposes, adequately measures two of the Big Five personality traits: extraversion (4 items) and conscientiousness (4 items). We also find an empirically highly reliable measure of third, neuroticism (6 items), but have some doubts about its conceptual meaning. We do not find adequate measures of openness to experience or to agreeableness, the remainder of the Big Five.

Available at: <https://doi.org/10.1016/j.rssm.2021.100595>

Title:

Stijepic, D. (2021). A cross-country study of skills and unemployment flows. *Journal for Labour Market Research*, 55(9), 1-30. doi: 10.1186/s12651-021-00289-x

Abstract:

Using an international survey that directly assesses the cognitive skills of the adult population, I study the relation between skills and unemployment flows across 37 countries. Depending on the specifically assessed domain, I document that skills have an unconditional correlation with the log-risk-ratio of exiting to entering unemployment of 0.65–0.68 across the advanced and skill-abundant countries in the sample. The relation is remarkably robust and it is unlikely to be due to reverse causality. I do not find evidence that this positive relation extends to the seven relatively less

advanced and less skill-abundant countries in the sample: Peru, Ecuador, Indonesia, Mexico, Chile, Turkey and Kazakhstan.

Available at (open access): <https://doi.org/10.1186/s12651-021-00289-x>

Title:

Sulkunen, S., Nissinen, K., & Malin, A. (2021). The role of informal learning in adults' literacy proficiency. *European Journal for Research on the Education and Learning of Adults*, 12(2), 207-222. doi: 10.3384/rela.2000-7426.1325

Abstract:

This study used the PIAAC dataset to compare the effects of informal literacy learning on adults' literacy proficiency to those of formal and non-formal learning. The study participants were Nordic adults aged 35–65 years. The statistical method was regression analysis. The results indicate that informal literacy learning had the most significant effect on Nordic adults' literacy proficiency. Non-formal adult education had a clearly smaller effect, and formal adult education seemed to have a negative effect when background factors were controlled for. Informal learning, particularly reading outside work, had a significant effect independent of adults' backgrounds, indicating that it offers also less-educated and unemployed adults the opportunity to develop literacy proficiency.

Available at (open access): <https://doi.org/10.3384/rela.2000-7426.1325>

Title:

Tausch, A. (2021). Führung in Zeiten von Digitalisierung, Globalisierung und Wandel: Führungskräfte im internationalen Vergleich analysiert anhand der PIAAC-Daten [Leadership in times of digitization, globalization and change: An international comparison of managers based on PIAAC data]. In *Vernetzte Arbeitswelt - Der digitale Arbeitnehmer: Tagungsband zur Konferenz* (pp. 15-33). Wiesbaden: Springer Fachmedien. doi: 10.1007/978-3-658-33328-7_2

Abstract:

The book addressed the following questions: (1) How well German managers are prepared for the current challenges in an international comparison and (2) to what extent young and older managers differ. Survey data from the PIAAC study (Program for the International Assessment of Adult Competencies) from nine countries were used as database (N= 10,286 managers).

Available at: https://doi.org/10.1007/978-3-658-33328-7_2

Title:

Tolganay, U. (2021). *Effects of skills mismatches on job satisfaction in Kazakhstan: Evidence from PIAAC data*. (Master's thesis). M.Narikbayev KAZGUU University.

Abstract:

This paper explores the effects of skill mismatch on job satisfaction in Kazakhstan. Additionally, the impact of education, gender, and sector on job satisfaction were examined too. Data for skill mismatch and job satisfaction indicators were sourced from OECD Survey of Adult Skills (PIAAC). The answers on questions from PIAAC questionnaire was used for analysis. Our sample consisted of 2,893 responses in the age range from 16 to 65. The results suggest that educational mismatch shows greater effects on job satisfaction than skill mismatch. Skill mismatch doesn't have significant impact on job satisfaction. At the same time, data analysis revealed the probability of job dissatisfaction is negatively correlated with education: people with higher level of education are less likely to be dissatisfied with their work. Additionally, data analysis results showed job satisfaction

among Kazakhstan respondents is high. Also showed high rate of skill mismatch among respondents. Only small amount of people think they have propered skills for their job. Most of people self-esteem as underskilled, overskilled and wrong skilled. These research results provide significant theoretical and practical implications for scholars and professionals.

Available at (open access): <http://repository.kazguu.kz/handle/123456789/1009>

Title:

Tout, D., Demonty, I., Díez-Palomar, J., Geiger, V., Hoogland, K., & Maguire, T. (2021). PIAAC Cycle 2 assessment framework: Numeracy. In. OECD (Eds.), (pp. 65-154). Paris: OECD Publishing. doi: 10.1787/c4221062-en

Abstract:

This chapter presents the framework for conceptualising and assessing adult numeracy and developing a reporting scale for the direct assessment of numeracy as part of the OECD's Programme for the International Assessment of Adult Competencies (PIAAC Cycle 2). Numeracy as described here refers to adults' skills in accessing, using and reasoning critically with mathematical content, information and ideas represented in multiple ways in order to engage in and manage the mathematical demands of a range of situations in adult life. The framework describes the conceptual and theoretical foundations behind the adult numeracy construct and the principles applied for assessing numeracy in PIAAC and the distribution of the numeracy assessment items by a range of task characteristics.

Available at: <https://doi.org/10.1787/c4221062-en>

Title:

Trapp, S. (2021). *Generalization and extension of the environmental enrichment hypothesis of the OFCI model*. (Dissertation). Humboldt University Berlin. doi: 10.18452/21951

Abstract:

This dissertation wants to test and generalize the Environmental Enrichment Hypothesis of the Openness-Fluid-Crystallized-Intelligence model (OFCI model, (Ziegler, Danay, Heene, Asendorpf, & Bühner, 2012). This hypothesis assumes that the personality trait Openness fosters intellectual development. This is based on the idea that more open people with put themselves in more learning situations and promote fluid and crystalline intelligence (Investment Hypothesis). Since this hypothesis has only been tested for younger and older adults, the present work wants to show the generalization for the entire adult age. Furthermore, the underlying assumption of the manifestation of Openness in intelligence specific behavior (e.g. reading) is tested. The first study in this paper considers the Environmental Enrichment Hypothesis from a structural perspective. It is assumed that Openness manifests in reading and calculating activities at work and during leisure time. Such activities would lead to people into new situations. According to Cattell's investment theory fluid intelligence would be used to build crystalline intelligence. On the basis of a representative sample it could be shown that (1) the Environmental Enrichment Hypothesis can be generalized over the entire adult age, (2) the positive influence of Openness on intelligence can be manifested in leisure and work activities, and (3) there is no difference in specific behaviors. The second study focuses on the extension of the Environmental Enrichment Hypothesis by reading. In this study the influence of Openness on these activities is considered in a longitudinal design. Additionally, it is examined whether Openness can also have a positive effect during unemployment. it is assumed that Openness should buffer the negative effects of unemployment on reading. The first effect could, but the second effect could not be supported. Finally, the results are discussed and used to generate further research questions.

Available at (open access): <http://dx.doi.org/10.18452/21951>

Title:

Ulitzsch, E., He, Q., Ulitzsch, V., Molter, H., Nichterlein, A., Niedermeier, R., & Pohl, S. (2021). Combining clickstream analyses and graph-modeled data clustering for identifying common response processes. *Psychometrika*, 86(1), 190-214. doi: 10.1007/s11336-020-09743-0

Abstract:

Complex interactive test items are becoming more widely used in assessments. Being computer-administered, assessments using interactive items allow logging time-stamped action sequences. These sequences pose a rich source of information that may facilitate investigating how examinees approach an item and arrive at their given response. There is a rich body of research leveraging action sequence data for investigating examinees' behavior. However, the associated timing data have been considered mainly on the item-level, if at all. Considering timing data on the action-level in addition to action sequences, however, has vast potential to support a more fine-grained assessment of examinees' behavior. We provide an approach that jointly considers action sequences and action-level times for identifying common response processes. In doing so, we integrate tools from clickstream analyses and graph-modeled data clustering with psychometrics. In our approach, we (a) provide similarity measures that are based on both actions and the associated action-level timing data and (b) subsequently employ cluster edge deletion for identifying homogeneous, interpretable, well-separated groups of action patterns, each describing a common response process. Guidelines on how to apply the approach are provided. The approach and its utility are illustrated on a complex problem-solving item from PIAAC 2012.

Available at (open access): <https://doi.org/10.1007/s11336-020-09743-0>

Title:

Värnik, H. J. (2021). *Adult Skill reflection on economic outcomes: Evidence from PIAAC*. (Bachelor thesis). Tallinn University of Technology.

Abstract:

This thesis aims to investigate the connection between education and economic well-being. Associations were sought for different aspects of education such as literacy and numeracy and, different facets of economic well-being, including the overall level of economic output, income inequality and unemployment. The analysis is based on publicly available data from the Organisation for Economic Co-operation and Development (OECD), including education related data from the results of Programme for the International Assessment of Adult Competencies (PIAAC), which is an international study encompassing more than 40 countries performed by the OECD. Data were analysed on country level with regression models. Countries were stratified into Western and Eastern to account for differences in overall economic level as measured by the Gross Domestic Product (GDP). The results show that a higher level of education is strongly associated with a higher level of economic well-being. Each additional point in literacy means a GDP higher by 132 USD, while each additional point in numeracy means a GDP higher by 125 USD. Higher economic inequality is associated with lower literacy and numeracy scores. Each additional point in literacy or numeracy means a Gini coefficient lower by 0.002 points. Numeracy and literacy are not associated with unemployment based on country level aggregate data. The relative importance and effect of literacy and numeracy on economic outcomes is almost equal and these two aspects of education are highly correlated with each other.

Available at (open access): <https://digikogu.taltech.ee/en/Item/629e91ea-be0c-439c-871d-3a751b399f36>

Title:

Westerman, J. (2021). Post-educational motivation to learn cognitive skills in three European labour markets. A comparative analysis of the PIAAC. *Journal of Education and Work*, 34(4), 459-471. doi: 10.1080/13639080.2021.1953693

Abstract:

This study advances the analysis of cognitive skill use at work by considering another crucial factor: the motivation-to-learn (MtL). Previous research has indicated that MtL forms cognitive skills in the school setting. However, the role of MtL in the work setting is much less understood. The present study analyses the association between MtL and cognitive skill use in three major European labour markets: Germany, the Netherlands, and the United Kingdom, using the Programme for the International Assessment of Adult Competencies (PIAAC). Findings from a regression analysis of cognitive skill use on MtL and various control variables show that the independent contribution of MtL is about as important as the combined contribution of literacy/numeracy proficiency, although a decomposition analysis reveals further insights about how MtL, literacy/numeracy proficiency, and education intersect each other in the determination of cognitive skill use. The found association is remarkably stable across different samples and model specifications. Some heterogeneities are however revealed, such as a larger relative importance of MtL among the low-educated in the Netherlands. The findings are interpreted in light of contemporary theory on institutional regimes, concentrating on cross-country differences in on-the-job training prevalence.

Available at (open access): <https://doi.org/10.1080/13639080.2021.1953693>

Title:

Wicht, A., Reder, S., & Lechner, C. M. (2021). Sources of individual differences in adults' ICT skills: A large-scale empirical test of a new guiding framework. *PLOS ONE*, 16(4), 1-18. doi: 10.1371/journal.pone.0249574

Abstract:

We develop an integrative conceptual framework that seeks to explain individual differences in the ability to use information and communication technologies (ICT skills). Building on practice engagement theory, this framework views the continued usage of digital technologies at work and in everyday life (ICT use) as the key prerequisite for the acquisition of ICT skills. At the same time, the framework highlights that ICT use is itself contingent upon individual and contextual preconditions. We apply this framework to data from two recent German large-scale studies (N = 2,495 and N = 2,786, respectively) that offer objective measures of adults' ICT skills. Findings support our framework's view of ICT use as a key prerequisite for ICT skills. Moreover, they demonstrate that literacy skills have strong associations with ICT skills, largely by virtue of their indirect associations through ICT use. By comparison, regional digital cultures (as proxied by internet domain registration rates) evince only limited explanatory power for individual differences in ICT skills.

Available at (open access): <https://doi.org/10.1371/journal.pone.0249574>

Title:

Xiao, Y., He, Q., Veldkamp, B., & Liu, H. (2021). Exploring latent states of problem-solving competence using hidden Markov model on process data. *Journal of Computer Assisted Learning*, 37(5), 1232-1247. doi: 10.1111/jcal.12559

Abstract:

The response process of problem-solving items contains rich information about respondents' behaviours and cognitive process in the digital tasks, while the information extraction is a big

challenge. The aim of the study is to use a data-driven approach to explore the latent states and state transitions underlying problem-solving process to reflect test-takers' behavioural patterns, and to investigate how these states and state transitions could be associated with test-takers' performance. We employed the Hidden Markov Modelling approach to identify test takers' hidden states during the problem-solving process and compared the frequency of states and/or state transitions between different performance groups. We conducted comparable studies in two problem-solving items with a focus on the US sample that was collected in PIAAC 2012, and examined the correlation between those frequencies from two items. Latent states and transitions between them underlying the problem-solving process were identified and found significantly different by performance groups. The groups with correct responses in both items were found more engaged in tasks and more often to use efficient tools to solve problems, while the group with incorrect responses was found more likely to use shorter action sequences and exhibit hesitant behaviours. Consistent behavioural patterns were identified across items. This study demonstrates the value of data-driven based HMM approach to better understand respondents' behavioural patterns and cognitive transmissions underneath the observable action sequences in complex problem-solving tasks.

Available at: <https://doi.org/10.1111/jcal.12559>

Title:

Yamashita, T., Smith, T. J., & Cummins, P. A. (2021). A practical guide for analyzing Large-Scale Assessment Data Using Mplus: A case demonstration using the Program for International Assessment of Adult Competencies data. *Journal of Educational and Behavioral Statistics*, 46(4), 501-518. doi: 10.3102/1076998620978554

Abstract:

In order to promote the use of increasingly available large-scale assessment data in education and expand the scope of analytic capabilities among applied researchers, this study provides step-by-step guidance, and practical examples of syntax and data analysis using Mplus. Concise overview and key unique aspects of large-scale assessment data from the 2012/2014 Program for International Assessment of Adult Competencies (PIAAC) are described. Using commonly-used statistical software including SAS and R, a simple macro program and syntax are developed to streamline the data preparation process. Then, two examples of structural equation models are demonstrated using Mplus. The suggested data preparation and analytic approaches can be immediately applicable to existing large-scale assessment data.

Available at: <https://doi.org/10.3102/1076998620978554>

Title:

Yamashita, T., Zhang, J., Sun, N., & Cummins, P. A. (2021). Sociodemographic and socioeconomic characteristics, and basic skills of the nonformal distance education participants among adults in the US. *Adult Education Quarterly*, 1-20. doi: 10.1177/07417136211044509

Abstract:

Despite increasing demand in distance education, relatively little is known about the demographic and socioeconomic characteristics as well as basic skill levels of adult distance education participants at the national level in the US. This study analyzed the US data from the 2012/2014 and 2017 Program for International Assessment of Adult Competencies (PIAAC) to identify baseline determinants of nonformal (i.e., not for a formal credential or degree) distance education among adults aged between 25 and 65 years old. Results showed that higher educational attainment, employment, literacy skills, and digital problem-solving skills were positively associated with nonformal distance education participation. As recent distance education is provided predominantly through

the internet and digital device, digital skills may be of particular concern. These identified determinants should be reflected in policy interventions to close education gaps. Additionally, the findings of this study are useful for future research that focuses on psychological and behavioral factors.

Available at: <https://doi.org/10.1177/07417136211044509>

Title:

Yashiro, N., Kyyrä, T., Hwang, H., & Tuomala, J. (2021). *Technology, labour market institutions and early retirement: evidence from Finland*. No. 1659. Paris: Economics Department of the OECD. doi: 10.1787/3ea0c49b-en

Abstract:

Among various barriers to increasing employment of older workers, this paper focuses on two notable ones that are relevant for the future of work. First, older workers engaged in codifiable, routine tasks are particularly prone to the risk of being displaced by computers and robots. Second, several countries have in place various labour market institutions that encourage early retirement, such as exceptional entitlements or looser criteria for unemployment and disability benefits applied to older individuals. This paper presents evidence that these two factors reinforce each other to push older workers out of employment. It is found that older workers who are more exposed to digital technologies are more likely to leave employment, and that this effect is significantly magnified when they are eligible to an extension of unemployment benefits until they start drawing old age pension. Furthermore, a simple simulation based on the empirical findings illustrates that a reform that tightens the eligibility for the benefit extension would increase mostly the employment of older workers that are more exposed to digital technologies.

Available at (open access): <https://doi.org/10.1787/3ea0c49b-en>

3 Data files and technical reports

3.1 Data files and technical reports 2013

Title:

Organisation for Economic Cooperation and Development (OECD) (2013). *Technical report of the Survey of Adult Skills (PIAAC)*. Paris: OECD Publishing. Retrieved May 5, 2019, from http://www.oecd.org/skills/piaac/_Technical%20Report_17OCT13.pdf

Abstract:

International technical report of the Survey of Adult Skills (PIAAC). [Note from editors]

Available at (open access): http://www.oecd.org/skills/piaac/_Technical%20Report_17OCT13.pdf

Title:

Statistics Canada (2013). *PUMF 2012 - Programme for the International Assessment of Adult Competencies (PIAAC)* [Catalogue number. 89-555-X2013002]. Ottawa: Statistics Canada.

Abstract:

The public use microdata file (PUMF) from the Programme for the International Assessment of Adult Competencies (PIAAC) provides data on three skills that are essential to processing information: literacy, numeracy, and problem-solving in technology-rich environments (referred to as PS-TRE). Data are based on interviews with approximately 27,000 respondents, which allows for reliable estimation at the national, provincial and territorial level. The file provides information about the literacy, numeracy and PS-TRE skills for the Canadian population aged 16 to 65. It provides results for Canada as a whole, as well as for all the provinces and territories. In addition, it provides skills proficiency information and a range of socio-demographic characteristics (e.g., age, gender, level of education) across the entire Canadian population. It also provides information on the literacy, numeracy and PS-TRE skills of Aboriginal populations, immigrants, and official-language minority communities.

Available at: <https://www150.statcan.gc.ca/n1/en/catalogue/89-555-X2013002>

3.2 Data files and technical reports 2014

Title:

Hogan, J., Montalvan, P., Diaz-Hoffmann, L., Dohrmann, S., Krenzke, T., Lemay, M., Mohadjer, L., & Thornton, N. (2013). *Program for the International Assessment of Adult Competencies 2012: U.S. Main study technical report* [NCES2014-047]. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved October 27, 2017, from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014047>

Abstract:

Program for the International Assessment of Adult Competencies (PIAAC) 2012: U.S. Main Study Technical Report is a technical manual that describes how these data were collected and processed as well as how to use the data files to conduct statistical analyses. Information is presented on meeting PIAAC consortium requirements, sample design, listing of dwelling units, data collection, reducing the risk of data disclosure, the need for conducting a nonresponse bias analysis, weighting and variance estimation, and data preparation and processing. The appendices of the Technical Report

include background questionnaire adaptations, data collection reports, interviewer training reports, outreach materials, interviewer debriefing report, basic analysis tables, extended analysis tables, weighted item response rates, technical notes, and data user guidance.

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014047>

Title:

Holtzman, S., Barone, J., Li, L., Krenzke, T., Hogan, J., Mohadjer, L., Carstens, R., & Daniel, T. (2014). *Program for the International Assessment of Adult Competencies (PIAAC) 2012 U.S. Restricted Use File* [NCES 2014046REV]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The PIAAC U.S. RUF contains individual unit record data (SPSS and SAS format) including both responses to the background questionnaire and the cognitive assessment from the original U.S. PIAAC data collection completed in 2012. Statistical disclosure control treatments were applied due to confidentiality concerns. In addition to the variables in the PUF [NCES 2014-045REV], the RUF contains detailed versions of variables and additional data collected through U.S. specific questionnaire routing. The RUF can be accessed through a restricted use license agreement with the National Center for Education Statistics. For more details on the RUF, please refer to Appendix J of the U.S. PIAAC Technical Report [NCES 2014-047].

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014046REV>

Title:

Organisation for Economic Cooperation and Development (OECD) (2014). *PIAAC technical standards and guidelines*. Paris: OECD Publishing. Retrieved October 20, 2017, from http://www.oecd.org/site/piaac/PIAAC-NPM%282014_06%29PIAAC_Technical_Standards_and_Guidelines.pdf

Abstract:

Reports the technical standards and guidelines of PIAAC. [Note from editors]

Available at (open access): [https://www.oecd.org/skills/piaac/PIAAC-NPM\(2014_06\)PIAAC_Technical_Standards_and_Guidelines.pdf](https://www.oecd.org/skills/piaac/PIAAC-NPM(2014_06)PIAAC_Technical_Standards_and_Guidelines.pdf)

Title:

Statistics Austria (2014). *Programme for the International Assessment of Adult Competencies (PIAAC), Scientific Use File PIAAC 2011/12 for Austria*. Vienna: Statistics Austria.

Abstract:

The Austrian PIAAC Public Use File (OECD 2016) contains information on the respondents' background and on their cognitive assessment (in literacy, numeracy, and problem solving in technology-rich environments). It excludes certain background variables (e.g., some of the national adaptations), and some variables were not released in all the available detail. The majority of the variables were suppressed or coarsened to comply with national data protection legislation. The Austrian PIAAC Scientific Use File includes many of the suppressed background variables. Furthermore, other variables (e.g., age and income) have been released in full detail. [Source: Maehler & Konradt, 2020, S. 49-92]

Available at (open access): https://statistik.gv.at/web_en/statistics/PeopleSociety/education/survey_of_adult_skills/public_use_data_files_of_the_piaac_survey_2011_12/index.html

Title:

Zabal, A., Martin, S., Massing, N., Ackermann, D., Helmschrott, S., Barkow, I., & Rammstedt, B. (2014). *PIAAC Germany 2012: Technical report*. Münster: Waxmann.

Abstract:

The Programme for the International Assessment of Adult Competencies (PIAAC) is a large-scale initiative of the Organization for Economic Cooperation and Development (OECD) that aims at assessing key adult competencies considered important for individual and societal success. This technical report describes how the PIAAC survey was conducted in Germany. It provides information on the PIAAC instruments: the background questionnaire and the cognitive assessment. Furthermore, it describes sampling, fieldwork, weighting, and nonresponse bias analyses. The report concludes with an overview of the data management processes and data products as well as a brief evaluation of the overall data quality.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-50410-5>

3.3 Data files and technical reports 2015

Title:

Solga, H., & Heisig, J. P. (2015). *Programme for the International Assessment of Adult Competencies (PIAAC), Germany - Prime Age (2012)*. Data file version 1.1.0 [ZA5951]. Cologne: GESIS Data Archive. doi:10.4232/1.12386

Abstract:

This data set (SPSS and Stata format) contains an additional national oversample of 26- to 55-year-old adults in former East Germany. 560 additional respondents were surveyed using the same procedures, instruments, and assessments that were used for the PIAAC Main Study in Germany. Finally the data was appended to the PIAAC main data (only 26- to 55-year-olds). [Note from editors]

Available at: <http://dx.doi.org/10.4232/1.12386>

Title:

Statistics Austria (2015). *Programme for the International Assessment of Adult Competencies (PIAAC), Extended Public Use File PIAAC 2011/12 for Austria*. Vienna: Statistics Austria.

Abstract:

The Austrian PIAAC Public Use File (OECD 2016) contains information on the respondents' background and on their cognitive assessment (in literacy, numeracy, and problem solving in technology-rich environments). The Extended PIAAC Public Use File for Austria contains additional national education variables. [Source: Maehler & Konradt, 2020]

Available at (open access): https://statistik.gv.at/web_en/statistics/PeopleSociety/education/survey_of_adult_skills/public_use_data_files_of_the_piaac_survey_2011_12/index.html

Title:

Statistics Norway (2015). *Survey of Adult Skills (PIAAC) 2012* [Dataset NSD2135]. Bergen: Norwegian Social Science Data Services. doi: 10.18712/NSD-NSD2135-V1

Abstract:

The Norwegian PIAAC data contain information on respondents' background and on their cognitive

assessment (in literacy, numeracy, and problem solving in technology-rich environments). The PIAAC data provided by the Norwegian Centre Research Data (NSD) contain more detailed information—for example, on earnings, country of birth, and occupation (detailed, four-digit, ISCO-08 codes)—than that available in the Norwegian PIAAC Public Use File (OECD 2016). Furthermore, the Norwegian PIAAC data can be extended with administrative (register) data, such as demographic data (e.g., citizenship and marital status), data on educational attainment and current education, employment, occupation and industry, and information about the workplace of the respondents and about social security for the years 2010–2020. These linked data are provided by Statistics Norway. Mode of Data Collection PIAAC data: face-to-face interview (computer-assisted personal interview, CAPI) to collect the background information; computer-based or paper-based assessment of skills in literacy, numeracy, and problem solving in technology-rich environments. The administrative data are derived from administrative registers (e.g., the population register). Sample Description and Size: The sample comprised 5,128 adults aged 16 to 65 years. The Norwegian PIAAC data are provided in SPSS, Stata, and SAS format by the Norwegian Centre for Research Data (NSD) to researchers, teachers and students located in Norway [Source: Maehler & Konradt, 2020]

Available at: <https://www.ssb.no/en/omssb/tjenester-og-verktoy/data-til-forskning>

3.4 Data files and technical reports 2016

Title:

Education of New Zealand (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), New Zealand Public Use File - Extended*. Wellington: Ministry of Education.

Abstract:

The New Zealand PIAAC Public Use File (OECD 2016) contains information on respondents' background and on their cognitive assessment (in literacy, numeracy, and problem solving in technology-rich environments). For New Zealand, an extended public use file (SPSS, Stata and SAS format) is available with country-specific variables (e.g., education) and international variables (e.g., a continuous age variable) that were confidentialised or suppressed for the public use file version. [Source: Maehler & Konradt, 2020]

Available at: <https://www.educationcounts.govt.nz/data-services/international>

Title:

Hogan, J., Thornton, N., Diaz-Hoffmann, L., Mohadjer, L., Krenzke, T., Li, J., & Van De Kerckhove, W. (2016). *Program for the International Assessment of Adult Competencies (PIAAC) 2014: U.S. National Supplement Public Use Data Files-Prison* [NCES 2016337REV]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The 2014 PIAAC U.S. Prison Study Public Use File (PUF) contains individual unit record data (SPSS, SAS and raw format) including responses to both the background questionnaire and the cognitive assessment from the data collection completed in 2014. Statistical disclosure control treatments were applied due to confidentiality concerns. For more details on the Prison Study PUF, please refer to Appendix E of the U.S. PIAAC Technical Report 2012/2014 [NCES 2016-036].

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016337>

Title:

Hogan, J., Thornton, N., Diaz-Hoffmann, L., Mohadjer, L., Krenzke, T., Li, J., & Van De Kerckhove, W. (2016). Program for the International Assessment of Adult Competencies (PIAAC) 2014: U.S. National Supplement Restricted Use Data Files-Prison [2016058REV]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The 2014 PIAAC U.S. Prison Study Restricted Use File (RUF) contains individual unit record data (SPSS and SAS format) including responses to both the background questionnaire and the cognitive assessment from the data collection completed in 2014. Statistical disclosure control treatments were applied due to confidentiality concerns. In addition to the variables in the Prison Study PUF (NCES 2016-337), the RUF contains detailed versions of variables and additional data collected through U.S. specific questionnaire routing. The RUF can be accessed through a restricted use license agreement with the National Center for Education Statistics. For more details on the RUF, please refer to Appendix E of the U.S. PIAAC Technical Report 2012/2014 (NCES 2016-036) with additional details on the prison variables found in the Addendum to the Technical Report (NCES 2016-036).

Available at: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016058>

Title:

Hogan, J., Thornton, N., Diaz-Hoffmann, L., Mohadjer, L., Krenzke, T., Li, J., Van De Kerckhove, W., Yamamoto, W., & Khorramdel, L. (2016). *U.S. Program for the International Assessment of Adult Competencies (PIAAC). 2012/2014: Main Study and National Supplement Technical Report* [NCES 2016-036REV]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

This technical report replaces the Program for the International Assessment of Adult Competencies (PIAAC) 2012: U.S. Main Study Technical Report (NCES 2014-047) as it combines information from both, the U.S. PIAAC 2012 Main Study and U.S. PIAAC 2014 National Supplement data collection efforts. This report includes detailed information on the Main Study and National Supplement sample design, survey instruments used for data collection, the data collection process and quality of the data, weighting, scaling, and data analysis.

Available at (open access): <https://nces.ed.gov/pubs2016/2016036.pdf>

Title:

Holtzman, S., Kandathil, M., Kapur, L., Kline, D., Barone, J., Li, L., Krenzke, T., Hogan, J., Mohadjer, L., et al. (2016). *Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014: U.S. National Supplement Restricted Use Data Files-Household* [NCES 2016668REV]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The PIAAC 2012/14 U.S. RUF contains individual unit record data (SPSS and SAS format) including both responses to the background questionnaire and the cognitive assessment from both the first and second U.S. PIAAC data collections, completed in 2012 and 2014, respectively. Statistical disclosure control treatments were applied due to confidentiality concerns. In addition to the variables in the PUF (NCES 2014-667REV), the RUF contains detailed versions of variables and additional data collected through U.S. specific questionnaire routing. The RUF can be accessed through a restricted use license agreement with the National Center for Education Statistics. For more details on the RUF, please refer to Appendix E of the U.S. PIAAC Technical Report [NCES 2016-036REV].

Available at: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016668REV>

Title:

Holtzman, S., Kandathil, M., Kapur, L., Kline, D., Barone, J., Li, L., Krenzke, T., Hogan, J., Mohadjer, L., et al. (2016). *Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014: U.S. National Supplement Public Use Data Files-Household* [NCES 2016667REV]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The PIAAC 2012/14 U.S. PUF contains individual unit record data (SPSS, SAS and raw format) including both responses to the background questionnaire and the cognitive assessment from both the first and second U.S. PIAAC data collections, completed in 2012 and 2014, respectively. In September 2017, the PUF was reissued, with an Errata Sheet detailing the revisions. Statistical disclosure control treatments were applied due to confidentiality concerns. For more details on the PUF, please refer to Appendix E of the U.S. PIAAC Technical Report (NCES 2016-036REV).

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016667REV>

Title:

Michaelidou-Evripidou, A., Modestou, M., Karagiorgi, Y., Polydorou, A., Nicolaidou, M., Afantiti-Lamprianou, T., Kendeou, P., Tsouris, C., & Loukaides, C. (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Cyprus*. Data file version 1.1.0 [ZA5650]. Cologne: GESIS Data Archive. doi: 10.4232/1.12632

Abstract:

The Cyprus Public Use File (SPSS and Stata format) contains responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <http://dx.doi.org/10.4232/1.12632>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Austria Public Use File* [Version: 17343010, prgautp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments)

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Belgium Public Use File* [Version: 18224205, prgbelp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments)

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Canada Public Use File* [Version: 88830378, prgcanp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Chile Public Use File* [Version: 17135698, prgchlp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments)

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Czech Republic Public Use File* [Version: 20736629, prgczep1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Denmark Public Use File* [Version: 24972525, prgdnkp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Estonia Public Use File* [Version: 25276973, prg-estp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Finland Public Use File* [Version: 18842845, prg-finp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), France Public Use File* [Version: 23516989, prg-frap1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Germany Public Use File* (Version: 18834098, prg-deup1.sav). Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Greece Public Use File* [Version: 15965250, prg-grcp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Ireland Public Use File* [Version: 19982813, prgirlp1.sav]. Paris: OECD.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments)

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Israel Public Use File* [Version: 18069090, prgisrp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Italy Public Use File* [Version: 15433181, prgi-tap1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Japan Public Use File* [Version: 17505957, prgjnp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Korea Public Use File* [Version: 22217045, prgkorp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Lithuania Public Use File* [Version: 17305986, prgltp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Netherlands Public Use File* [Version: 18028845, prgnldp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), New Zealand Public Use File* [Version: 21235362, prgnzlp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Norway Public Use File* [Version: 17723269, prgnorp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Poland Public Use File* [Version: 30634733, prgppl1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Russian Federation Public Use File* [Version: 13378965, prgrusp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Singapore Public Use File* [Version: 18353722, prgsgpp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Slovak Republic Public Use File* [Version: 18921861, prgsvkp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Slovenia Public Use File* [Version: 18125930, prgsvnp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Spain Public Use File* [Version: 20201797, prgespp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Sweden Public Use File* [Version: 15716978, prg-swep1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Turkey Public Use File* [Version: 16765802, prg-turp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), United Kingdom Public Use File* [Version: 30110173, prggbrp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), United States Public Use File* [Version: 17016050, prgusap1_2012.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for

downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2016). *Technical report of the Survey of Adult Skills (PIAAC)*. Paris: Organisation for Economic Cooperation and Development (OECD). Retrieved October 20, 2017, from http://www.oecd.org/skills/piaac/PIAAC_Technical_Report_2nd_Edition_Full_Report.pdf

Abstract:

Second edition of international technical report of the Survey of Adult Skills (PIAAC), including countries from PIAAC Cycle 1 – Round 1 and 2. [Note from editors]

Available at (open access): http://www.oecd.org/skills/piaac/PIAAC_Technical_Report_2nd_Edition_Full_Report.pdf

Title:

Rammstedt, B., Martin, S., Zabal, A., Konradt, I., Maehler, D., Perry, A., Massing, N., Ackermann-Piek, D., & Helmschrott, S. (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Germany – Reduced version*. Data file version 2.2.0 [ZA5845]. Cologne: GESIS Data Archive. doi: 10.4232/1.12660

Abstract:

The German PIAAC Public Use File (OECD 2016) contains information on the respondents' background and on their cognitive assessment (in literacy, numeracy, and problem solving in technology-rich environments). It suppresses certain background variables (e.g., some of the national adaptations), and some of the included variables have not been released in all available detail. Background variables were suppressed or coarsened to comply with national data protection legislation. The German PIAAC Scientific Use File (SPSS and Stata format) includes many of these suppressed variables and releases other variables in full detail (e.g., age and income). [Source: Maehler & Konradt, 2020]

Available at: <https://doi.org/10.4232/1.12660>

Title:

Rammstedt, B., Martin, S., Zabal, A., Konradt, I., Maehler, D., Perry, A., & Helmschrott, S. (2016). *Programme for the International Assessment of Adult Competencies (PIAAC), Germany - Extended version - Regional data*. Data file version 1.0.0 [ZA5846]. Cologne: GESIS Data Archive. doi:10.4232/1.12560

Abstract:

This dataset (SPSS and Stata format) provides detailed regional information that was excluded from the regular German PIAAC Scientific Use File due to national data protection legislation. Additionally available indicators include, for example: municipality code, classified size of the political municipality, and number of the sample point. [Source: Maehler & Konradt, 2020].

Available at: <https://doi.org/10.4232/1.12560>

Title:

Steinacker, G., Schmidt, S., Wolfert, S., & Schneekloth, U. (2016). *Durchführung der 1. Erhebungswelle von PIAAC-L (Kooperative längsschnittliche Weiterverfolgung der PIAAC-Studie in Deutschland): Feldbericht zur Erhebung 2014*. GESIS Papers No. 2016/5. Cologne: GESIS - Leibniz-Institute for the Social Sciences. Retrieved December 12, 2017, from <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-47162-3>

Abstract:

Field report of the PIAAC-L survey wave 1 (2015). [Note from editors]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-47162-3>

Title:

Zabal, A., Martin, S., & Rammstedt, B. (2016). *PIAAC-L data collection 2014: Technical report. Follow-up to PIAAC Germany 2012*. GESIS Papers No. 2016/17. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

Technical report on the PIAAC-L survey wave 1 (2014). [Note from editors]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-49665-1>

3.5 Data files and technical reports 2017

Title:

Bartsch, S., Poschmann, K., & Burkhardt, L. (2017). *Weighting in PIAAC-L 2014*. GESIS Papers No. 2017/06. Köln: GESIS - Leibniz-Institut für Sozialwissenschaften.

Abstract:

Describes the weighting procedure in PIAAC-L wave 1. [Note from editors]

Available at (open access): <https://nbn-resolving.de/urn:nbn:de:0168-ssoar-50569-5>

Title:

Friebe, J., Gebrande, J., Gnahs, D., Knauber, C., Schmidt-Hertha, B., Setzer, B., Tippelt, R., & Weiß, C. (2017). *Competencies in Later Life (CiLL) – Programme for the International Assessment of Adult Competencies (PIAAC), Germany*. Data file version 1.1.0 [ZA5969]. Cologne: GESIS Data Archive. doi: 10.4232/1.12814

Abstract:

This data file (SPSS format) contains competency scores (plausible values) for each participant in the domains Literacy, Numeracy and Problem solving in technology-rich environments as well as their background information. It contains more detailed information about respondents in Germany than the German public use file for PIAAC available at the OECD homepage (<http://www.oecd.org/site/piaac/publicdataandanalysis.htm>). The background questionnaire for CiLL is identical to the background questionnaire for PIAAC and is divided into the following topics: A: General Information, such as age and gender; B: Education, such as highest educational achievement, current education, participation in continuing education; C: Current status and work history, such as paid work and unpaid work for family business, information on job search; D: Current work, such as profession, self-employment, and income; E: Recent work, such as profession, self-employment, reason for quitting; F: Skills used at work, such as influence and physical skills; G: Skill use Literacy,

Numeracy etc. at work; H: Skill use Literacy, Numeracy etc. in everyday life; I: About yourself, such as readiness to learn and volunteering; J: Background information, such as country of birth, citizenship, language, parents' profession. Additionally, the data file contains further derived variables, information on competency assessment, information on sampling and weighting, limited regional information and time information of the interview.

Available at: <https://doi.org/10.4232/1.12814>

Title:

GESIS – Leibniz Institute for the Social Sciences, German Socio-Economic Panel (SOEP) at DIW Berlin & LIfBi – Leibniz Institute for Educational Trajectories (2017). *PIAAC Longitudinal (PIAAC-L), Germany*. Data file version 3.0.0 [ZA5989]. Cologne: GESIS Data Archive. doi: 10.4232/1.12925

Abstract:

The German PIAAC-L study ("PIAAC-Longitudinal (PIAAC-L), Germany" [ZA5989]) is a collaborative effort undertaken by GESIS – Leibniz Institute for the Social Sciences (lead) together with the German Institute for Economic Research (DIW) and the Leibniz Institute for Educational Trajectories (LIfBi). It follows up the German PIAAC sample with three additional waves of data collection (in 2014, 2015, and 2016), each with a somewhat different focus. The PIAAC-L questionnaires are based on core instruments from the German Socio-Economic Panel (SOEP) and also include various additional questions and modules on the respondent's background. In addition, assessment instruments from PIAAC and the National Educational Panel Study (NEPS) measuring key competencies are implemented. The objective of the PIAAC-L project is to significantly expand the German PIAAC database (SPSS and Stata format) by adding a longitudinal dimension and by enriching the depth and breadth of information available on the German PIAAC respondents. Mode of Data Collection Face-to-face interview (CAPI) and computer-based or paper-based cognitive assessment. Sample Description and Size: The sample comprised German PIAAC 2012 respondents aged 18 to 65 years who agreed to participate in PIAAC-L and other members of their household aged 18 years and over (total initial sample at the first wave: N = 6,231). Whereas the focus and the groups of addressed persons varied somewhat across waves, German PIAAC 2012 respondents (N = 5,465)—the so-called anchor persons—were consistently the central response units in PIAAC-L (Zabal et al. 2016). Wave 1 was designed to target anchor persons (n = 3,758) and their household members aged 18 years and over (i.e., born in 1996 or earlier; n = 2,473). In Wave 2, anchor persons (n = 3,263) and their partners, if living in the same household, were addressed (n = 1,368). The design of the third wave was similar to that of the first wave: anchor persons (n = 2,967) and all household members aged 18 years and over (i.e., born in 1998 or earlier) were to be interviewed (n = 1,914).

Available at: <https://doi.org/10.4232/1.12925>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Austria log file*. Data file version 2.0.0 [ZA6712_AT.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Belgium log file*. Data file version 2.0.0 [ZA6712_BE.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Denmark log file*. Data file version 2.0.0 [ZA6712_DK.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Estonia log file*. Data file version 2.0.0 [ZA6712_EE.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Finland log file*. Data file version 2.0.0 [ZA6712_FI.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), France log file*. Data file version 2.0.0 [ZA6712_FR.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Germany log file*. Data file version 2.0.0 [ZA6712_DE.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Ireland log file*. Data file version 2.0.0 [ZA6712_IE.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time

stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Italy log file*. Data file version 2.0.0 [ZA6712_IT.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Korea log file*. Data file version 2.0.0 [ZA6712_KR.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Netherlands log file*. Data file version 2.0.0 [ZA6712_NL.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Norway log file*. Data file version 2.0.0 [ZA6712_NO.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Poland log file*. Data file version 2.0.0 [ZA6712_PL.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Slovakia log file*. Data file version 2.0.0 [ZA6712_SK.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Spain log file*. Data file version 2.0.0 [ZA6712_ES.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During

the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), United Kingdom log file*. Data file version 2.0.0 [ZA6712_GB.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Organisation for Economic Cooperation and Development (OECD) (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), United States log file*. Data file version 2.0.0 [ZA6712_US.data.zip]. Cologne: GESIS Data Archive. doi: 10.4232/1.12955

Abstract:

The PIAAC 2012 study was the first fully computer-based large scale assessment in education. During the PIAAC assessment 2011–2012 (Round 1 of the 1st Cycle), user interactions with the computer were logged automatically. This means that respondents' actions (e.g., starting a unit, opening a webpage, entering an answer) within the assessment tool were recorded and stored with time stamps in separate log files. These log files contain paradata for each participant in the domains of literacy, numeracy, and/or problem solving in technology-rich environments.

Available at (open access): <https://doi.org/10.4232/1.12955>

Title:

Perry, A., Helmschrott, S., Konradt, I., & Maehler, D. (2017). *User guide for the German PIAAC Scientific Use File: Version II*. GESIS Papers No. 2017/23. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

This User Guide gives a brief overview of the German PIAAC Scientific Use File [ZA5845] and information necessary for doing basic analyses using the PIAAC data.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-54438-v2-7>

Title:

Rammstedt, B., Martin, S., Zabal, A., Helmschrott, S., Konradt, I., & Maehler, D. (2017). *Programme for the International Assessment of Adult Competencies (PIAAC), Germany - Extended version - microm data*. Data file version 1.0.0 [ZA5963]. Cologne: GESIS Data Archive. doi: 10.4232/1.12926

Abstract:

The data set contains contextual information that describes either the household or the neighbourhood of the respondents and which was not included in the regular PIAAC Scientific Use File (SUF) 'PIAAC, Germany - Reduced version' (ZA5845) due to national data privacy legislation. This spatial data comes from microm Micromarketing-Systeme und Consult GmbH in Neuss, Germany. The microm data available include more than 100 variables from the microm domains sociodemographics and -economics, consumer behavior, area- and site planning, and strategic segmentation models. Variables for instance contain information about: Type of residential area, number of private households and businesses, sociodemographic and -economic characteristics (e.g. unemployment, confessions, ethnic composition), Mobility (e.g. population fluctuation), affinity towards fundraising, communications and print media, Sinus Geo-Milieus® or purchasing power at the level of street sections.

Available at: <https://doi.org/10.4232/1.12926>

Title:

Steinacker, G., & Wolfert, S. (2017). *Durchführung der 2. Erhebungswelle von PIAAC-L (Kooperative längsschnittliche Weiterverfolgung der PIAAC-Studie in Deutschland): Feldbericht zur Erhebung 2015*. GESIS Papers No. 2017/4. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

Field report of the PIAAC-L survey wave 2 (2015). [Note from editors]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-50488-9>

3.6 Data files and technical reports 2018

Title:

Burkhardt, L., Silbermann, T., & Bartsch, S. (2018). *Weighting in PIAAC-L 2016*. GESIS Papers No. 2018/15. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

The present paper describes the weighting process for the last of the three PIAAC-L waves, by illustrating the two classical weighting steps nonresponse adjustment and post-stratification or calibration. For the documentation of the weighting process for the first and second PIAAC-L waves as well as for information on the overall PIAAC and PIAAC-L weighting concept, see Bartsch, Poschmann, and Burkhardt (2017) and Burkhardt and Bartsch (2017). As weighting in PIAAC-L follows a consistent concept across waves, a large part of the present paper was taken literally from these preceding papers. Where applicable, updates or adaptations were undertaken, based on wave 3 weighting processes and data from dataset ZA5989_Weights_16. This dataset is one of twelve sub-datasets that were released for 2016 as part of the PIAAC-L database that encompasses datasets from 2014, 2015, and 2016.

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-57697-9>

Title:

Engelhardt, L., & Goldhammer, F. (2018). *Number series study (DIPF): Technical report*. GESIS Papers No. 2018/1. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

The Number Series Study addresses the fundamental research question of what is measured by competence tests used in the Survey of Adult Skills (PIAAC; Programme for the International Assessment of Adult Competencies): More specifically, to what extent do the PIAAC Literacy and Numeracy measures capture the outcome of learning processes, and to what extent do they measure general cognitive abilities? This technical report describes the implementation of the Number Series Study for the third wave of PIAAC-L and focuses only on information specific to the Number Series Study. Detailed information on the PIAAC-L study can be found in the PIAAC-L Technical Reports of the three waves (Martin, Zabal, & Rammstedt, 2018; Zabal, Martin, & Rammstedt, 2016, 2017). [Source: From the from introduction, p. 5,6]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-55737-7>

Title:

Istituto Nazionale per l'Analisi delle Politiche Pubbliche (INAPP) (2018). *Program for the International Assessment of Adult Competencies (PIAAC) 2012 Italy*. Rome, Italy: Istituto Nazionale per l'Analisi delle Politiche Pubbliche.

Abstract:

The Italian Extended PIAAC Public Use File (SPSS format) contains additional national variables on respondent's background—for example, regional information (macro region: North East, North West, Centre, South, Islands) and information on parents' occupation (e.g., according to ISCO-08).

Available at: <https://inapp.org/it/dati/piaac>

Title:

Martin, S., Zabal, A., & Rammstedt, B. (2018). *PIAAC-L data collection 2016: Technical report*. GESIS Papers No. 2018/5. Cologne: GESIS - Leibniz-Institute for the Social Sciences.

Abstract:

This paper is part of a series of reports describing the technical implementation of PIAAC-L, the German PIAAC-Longitudinal project. PIAAC-L is designed as a three-wave follow-up survey to PIAAC respondents, with data collections in 2014, 2015, and 2016. While foci and groups of addressed persons vary somewhat across waves, PIAAC respondents, called anchor persons, are consistently the central response units in PIAAC-L. This paper is a follow-up to the technical reports for wave 1 (Zabal, Martin, & Rammstedt, 2016) and wave 2 (Zabal, Martin, & Rammstedt, 2017) and aims to describe the design, instruments, fieldwork processes, and data dissemination for wave 3. The design of the third wave was similar to that of the first wave: Anchor persons and all household members aged 18 and over (born 1998 or earlier) were to be interviewed; a household and a person questionnaire were administered. Although some questions were taken from SOEP questionnaires, the instruments were adapted to include questions newly developed by researchers from the PIAAC Leibniz network. In addition, two modules assessing cognitive skills were administered. [Source: From the from introduction, p. 5]

Available at (open access): <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-56852-1>

Title:

Organisation for Economic Cooperation and Development (OECD) (2018). *Programme for the International Assessment of Adult Competencies (PIAAC), English Pilot Study on Non-Cognitive Skills*. Data file version 1.0.0 [ZA6940]. Cologne: GESIS Data Archive. doi: 10.4232/1.13062

Abstract:

This online survey (see also Kankaraš 2017) was designed to test the measurement properties of nine personality scales: the Big Five, Traditionalism, Self-Control, Self-Efficacy, Honesty/Integrity, Socio-Emotional Skills, Intellectual Curiosity, Job Orientation Preferences, and Vocational Interests. Eight of these nine scales were existing scales (or combinations of existing scales) available for use in the public domain. The study (data collection period: June–July 2016) was conducted in two phases, each with a somewhat different study design. The objectives of the online survey were to test (a) the measurement characteristics of the selected scales; (b) the relationships of the selected scales with background and other characteristics of respondents; (c) different item formulations—original vs. simplified; (d) different response options—with or without a neutral/middle category; (e) scales with different item formats—multiple choice vs. forced choice (Vocational Interests Scale); and (f) the new balanced scales (compared to the original unbalanced scales). Mode of Data Collection: The entire survey was conducted online. It was implemented using the Survey Monkey platform. Sample Description and Size: The sample comprised 5,910 adults aged 16 to 65 years from the United States and the United Kingdom in the first phase and 1,606 in the second phase (only United States). [Source: Maehler & Konradt, 2020]

Available at: <https://doi.org/10.4232/1.13062>

Title:

Organisation for Economic Cooperation and Development (OECD) (2018). *Programme for the International Assessment of Adult Competencies (PIAAC), International Pilot Study on Non-Cognitive Skills*. Data file version 1.0.0 [ZA6941]. Cologne: GESIS Data Archive. doi: 10.4232/1.13063

Abstract:

This study was designed with the following objectives: first, to test the measurement characteristics of selected scales; second, to test the cross-national comparability of selected scales. The measurement properties of nine personality scales—the Big Five, Traditionalism, Self-Control, Self-Efficacy, Honesty/Integrity, Socio-Emotional Skills, Intellectual Curiosity, Job Orientation Preferences, and Vocational Interests—were tested (data collection period: January–March 2017). Mode of Data Collection: The entire survey was conducted online. It was implemented using the Survey Monkey platform. Sample Description and Size: The sample comprised 6,924 adults aged 16 to 65 years from Germany, Spain, France, Japan, and Poland. [Source: Maehler & Konradt, 2020]

Available at (open access): <https://doi.org/10.4232/1.13063>

3.7 Data files and technical reports 2019

Title:

Li, L., Krenzke, J., Mohadjer, L., & Hogan, T. (2019). *Program for the International Assessment of Adult Competencies (PIAAC) U.S. 2017 Sample Public-use File* [NCES 2020222]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The PIAAC U.S. 2017 public-use file (PUF) contains individual unit data including both responses to

the background questionnaire and the cognitive assessment from the third U.S. PIAAC data collection, completed in 2017. Statistical disclosure control treatments were applied due to confidentiality concerns. For more details on the PUF, please refer to Appendix E of the U.S. PIAAC Technical Report (NCES 2020-224).

Available at (open access): <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020222>

Title:

Li, L., Krenzke, J., Mohadjer, L., & Hogan, T. (2019). Program for the International Assessment of Adult Competencies (PIAAC) U.S. 2017 Sample Restricted-Use File (RUF) [NCES 2020223]. Washington DC: U.S. Department of Education, National Center for Education Statistics.

Abstract:

The PIAAC U.S. 2017 Restricted-use File (RUF) consists of data from the PIAAC 2017 household sample. It contains data for individuals including responses to the background questionnaire and the cognitive assessment. Statistical confidentiality treatments were applied due to confidentiality concerns. In addition to the variables in the public use file, the RUF contains detailed versions of variables and additional data collected through U.S. specific questionnaire routing. The RUF can be accessed through a restricted-use license agreement with the National Center for Education Statistics. For more details on the data, please refer to Appendix E of the U.S. PIAAC technical report. (NCES 2019-224).

Available at: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020223>

Title:

Li, L., Krenzke, T., Mohadjer, L., & Hogan, J. (2019). *Program for the International Assessment of Adult Competencies (PIAAC) U.S. Combined 2012/14/17 Sample Restricted Use File [NCES 2020032]*. Washington, DC: National Center for Education Statistic.

Abstract:

The PIAAC U.S. 2012/2014/2017 Restricted Use File (RUF) consists of data from the PIAAC combined 2012/2014/2017 household sample. It contains data for individuals including responses to the background questionnaire and the cognitive assessment. Statistical confidentiality treatments were applied due to confidentiality concerns. The RUF can be accessed through a restricted use license agreement with the National Center for Education Statistics. For more details on the data, please refer to Appendix E of the U.S. PIAAC technical report.

Available at: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020032>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Programme for the International Assessment of Adult Competencies (PIAAC), Ecuador Public Use File [Version: 17688347, prgecup1.sav]*. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Programme for the International Assessment of Adult Competencies (PIAAC), Hungary Public Use File* [Version: 20439451, prghunp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Programme for the International Assessment of Adult Competencies (PIAAC), Kazakhstan Public Use File* [Version: 20450859, prgkzsp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Programme for the International Assessment of Adult Competencies (PIAAC), Mexico Public Use File* [Version: 19760643, prgmex1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Programme for the International Assessment of Adult Competencies (PIAAC), Peru Public Use File* [Version: 22883339, prgperp1.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Programme for the International Assessment of Adult Competencies (PIAAC), United States Public Use File* [Version:19748455, prgusap1_2017.sav]. Paris: OECD Publishing.

Abstract:

Public Use Files containing individual unit record data in SAS, SPSS and CSV format are available for downloading for each of the countries participating in the Survey of Adult Skills. These contain both responses to the background questionnaire and the cognitive assessment (literacy, numeracy and problem solving in technology-rich environments).

Available at (open access): <https://www.oecd.org/skills/piaac/data/>

Title:

Organisation for Economic Cooperation and Development (OECD) (2019). *Technical report of the Survey of Adult Skills (PIAAC)*. Third Edition. Paris: OECD Publishing. Retrieved December 5, 2020, from https://www.oecd.org/skills/piaac/publications/PIAAC_Technical_Report_2019.pdf

Abstract:

Third edition of international technical report of the Survey of Adult Skills (PIAAC), including countries from PIAAC Cycle 1 – Round 1, 2 and 3. [Note from editors]

Available at (open access): https://www.oecd.org/skills/piaac/publications/PIAAC_Technical_Report_2019.pdf

3.8 Data files and technical reports 2021

Title:

Kastberg, D., Arieira, C., & Herbison, R. (2021). *Program for the International Student Assessment Young Adult Follow-up Study (PISA YAFS) 2016 Public Use File* [NCES 2021022]. Washington, DC: National Center for Education Statistic.

Abstract:

The PISA YAFS 2016 Public Use File (PUF) consists of data from the PISA YAFS 2016 sample. It contains data for individuals including responses to the background questionnaire and the cognitive assessment. To measure these students' subsequent literacy, numeracy, and digital problem-solving skills, the study used the Education and Skills Online assessment (ESO), an online assessment developed by OECD. The ESO's design is based on the Program for the International Assessment of Adult Competencies (PIAAC), a study of adult literacy, numeracy, and digital problem-solving skills focused on those aged 16 to 65 (see <https://nces.ed.gov/surveys/piaac/>). Like PIAAC, the ESO aims to measure cognitive skills needed for successful participation in 21st-century society and the global economy. Statistical confidentiality treatments were applied due to confidentiality concerns.

Available at: <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2021022>