



# Conference Report: Improving Skills: Evidence from Secondary Analysis of International Surveys

Limassol, Cyprus, 15-16

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# IMPROVING SKILLS

Evidence from secondary analysis of  
international surveys

*Limassol, Cyprus / 15 - 16 November 2012*

Education  
and Training

## **List of acronyms/abbreviations**

**ALL** – Adult Literacy and Life skills

**CEDEFOP** – European Centre for the Development of Vocational Training

**CRELL** – Centre for Research on Education and Lifelong Learning, European Commission

**DG EAC** – Directorate-General for Education and Culture, European Commission

**EACEA** – The Education, Audio-visual and Culture Executive Agency

**ETUCE** – European Trade Union Committee for Education

**ENTEP** – European Network on Teacher Education Policies

**ESLC** – European Survey on Language Competences

**EUROFOUND** - The European Foundation for the Improvement of Living and Working Conditions

**IALS** – International Adult Literacy Survey

**ICCS** – International Civic and Citizenship Education Study

**ICT** – Information and Communications Technology

**IEA** – International Association for the Evaluation of Educational Achievement

**JRC** – Joint Research Centre, European Commission

**NEET** – Not in Employment, Education or Training

**NEPS** – National Educational Panel Study

**PIRLS** – Progress in International Reading Literacy Study

**PISA** – Programme for International Student Assessment

**STEM** – Science, technology, engineering and mathematics

**TIMSS** – Trends in International Mathematics and Science Study

## **Introduction**

The Improving Skills conference, which took place November 15-16, 2012 in Cyprus, was organised by the European Commission, DG Education and Culture (DG EAC), in close cooperation with the Cypriot Presidency and with the input from CRELL. The aim of the conference was to generate and disseminate knowledge derived from recent secondary analysis of large scale international surveys and assessments such as PISA, TIMSS, ICCS, ESLC and PIRLS. The conference focused on results at the European level where the intended target audience was policy makers and researchers in the respective fields. As the EU emerges from the economic crisis, one of the key drivers of long-term growth will be increasing and better targeting competences and skills to labour market needs. The Europe 2020 strategy is therefore a response to an evident need to focus on education and training, as the acquisition of skills necessary to competing in a modern and globalised economy is identified as a core goal. Participants of the conference discussed policy goals and areas requiring further research in the field of improving skills, both in terms of improving basic skills (such as literacy and reading competencies) and transversal skills (enhancing employability, social inclusion and civic participation). The conference constituted a follow-up of the previously held 2009 Stockholm conference<sup>1</sup> and was designed by a Scientific Committee, which was formed by DG EAC, Cyprus Presidency, CRELL, IEA, OECD and various members of national education ministries and research institutes.

### **Conference's aims**

The conference had three main goals. First, it aimed to show how secondary analyses of data from large scale international surveys and direct assessments of pupils can provide policy relevant insights on teaching, institutional structures and learning outcomes in different skills areas. Secondly, it sought to further develop understanding of the extent to which countries used evidence from these large scale international assessments to inform their policy measures in the field of education and training. Finally, the conference aimed to identify EU-relevant thematic areas where there is a demonstrable need for further data development, including identifying areas for secondary analysis in the coming years.

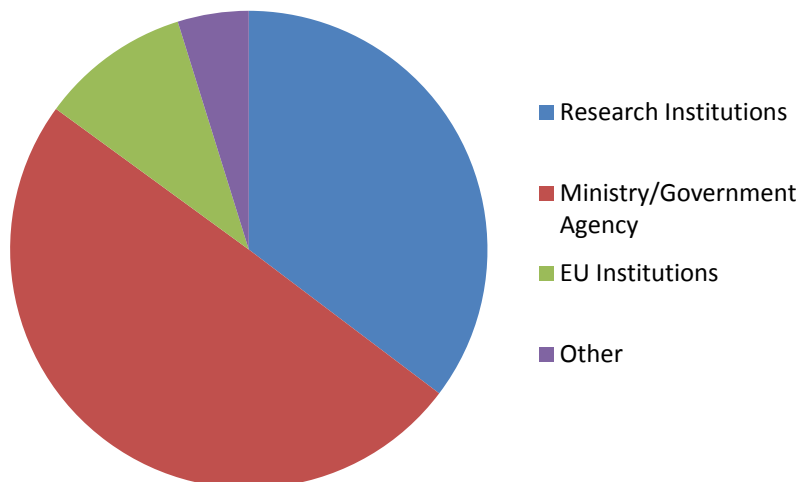
### **Participation**

The conference was able to attract policy makers in the area of education and training from almost all EU Member States and Commission staff from DG EAC, CRELL, Eurydice and the Office of the Chief Scientific Adviser of the Commission President. In addition, the conference hosted researchers from established institutions as well as representatives of numerous external agencies. In total more than 160 participants from a wide range of organisations and institutions – see Graph 1 – attended the conference.

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<sup>1</sup> 2009 Stockholm Conference: "Improving Education: evidence from secondary analysis of international studies". [http://ec.europa.eu/education/lifelong-learning-policy/doc/improve/prog\\_en.pdf](http://ec.europa.eu/education/lifelong-learning-policy/doc/improve/prog_en.pdf)

**Graph 1: Participants according to affiliation**



Researchers from the following universities participated in the conference: Humboldt University of Berlin, University of Cyprus, University of Milan, University of Murcia, Leuphana University of Lueneburg, University of Groningen, University of Stavanger, University of Luxembourg, University of Oslo, University of Gothenburg, University of Southampton, University of Bucharest, University of Helsinki, University of Bologna, Northumbria University, University of Ljubljana, University of Liege, Aristotle University, University of Malta and Tallinn University.

Moreover, representatives from the following external or international agencies and research institutes participated in the conference: the International Association for the Evaluation of Educational Achievement (IEA), Italian National Institute for Educational Evaluation (INVALSI), Educational Research Institute, Poland, European Foundation for the Improvement of Living and Working Conditions (EUROFOUND), European Centre for the Development of Vocational Training (CEDEFOP), European Trade Union Committee for Education (ETUCE) and the European Network on Teacher Education Policies (ENTEP).

### **Structure of the conference**

The conference opened with a plenary session by the Commission and Cyprus Presidency and included keynote speeches by J-E. Gustafsson and M. Jakubowski. Following the opening, three parallel sessions on basic skills were held, i.e. on reading literacy and language competencies, on mathematics and science skills and on transversal skills. The second day continued with parallel sessions on the educational achievements of migrants, teachers' development and methods, and effective education policies and closed with a panel debate and closing words by P. Mairesse (DG EAC). In each of the six workshops, the Commission provided a brief introduction to the topic and conclusions were communicated by a rapporteur from CRELL.

The following sections will present the main outcomes drawn from the opening session, the six different workshops and the closing plenary session. The complete conference programme can be found after the description of the conference and additional information is available at <http://ec.europa.eu/improving-skills-conference>.

## **Opening Session**

**Plenary Session: November 15<sup>th</sup>, 9.30 – 13:00**

**Chair:** Athena Michaelidou (Cyprus Pedagogical Institute)

The conference was opened by a written message from Androulla Vassiliou (the European Commissioner for Education, Culture, Multilingualism & Youth) in which she emphasised the important role of the conference in addressing priorities in the field of education, as well as the broader agenda of the EU2020 growth strategy for a smart, sustainable and inclusive economy.

Pierre Mairesse (European Commission – DG EAC) subsequently discussed the increasing relevance and importance of education and training in the European policy context, with both areas being a focal point in the Europe 2020 strategy for growth and jobs. In particular, he emphasised the need for a strong evidence base with country specific knowledge to inform policy makers working in the field of education and training, and in order to provide country specific recommendations. In this context, DG EAC's role in terms of strengthening methodology for country analysis was discussed, specifically with regard to achieving the Europe 2020 headline targets. To this end, Mairesse stressed the importance of exploiting all available data sources for evidence-based policy making while also noting the current gaps in data availability in certain areas. Finally, Mairesse highlighted the importance of brokerage channels between researchers and policy makers and increasing collaboration with other partners, such as the OECD and IEA, to use data most efficiently.

The plenary session also included opening remarks by Olympia Stylianou (Permanent Secretary, Ministry of Education and Culture, Cyprus). Stylianou discussed how recent economic and social changes have led to an increased demand for interpersonal, personal and professional skills from all citizens. She emphasised that educational systems were increasingly called upon to provide such skills for EU citizens, for them to lead independent lives and in order to become responsible citizens capable of making a positive contribution to the European economy. With reference to international educational surveys, Stylianou noted that these constitute valuable tools to assess country performance over time.

### **Keynote Speeches**

**Jan-Eric Gustafsson** (University of Gothenberg, Sweden): *Using international surveys of educational achievement as a source of information for improving education*

Gustafsson's presentation highlighted the importance of using international surveys to monitor levels and trends in educational achievement, while also identifying weaknesses in the design of these studies as a basis for making policy-relevant inferences. He identified the potential of new statistical techniques in creating further opportunities in the secondary analysis of accumulated

data. The two analytical approaches that were examined in detail were the trend design of several international surveys (PISA, PIRLS and TIMSS), which allow analysis of changes over time. The second approach was a two-level structural equation model, which measures the impact of factors such as computer use, homework and teaching approaches on performance. In particular, he argued that challenges presented by the cross-sectional designs of international surveys measuring educational achievement include possible **reverse causality** (where the assumed independent variable may also itself be affected by the dependent variable), **potential omitted variables**, and **measurement errors**. According to Gustafsson, international surveys constitute a rich source of data for understanding determinants of educational achievement, but **techniques require further fine-tuning to make this data more accessible and policy-relevant**.

**Maciej Jakubowski** (Ministry of National Education, Poland): *Can you make the leap twice? Using evidence to further improve the Polish education*

Jakubowski discussed the 1999 reform of the Polish education system and the success of this reform in improving Polish educational attainment as well as in reducing between-school differences. Key improvements included a newly structured school system, a new curriculum, more school autonomy, standardised national exams and encouragement of teachers' professional development. Since 2000, Poland has participated in several international surveys to monitor educational achievements and has thereby increased the availability of data relevant to policy making in the field of education. Poland's mean performance is now above the OECD average. Evidence from the impact of the 1999 reforms will be used to support further policy changes in the field of education and training. Jakubowski argued that the 1999 **Polish educational reforms had positive effects**, particularly in terms of reducing attainment differences between population sub-groups and radically decreasing the overall percentage of low-performing students. However, evidence suggests that there is still room for improvement in the Polish educational system through **further curriculum reform**, greater **support for teachers** (professional development and improved working hours), and more **support for high achievers**. Jakubowski also discussed challenges that have to be addressed to build infrastructure for the effective research support for policy making: he cited as an example the Educational Research Institute, supervised by the Polish Ministry of National Education, which acts as an intermediate between researchers and policy makers in addition to carrying out its own research projects on policy relevant topics.



## *Parallel session Day 1*

*Workshop 1: Basic skills: Reading literacy and language competences (November 15<sup>th</sup>, 14:30 – 18:00)*

Chair: Gerry Shiel (Educational Research Centre, St. Patrick's College, Ireland)

Speakers: Luisa Borges Araujo (European Commission); Magdalena Szpotowicz (Educational Research Institute); Astrid Roe (University of Oslo); Arlette Delhaxhe (EACEA).

### Summary

Workshop 1 looked at internal and external factors influencing student literacy and language competences in different case studies. Luisa Borges Araujo presented a secondary analysis of the ESLC carried out in EU countries, focusing on factors affecting proficiency in learning English as a first foreign language. The study examined factors at both the in-school and out-of-school level. Magdalena Szpotowicz examined national language competence measurements in comparison with ESLC results in Poland. She provided evidence for correlations between performance on national language measurements (including spoken language) and ESLC results in Poland, confirming the reliability of the national exam as a performance measure. Astrid Roe successfully identified both internal and external factors influencing performance where students' reading abilities were calculated while taking into account socioeconomic status and gender. In particular, her research examined changes in reading patterns over time (comparing reading trends in 2000 and 2009) in Nordic countries. Last, Arlette Delhaxhe presented research on the impact of various national policies whose aim it is to improve reading achievement. Countries were grouped according to types of policies and educational outcomes were respectively explored for low-achieving 15-year-olds. In addition, results from a Spanish study were made available to the participants.

### Key results

Results indicated that the factors with the greatest impact on literacy and language acquisition were early onset of language learning, class size, extra-curricular contexts such as media and perceived 'usefulness' of language outside of school, and pedagogical approaches such as the use of content and language integrated learning (CLIL). It was also confirmed that there are gender differences in reading outcomes with girls generally outperforming boys on a range of reading outcomes. Secondary analyses of PISA and PIRLS data suggest that the presence of a reading specialist in schools can support teachers' efforts to tackle reading difficulties and reduce numbers of lower-achieving students.

### Policy implications & future research

As evidence shows that there are **gender differences** in a range of reading and language outcomes, policy makers are encouraged to **examine if such differences can be addressed**

through intervention measures, especially where low-socioeconomic status boys are concerned. Policy makers are urged to **recognise the value that reading specialists can bring** in supporting teachers to address students' reading difficulties. The provision by educational systems of curricular recommendations on improving reading skills may need to be supported by the activities of reading specialists to reduce the proportion of lower-achieving students. Finally, there is value in capitalising on activities that can raise students' foreign language performance, including **use of visual media in out-of-school contexts**, especially in those countries where specific foreign languages may not enjoy a high status.

Further research is needed on **why gender differences in reading and language competences arise**, especially from primary to post-primary schooling. Future cycles of the ESLC could consolidate the understanding of performance differences across countries, including motivational and instructional factors. Future surveys might incorporate a **speaking assessment component among subgroups** of students. Efforts to link national and international language assessments need to **go beyond correlation** in order to look in detail at curriculum goals as well as assessment frameworks. **The roles of reading specialists** in supporting teachers to support lower-achieving students also need to be examined further.

## **Workshop 2: Basic skills: Mathematics and Science Skills (November 15<sup>th</sup>, 14:30 – 18:00)**

**Chair:** Anne-Berit Kavli (Norwegian Directorate of Education and Training, Norway)

**Speakers:** Liv Sissel Grønmo (University of Oslo, Norway); Yvan Clermont (Statistics Canada, Canada); Timo Ehmke (Leuphana University of Lüneburg, Germany); Gabrielle Marie Stanco (TIMSS & PIRLS International Study Center, Boston College, USA).

### **Summary**

Workshop 2 focussed on two important questions: 1) what are drivers of mathematic competencies and 2) are mathematics skills consistently measured in different surveys. Liv Sissel Grønmo presented results on pure and applied mathematics skills from TIMSS, TIMSS advanced and PISA. By using the complementary results from the various studies, she identified different profiles in mathematics and science education in different countries, e.g. Nordic and English-speaking students performed relatively well on types of mathematics applicable in daily life, and lower on items in classical abstract mathematics, i.e. arithmetic and algebra. Yvan Clermont presented findings on numeracy and problem-solving skills in the Adult Literacy and Life Skills Survey (ALL). In particular, this study shows the influential role of age, gender, and formal education on numeracy skills and discusses the incremental role of problem solving skills in influencing important labour market outcomes. Timo Ehmke presented results from the assessment of the conceptual and dimensional equivalence of mathematical competencies in TIMSS, PISA, Standard-based National Assessment in Germany (NA), and the German multi-cohort National Educational Panel Study (NEPS). The results revealed a high conceptual correspondence between the assessment frameworks in the various surveys. Gabrielle Marie Stanco presented results from TIMSS 2007 on the effect of various school effectiveness factors on science, technology, engineering and mathematics (STEM) skills in the Czech Republic and Slovenia. In particular, this research revealed the positive effect of various factors associated with school resources, fidelity of curriculum implementation, and school climate (while controlling for student home resources) on STEM competencies, and showed the potential of using TIMSS data as a basis for conducting school effectiveness analyses across different country contexts.

### **Key results**

Mathematics and science skills have substantial positive economic benefits, such as lower unemployment rates, increased earnings, and increased productivity, and are thereby crucial for economic growth. Existing evidence from the IALS and ALL suggests that higher education levels are generally associated with higher numeracy skills. However, there seems still to be a substantial gender gap in mathematical skills. Different teaching methods, preparation of teachers, and school climate (i.e. addressing attendance problems and support for academic success) can improve mathematics and science skills levels. In addition, it is important to keep in mind that pure mathematic skills, such as algebra and arithmetic, are the basis for competencies in applied mathematics and science. In this context, existing evidence from PISA, TIMSS and

TIMSS advanced demonstrates that one can identify country-specific profiles in mathematical achievement. In particular, students in East European countries seem to perform well in pure and abstract mathematics, such as arithmetic and algebra, whereas Nordic and English-speaking countries perform well in daily life mathematics.

### **Policy implications & future research**

In this workshop, it was shown that **TIMSS, TIMSS advanced and PISA are complementary surveys**, which hold information on different age levels and complementary notions of mathematics skills. In addition, there is some scope to **exploit the consistency of the mathematical concept in international and national surveys** and link them to explore the longitudinal dimension for rigorous analysis. Hence, it seems favourable to use the combined information from all the aforementioned surveys to get a complete picture of what happens in different grades, **to understand how performance in one grade affects the next grade**, and derive more suitable recommendations for policy makers.

From the discussion in the workshop several areas for further investigations were identified. In particular, there seems to be a **need to better understand the role of school effectiveness factors**, such as best teaching practice, and understand **which school factors might help to increase the general level of mathematics and science skills** as well as help to close the gender gap. In addition, a better understanding of the relationship between different dimensions of mathematical skills - such as pure mathematics, applied mathematics, problem solving - and science skills on the other hand is lacking.

### **Workshop 3: Transversal Skills (November 15<sup>th</sup>, 14:30 – 18:00)**

**Chair:** Paulina Korsnakova (International Association for the Evaluation of Educational Achievement, IEA)

**Speakers:** Bryony Hoskins (University of Southampton); Maria Magdalena Isac (European Commission, JRC & University of Groningen, The Netherlands); Angelo Paletta (University of Bologna); Valérie Quittre (University of Liège).

### **Summary**

This workshop explored the ways in which large scale international surveys and assessments can be used to measure transversal skills and competences (e.g. key competences such as social and civic competences and digital competence) that are of importance both for individuals' employability and their active participation in society. Since the 2009 Stockholm conference, new data about social and civic competences have become available through the International Civic and Citizenship Education Study (ICCS), and several secondary analysis projects have made use of this data. Bryony Hoskins presented a paper examining measures of civic competence in Europe using the IEA's ICCS study. Using data from ICCS 2009 as well, Maria Magdalena Isac presented a multivariate multilevel analysis which looked at the impact of student, school and educational system characteristics on student outcomes related to citizenship. Angelo Paletta looked at school autonomy as a factor affecting a student's civic knowledge as well as basic skills (mathematics and reading), looking at the extent, size and direction of the relationship between these two variables. Valérie Quittre discussed the use of ICTs in classrooms and the results of the European survey of schools examining ICT infrastructure and use, ICT-based learning activities, teacher and student confidence in using ICTs, as well as attitudes and opinions.

### **Key results**

The workshop illustrated how the Nordic educational systems facilitate the acquisition of values relating to social justice, whereas countries following the civic republican tradition (e.g. Italy) focus on promoting values relating to citizenship and civic participation. It was also found that schools have only a small impact on students' civic knowledge and hardly an impact on students' citizenship values and participatory attitudes, with student characteristics and out-of-school factors playing a more important role. Evidence showed mixed results indicating both positive and negative results of school autonomy on educational performance (basic as well as civic skills). Finally, it was demonstrated that teachers' confidence in using ICTs was directly linked to the frequency of students' use of such technologies in learning processes.

### **Policy implications & future research**

At the school level, **promoting dialogue and critical debate** creates opportunities for students to learn and practice democracy and thus helps to foster civic awareness. In order to develop citizenship values and participatory attitudes, educational systems could place a stronger

emphasis on these competences in the school curriculum. Moreover, family-focused and/or community-oriented social policies could be developed. **School autonomy has different effects** in different countries depending on the level of development: policy makers are urged to consider this together with the other contextual factors (e.g. levels of school accountability) in order to avoid undesired effects. **Supporting teachers' professional development** is a key condition for effective and efficient **use of available technologies to enhance learning outcomes**.

More in-depth **investigation at the regional level** is needed for better interpretation of data and better informed policy recommendations on civics and citizenship education. There is also a need to **improve measurement of attitudes** and perceptions, by developing more refined and appropriate measurement tools (e.g. considering the age of the population and emerging forms of (online) civic participation). It would also be useful to develop a longitudinal/panel tool in order to improve the investigation. In addition, it would be valuable to **define the exact parameters of the concept of 'school autonomy'**, and to investigate the **different effects of autonomous decision making processes (e.g. budget, curriculum, personnel management, student policies)**, as well as measures of school accountability, as far as these areas are found to have an impact on students' citizenship knowledge. Finally, an investigation into **entrepreneurial skills and how to foster** them would be useful and there is an evident need for data development in the area of entrepreneurial skills and competencies.

## **Parallel session Day 2**

### **Workshop 4: Educational Achievement of Migrants, Ethnic Minorities and Disadvantaged Students (November 16<sup>th</sup>, 8.30 – 12:10)**

**Chair:** Seamus Hegarty (IEA)

**Speakers:** Dirk Hastedt (IEA); Pavlina Hadjitheodoulou Loizidou (Cyprus Pedagogical Institute); Massimiliano Mascherini (EUROFUND); Adél Pasztor (Northumbria University).

### **Summary**

In workshop 4, speakers presented their research on the educational performance of the specific subgroups of migrants, ethnic minorities and other disadvantaged groups. Dirk Hastedt discussed the challenges presented by increased global migration and the implications of this trend for educational systems in different EU countries, where he examined the characteristics of immigrant students, trends of their achievement in the field of mathematics and the different situations of various subgroups of immigrant students. He demonstrated that the situation of immigrant students was very diverse both within and between EU countries, noting large differences between migrant and non-migrant achievement in mathematics in, for example, Romania, Slovenia and Sweden. Pavlina Hadjitheodoulou Loizidou examined Cyprus' transition from a traditionally mono-cultural society to an increasingly multicultural one, and the capacity of the Cypriot education system to accommodate migrant children. The research analysed PISA results in Greece and Germany in order to identify trends and obstacles hindering efficiency and equity of education systems which could also apply to the case of Cyprus. Massimiliano Mascherini's research focused on NEETs (young people Not in Employment, Education or Training) in Europe whose growing prevalence is a trend brought on by the recession. The presentation illustrated the future risk factors this trend represents, emphasising the economic and social consequences of long-term disengagement from the labour market and education. Adél Pasztor's presentation examined the effect of being taught in one's mother tongue on student performance, in comparison with students who were being taught in their second language. Her research was based on three different case studies, namely Swedish-speaking Finns in Finland, Hungarians in Slovakia and German-speakers in Bolzano (Italy).

### **Key results**

With some exceptions, it was found that in most countries immigrant students lag behind non-immigrant students in terms of educational achievement. The workshop demonstrated differences in achievement also between first generation and second generation immigrant students, with the former group typically experiencing greater achievement gaps with non-migrant students than the latter. Dirk Hastedt emphasised that speaking a different language at home constituted a disadvantage but that not all the achievement difference between migrant and non-migrant students can be explained by this variable. The workshop also discussed some

recent policy measures implemented to target the issue of NEETs. In her conclusions, Adél Pasztor noted that the gap between autochthonous students of an ethnic minority (those who are not first or second generation immigrants) and native students was less significant than the gap between immigrant and native students, as demonstrated by PISA data.

### **Policy implications & future research**

The research on educational achievement of migrant students, ethnic minorities and disadvantaged students has highlighted the presence of **equity issues**. This calls on schools and policy makers to further reflect on **how to group students** in schools and classrooms, as well as addressing the question of **how language education should be delivered**. Drawing on **best practices** also has value, by further identifying and possibly **replicating characteristics of systems that have successfully integrated immigrant children**. The **growing challenge presented by NEETS** calls for focused initiatives at the EU level, where policies could aim to reduce the rate of early school leavers and encourage smoother transitions from education to employment. Finally, **additional career guidance is needed** in order to give young people more information on their options and encourage action before disengagement sets in.

Further research could focus on **identifying conditions that improve the educational performance of migrant children** and decrease the achievement gap between migrants and non-migrants. It would thus be useful to **document differential approaches and make note of best practices** in countries where migrant integration in educational systems is more successful. However, it needs to be well understood how ‘best practices’ can be applied from one country to another as the application might depend critically on the framework of the receiving country’s educational institutions/system and labour market conditions. Finally, it would be useful to have a detailed **analysis of the historic and social background of ethnic groups** in order to assess the difficulties different groups may face. This also relates to generating better information on first generation migrants in comparison to second generation migrants, and thus deconstructing migrant populations.



***Workshop 5: Teachers' professional development, teaching methods and learning outcomes  
(November 16<sup>th</sup>, 8.30 – 12:10)***

**Chair:** Daniele Vidoni (INVALSI)

**Speakers:** Stanislav Ranguelov (EACEA); Sigrid Blömeke (Humboldt University); Leonidas Kyriakides (University of Cyprus); Andres Sandoval-Hernandez (IEA).

**Summary**

Workshop 5 looked at the role of teachers and teaching methods in relation to educational performance of students. Stanislav Ranguelov discussed teaching approaches as one of the main factors influencing learning outcomes and student motivation in subjects such as mathematics and science. The presentation examined the extent to which national teaching guidelines on promoting collaborative activities and ICT are used in daily teaching practices, through the analysis of TIMSS and PISA data. Sigrid Blömeke's research assessed the content knowledge of mathematics teachers in primary and lower-secondary schools in 16 countries at the end of their training. Leonidas Kyriakides argued that there is a need to strengthen links between research on teacher effectiveness and research on teacher professional development. Andres Sandoval-Hernandez examined the case of new teachers and analysed key aspects of teachers' work experience with the aim of helping policy makers to increase the effectiveness of teaching. Comparisons were drawn between new and experienced teachers in order to identify significant differences and discuss policy implications.

**Key results**

The workshop highlighted some gaps between existing teaching approaches and current guidelines, and explored ways in which teachers could be trained to deliver high-quality learning. It was also concluded that cultural influences are important determinants explaining variances in teaching methods between countries, as teachers' demonstrated knowledge in the field of mathematics was shown to be closely linked to national debates on mathematics education. Finally, it was found that new teachers performed worse in terms of efficacy in teaching, classroom management and student discipline.

**Policy implications & future research**

Current evidence indicates that **improving quality of teaching is key** to improving student achievement. There is also strong evidence to indicate that **both constructivist and traditional teaching methods can be effective** and that there is thus a need to **develop integrated approaches to teaching**. However, it is also necessary to identify individual strengths and weaknesses in countries as a basis for implementing reforms. Furthermore, it would be helpful not just to examine progress by ranking countries, but to look instead at **'opportunities to learn'** on a broad scale and to target actual weaknesses as identified by evidence-based research. In addition, advances can be derived from **greater job differentiation** between new and experienced teachers (as new teachers have the same workloads as experienced teachers, but

spend a greater proportion of their time on classroom management). Finally, a review of the content, format and intensity of teachers' continuing professional development is recommended so as to better target it to teachers' specific needs, such as classroom management training for new teachers.

International surveys need to include specific questions which reveal whether or not findings produced through studies on the quality of teaching are actively used to develop the content and structure of teacher training programmes. This would be beneficial in producing an evidence-based and theory-driven approach to teachers' professional development. In addition, since the associated risks of drawing far-reaching conclusions on the basis of case studies, further research is needed **to link research on teacher training with research on teacher effectiveness**. It is also necessary **to link teacher and student data** (for example through matching various datasets, such as TIMSS, PIRLS and TALIS). Finally, it would be useful to compare results from different studies and use experimental studies on teacher effectiveness to identify common patterns.

## **Workshop 6: The effectiveness of educational policies (November 16<sup>th</sup>, 8.30 – 12:10)**

**Chair:** Anke Weber (European Commission, Joint Research Centre) (in absence of Andrea Saltelli, European Commission, Joint Research Centre)

**Speakers:** Daniele Checchi (University of Milan, Italy); Zbigniew Sawiński (Educational Research Institute, Poland); Valentina Rastelli (INVALSI, Italy); (absent Harry Anthony Patrinos (The World Bank)).

### **Summary**

Workshop 6 aimed at looking at the interplay between political decisions, settings, and institutional arrangements on the one hand and educational outcomes on the other hand. In addition, the workshop aimed at shedding further light on how international surveys based on skills assessments have influenced policy reforms in European countries. Daniele Checchi presented results on the impact of educational policies in Europe in the last century on educational outcomes. In particular, he showed which policies affect mean years of education, educational inequality and intergenerational persistence and thereby presented an ideal policy menu which is available to policy makers. Zbigniew Sawiński presented an analysis of the impact of school reforms on educational inequalities in Poland using PISA data. He demonstrated that by analysing PISA data from the years 2000-2009, one can detect that inequalities first decreased due to the school reform, but that following the gradual adaptation of parents to the new system, inequalities started to reoccur. Last, Valentina Rastelli presented an analysis of the impact of EU funding on students' results in Southern Italy. In particular, this study compared the PISA 2006 and 2009 outcomes of the regions with EU funding to a control group which did not receive the EU funding, and provide some indication that European funds can have a significant positive impact on student achievement.

### **Key results**

Education reforms affect different dimensions of education, such as students' achievement, inequalities in education, and the inter-generational link, i.e. the link between parents' and students' education level. Depending on the type of reform, outcomes might be positive for student's schooling but can have negative effects on educational inequality and inter-generational links. Another factor to keep in mind is the cost of reforms and here it seems that expansionary reforms are more expensive than organisational reforms. On the positive side, there is some indication that European Social Funds have a positive effect on student achievement in reading and mathematics (as demonstrated by the paper on Southern Italy). However, it is crucial to account for the interplay between education reforms and the reactions by the society, i.e. teachers and parents. This interplay might strongly affect the outcomes of reforms (as seen in the case of Poland).

### **Policy implications & future research**

This workshop revealed that **international education surveys are important tools to assess the effects of policy reforms on student achievement**. In addition, they can help to **track the development of educational inequality** over time and **monitor the variation between schools**. To derive better policy recommendations, however, **more use should be made of counterfactual analysis** as well as rigorously using the available data to assess the ‘causal’ effect of reforms. In addition, analyses of educational reforms require a good understanding of the national education system. This can only be achieved through **collaboration with national experts**. Last, when designing education policies the reaction by the society, most notably the parents and teachers, needs to be anticipated and integrated in the education reform for it to be successfully implemented.

The discussion in the workshop revealed two important aspects for future research. First, there is a strong **need to acquire a better understanding of how to design analysis to obtain ‘causal’ effects and thereby to inform policy**. Second, there is a **need to disentangle various effects by reforms**, i.e. on educational achievement, inequalities and intergenerational links, as well as better understand the interrelations of different educational reforms and how reforms were implemented in a country.

## *Closing Session and Conclusions*

*November 16<sup>th</sup>, 12.30 – 14:30*

### Panel Debate

Chair: Susanne von Below (German Federal Ministry of Education and Research)

Panellists: Leonidas Kyriakides (University of Cyprus); Anu Toots (Tallinn University); Anne-Berit Kavli (Norwegian Directorate of Education and Training); Athena Michaelidou (Cyprus Pedagogical Institute); Lars Bo Jakobsen (EACEA); Ana Maria Costa Freitas (European Commission, Office of the Chief Scientific Adviser of the Commission President).

The panellists discussed how the wealth of existing evidence can be used to improve policies in the education sector, and what needs to be done to increase the usefulness of survey data for policies. **Leonidas Kyriakides** made a strong plea for further secondary analysis particularly with respect to identifying relevant system-level factors and school-based factors. He highlighted the importance of identifying the impact of actions taken by schools and teachers, and proposed to include questions on system-level factors in surveys. **Anu Toots** highlighted the challenge to retain consistent indicators over succeeding waves of surveys, but yet to take into account the changing concepts of those indicators, for example on democracy or when accounting for mobile students in Europe. Moreover, she called for a stronger focus of the institutional framework in which education policies are implemented, as these might help to explain differences in outcomes. The third panellist, **Anne-Berit Kavli**, supported the idea that there is a need for greater knowledge on specific actions taken in the classroom, such as innovative learning approaches and teaching practices. It seems still unclear what effective teaching is and whether effective teaching is the same in each country. To answer these questions a more in-depth evaluation of each country's contextual information is needed as well as a stronger dialogue between politicians and researchers. In addition, Kavli proposed conducting analyses of countries with similar cultural and economic backgrounds. **Athena Michaelidou** stressed the important impact of surveys on countries and emphasised the crucial role of teachers as critical users of surveys. In addition, she remarked that results from secondary analyses of surveys need to be communicated clearly and with respect to the underlying quality of the survey to be able to impact education policies. Last, she proposed that linking national with international surveys is a fruitful avenue and further work needs to be done on this. **Lars Bo Jakobsen's** intervention highlighted that education surveys have already produced a substantial amount of evidence and this evidence is already used in the European Commission to monitor reforms and progress towards the ET2020 and Europe 2020 targets. However, according to Jakobsen, there is also merit in using more qualitative data, for example with regard to collecting information on system-level factors. Last, he stressed the necessity for politicians to take an active part in the conceptualisation of international surveys to ensure that survey results are adapted to policy needs. **Ana Maria Costa Freitas** underlined the need for an improved dialogue between the

different stakeholders, i.e. among the researchers from different disciplines and between researchers and politicians. To enhance the dialogue between the different stakeholders, it seems necessary to have a common language. In addition, she emphasised the need to invest in the right skills, such as transversal and language skills, which are adapted to the labour market. This can only be achieved by well-trained and motivated teachers.

### **Existing Evidence and Key Messages**

There was a consensus that **classroom effects are very important** in explaining disparities in student achievement. **Greater interaction between stakeholders** – such as between education providers and employers – would be beneficial in terms of encouraging discussion on which skills are important and valued; this would also enable a **better recognition of the skills young people need** in a perpetually modernising world. **Societal changes over time need to be taken into account** and research needs to be proactive in order to correctly and effectively identify future needs. It is also advised to **undertake more culture specific studies** as cultural and social differences and contexts between countries can mean that policies that are effective in one country may not be in another; analyses that compare and contrast different studies on **education systems** are thus recommended and countries with similar cultures or education systems could form learning networks. The **challenges of evidence-based policy** are that despite best-practice guidelines some countries are better equipped to implement policy recommendations depending on, for example, the capacity of their institutions.

### **Policy Recommendations**

**More research on the quality of teaching, teaching effectiveness** and on specific activities in the classroom is required. **The need for investment in transversal skills is increasing** as a highly skilled workforce is the key to driving innovation and boosting growth in Europe; such skills include technological competences, language skills and critical analysis skills. Also, **professional development of teachers** should be improved and access to this kind of training should be enlarged. The data currently available on educational outcomes is rich but further **secondary data analysis and targeted research** is needed. For example there is demonstrable knowledge on input factors and outcomes, but not enough on the relationship between them. There is a need to improve **communication channels between researchers and policy makers** and to create additional platforms for such dialogue; also, it is important to sum up research results in a way and format that is easy for policymakers to understand, and that addresses the concerns that policy makers are dealing with.

### **Concluding Remarks**

Pierre Mairesse closed the conference discussions by re-examining the conference's success in terms of its initial objectives. He concluded that the conference had: **provided many policy relevant findings** through secondary analyses of large scale international surveys and assessments; **highlighted the need for effective knowledge brokerage** with regard to

communicating results from secondary analysis effectively to policy makers; and **identified gaps in data sources** as well as prospects for further analysis and opportunities to rethink the scope of some of the existing international surveys. Mairesse also emphasised the need for researchers and policy makers to **clarify the use of certain terminology and concepts**, such as ‘school autonomy’, ‘efficiency’ and ‘impact’, so as to establish a common understanding of such terms. He identified the following areas as requiring greater attention: equity and equality; effectiveness and efficiency of reforms; and focusing further secondary analysis at the education system level. Mairesse also **made reference to the upcoming publication of surveys and data availability** in the areas of education and training which would allow for additional policy relevant analyses, making particular reference to the European Commission’s continued work on country-specific analysis and recommendations.

#### **Box 1: Web links to international surveys**

##### **OECD data sources**

Programme for International Student Assessment (PISA): [www.oecd.org/pisa](http://www.oecd.org/pisa)

Programme for International Assessment of Adult Competencies (PIAAC): [www.oecd.org/piaac](http://www.oecd.org/piaac)

Teaching and Learning International Survey (TALIS): [www.oecd.org/edu/talis](http://www.oecd.org/edu/talis)

Adult Literacy and Lifeskills Survey (ALL): [www.nces.ed.gov/surveys/all](http://www.nces.ed.gov/surveys/all)

##### **IEA data sources**

Progress in International Reading Literacy Study (PIRLS): <http://timssandpirls.bc.edu>

Trends in International Mathematics and Science Study (TIMSS): <http://timssandpirls.bc.edu>

International Civic and Citizenship Education Study (ICCS): [www.iea.nl/iccs\\_2009.html](http://www.iea.nl/iccs_2009.html)

International Computer and Information Literacy Study (ICILS): [www.iea.nl/icils\\_2013.html](http://www.iea.nl/icils_2013.html)

Teacher Education and Development Study in Mathematics (TEDS-M): [www.iea.nl/teds-m.html](http://www.iea.nl/teds-m.html)

##### **Other data sources**

The European Survey on Language Competences (ESLC)

<http://ec.europa.eu/languages/eslc/index.html>

European Survey of Schools: ICT in Education (ESSIE): <http://essie.eun.org/>



# PROGRAMME ABSTRACTS AND SPEAKERS

# IMPROVING SKILLS

Evidence from secondary analysis  
of international surveys

*Limassol, Cyprus / 15 - 16 November 2012*



# PROGRAMME

## DAY 1 THURSDAY 15 NOVEMBER

08.30-09.30 REGISTRATION

### PLENARY SESSION

Chair: Athena Michaelidou (Cyprus Pedagogical Institute, Cyprus)

09.30 – 10.30 CONFERENCE OPENING

#### *BACCHUS ROOM*

Video message from Androulla Vassiliou, Commissioner for Education, Culture, Multilingualism and Youth

Pierre Mairesse, Director, Lifelong learning: horizontal policy issues and 2020 strategy, European Commission, Directorate General Education and Culture

Olympia Stylianou, Permanent Secretary, Ministry of Education and Culture, Cyprus

10.30 – 11.00 COFFEE BREAK

11.00 – 13.00 KEYNOTE SPEAKERS:

#### *BACCHUS ROOM*

Jan-Eric Gustafsson (University of Gothenburg, Sweden):  
Using international surveys of educational achievement as a source of information for improving education

Maciej Jakubowski (Ministry of National Education, Poland):  
Can you make the leap twice? Using evidence to further improve the Polish education

13.00 – 14.30 LUNCH BREAK

## PARALLEL SESSION 1

14.30 – 18.00 (COFFEE BREAK 16.00-16.30)

### WORKSHOP 1

BASIC SKILLS: READING LITERACY AND LANGUAGE COMPETENCES

*BACCHUS ROOM*

Chair: Gerry Shiel (Educational Research Centre, St Patrick's College, Ireland)

#### SPEAKERS:

Introduction by the European Commission

Luisa Borges Araujo (European Commission, Joint Research Center):  
The ESLC Survey: School-internal and External Factors in Language Learning

Magdalena Szpotowicz (Educational Research Institute, Poland):  
Comparing ESLC results with national language competence measurements in Poland

Astrid Roe (University of Oslo, Norway):  
To read or not to read – that is the question. Reading engagement and reading habits in a gender perspective. Northern Lights on PISA 2009

Arlette Delhaxhe (European Commission, Education, Audiovisual and Culture Executive Agency (EACEA)):  
Patterns in national policies and the provision of support for struggling readers across Europe

### WORKSHOP 2:

BASIC SKILLS: MATHEMATICS AND SCIENCE SKILLS

*SALAMINA ROOM*

Chair: Anne-Berit Kavli (Norwegian Directorate of Education and Training, Norway)

#### SPEAKERS:

Introduction by the European Commission

Liv Sissel Grønmo (University of Oslo, Norway):  
Results from TIMSS advanced

Yvan Clermont (Statistics Canada, Canada):  
Numeracy and skills in the Adult Literacy and Life Skills Survey: preliminary findings

Timo Ehmke (Leuphana University of Lüneburg, Germany):  
Bringing together PISA, the National Educational Panel Study (NEPS) and the Standard-based National Assessment (NA) in Germany

Gabrielle Marie Stanco (TIMSS & PIRLS International Study Center, Boston College, USA):  
Using TIMSS 2007 Data to Examine School Effectiveness Factors in the Czech Republic and Slovenia

### WORKSHOP 3:

TRANSVERSAL SKILLS

*ATHENA ROOM*

Chair: Paulina Korsnakova (International Association for the Evaluation of Educational Achievement, IEA)

#### SPEAKERS:

Introduction by the European Commission

Bryony Hoskins (University of Southampton, UK):  
Comparing Young Peoples' Civic Competence in Europe: Ten years on

Maria Magdalena Isac (European Commission, Joint Research Center):  
The Contribution of Schooling to Secondary-School Students' Citizenship Outcomes Across Countries: Using an Educational Effectiveness Theoretical Framework to Conduct a Secondary Analysis of the International ICCS 2009 Data

Angelo Paletta (University of Bologna, Italy):  
Improving skills through school autonomy: Evidence from ICCS international surveys

Valérie Quittre (University of Liège, Belgium):  
Results from the 2011 European Survey of Schools on ICT in education

20.00

### CONFERENCE DINNER OFFERED BY THE CYPRIOT PRESIDENCY

Buses to the "Ktima Laniti" restaurant will depart from the hotel at 19.30

## DAY 2 FRIDAY 16 NOVEMBER

### PARALLEL SESSION 2

08.30 – 12.10 (COFFEE BREAK 10.45-11.15)

#### WORKSHOP 4. EDUCATIONAL ACHIEVEMENT OF MIGRANTS, ETHNIC MINORITIES AND DISADVANTAGED STUDENTS

##### *SALAMINA ROOM*

Chair: Seamus Hegarty (International Association for the Evaluation of Educational Achievement, IEA)

#### SPEAKERS:

Introduction by the European Commission

Dirk Hastedt (IEA Data Processing and Research Center, Germany):  
Mathematic Achievement of Immigrant Students

Pavlina Hadjitheodoulou Loizidou (Cyprus Pedagogical Institute, Cyprus):  
Cyprus Educational Policy for the Students with Migrant Background:  
The impact of international studies results

Massimiliano Mascherini (The European Foundation for the Improvement of Living and Working Conditions (EUROFUND)):  
The social and economic cost of NEETs in Europe

Adél Pasztor (Northumbria University, UK):  
Talking the Same Language: How Does Education in the Mother Tongue Affect the Pupils' Scholastic  
Achievement in the Parallel School Systems?

#### WORKSHOP 5. TEACHERS' PROFESSIONAL DEVELOPMENT, TEACHING METHODS AND LEARNING OUTCOMES

##### *BACCHUS ROOM*

Chair: Daniele Vidoni (INVALSI, Italy)

#### SPEAKERS:

Introduction by the European Commission

Stanislav Rangelov (European Commission, Education, Audiovisual and Culture Executive Agency (EACEA)):  
Effective teaching approaches: National guidelines and Practices identified in international surveys

Sigrid Blömeke (Humboldt University, Germany):  
Assessing strengths and weaknesses of teacher knowledge in Asia, Eastern Europe and Western countries:  
Differential item functioning in TEDS-M

Leonidas Kyriakides (University of Cyprus, Cyprus):  
Promoting quality of teaching: A dynamic approach to teacher professional development

Andres Sandoval-Hernandez (IEA Data Processing and Research Center, Germany):  
New teachers' working experience. A cross country comparison based on data collected from  
the OECD Teaching and Learning International Survey (TALIS) 2008

#### WORKSHOP 6. THE EFFECTIVENESS OF EDUCATIONAL POLICIES *ATHENA ROOM*

Chair: Andrea Saltelli (European Commission, Joint Research Center)

#### SPEAKERS:

Introduction by the European Commission

Harry Anthony Patrinos (The World Bank):  
Private education provision and public finance: the Netherlands

Daniele Checchi (University of Milan, Italy):  
Educational policies in a long run perspective

Zbigniew Sawiński (Educational Research Institute, Poland):  
Do school reforms decrease educational inequalities in Poland? A new look at the PISA data

Laura Palmerio (INVALSI, Italy):  
Reducing the gap? The Effects of EU funds for improving education in Southern Italy

## PLENARY SESSION

### *BACCHUS ROOM*

12.30 – 14.30 Chair: Susanne von Below (Federal Ministry of Education and Research, Germany)

### SHORT REPORTS FROM THE PARALLEL SESSIONS

#### PANEL DEBATE.

##### Topic for discussion:

What do we do with the existing evidence in education? Despite the rich empirical evidence on education, drawing policy implications is not very straightforward. This panel, therefore, asks the questions how results from surveys can be utilised best and which implications can be drawn from the results for future policy agendas.

#### PANELLISTS:

Leonidas Kyriakides (University of Cyprus, Cyprus)

Anu Toots (Tallinn University, Estonia)

Anne-Berit Kavli (Norwegian Directorate of Education and Training, Norway)

Athena Michaelidou (Cyprus Pedagogical Institute, Cyprus)

Lars Bo Jakobsen (European Commission, Education, Audiovisual and Culture Executive Agency (EACEA))

Ana Maria Costa Freitas (European Commission, Office of the Chief Scientific Adviser of the Commission President)

#### CONCLUDING REMARKS

Pierre Mairesse (European Commission, Directorate General Education and Culture)

14.30-15.30 LUNCH

# ABSTRACTS

## DAY 1 THURSDAY 15 NOVEMBER

### PLENARY SESSION KEYNOTE SPEECHES

#### JAN-ERIC GUSTAFSSON (UNIVERSITY OF GOTHENBURG, SWEDEN):

##### **Using international surveys of educational achievement as a source of information for improving education**

The international surveys of educational achievement serve important functions to monitor the levels and trends of educational achievement in school systems around the world. These surveys also aim to provide information to policy makers for improving outcomes of education, preferably through establishing generalizations about causal relations between outcomes and policy relevant factors. Regrettably, the design of these studies provides challenges to credible causal inference in the form of endogeneity problems, omitted variables and errors of measurement. However, recently important advances have been made in development of statistical techniques for causal inference from observational data, which open opportunities for advancing knowledge through secondary analysis of the accumulated body of data. The presentation focuses in particular on two analytical approaches. One takes advantage of the trend design of several of the surveys (e.g., PISA, PIRLS and TIMSS) which allows analysis of change over time at the school system level, thereby controlling for the biasing effect of omitted variables which are fixed over time. The other analytical approach is two-level structural equation modeling, which allows use of latent variable modeling techniques at two levels of observation simultaneously. This makes it possible to deal with measurement problems and to fit structural relations models. Examples of analyses with these approaches of, among other things, effects of computer use, homework, and teaching approaches are presented and discussed.

#### MACIEJ JAKUBOWSKI (MINISTRY OF NATIONAL EDUCATION, POLAND):

##### **Can you make the leap twice? Using evidence to further improve the Polish education**

Poland heavily reformed its education system in 1999/2000 by changing its structure, extending comprehensive education by one year, introducing per-student funding scheme, increasing school autonomy, launching external standardized exams, new professional development schemes for teachers and new curricula. It took years to implement all these changes fully but results outdid the expectations. Students in Poland improved their performance in reading to above the OECD average levels and the share of low performers decreased from above 23% to 15%. Moreover, between-school differences decreased from one of the highest in the OECD to one of the lowest. Poland is continuing the reforms started in 2000 to further expand comprehensive education and improve quality of the key elements of the new education system. The new developments are increasingly based on evidence. Since 2000 Poland increased its involvement in international surveys and its capacity for evidence-informed policy making, mainly through research and policy institutes that cooperate with the Ministry. The presentation will discuss the improvement of Polish results and the current evidence suggesting further reforms Poland should implement. The presentation will also discuss challenges that have to be addressed to build infrastructure for the effective research support for policy making.

## PARALLEL SESSION 1 WORKSHOP 1. BASIC SKILLS: READING LITERACY AND LANGUAGE COMPETENCES

**LUISA BORGES ARAUJO (EUROPEAN COMMISSION, JOINT RESEARCH CENTER):**

### **The ESLC Survey: School-internal and External Factors in Language Learning**

This study presents a secondary analysis of the European Survey on Language Competences (ESLC) carried out in 16 EU educational systems. It focuses on the factors specific to language learning that affect secondary school students' language proficiency according to the Common European Framework of Reference (CEFR) for English as their first foreign language. The purpose is to identify factors associated with learning outside and inside school. The methodology adopted was a multinomial regression model, which allows us to compare the probability of a student moving from one CEFR proficiency level to another. We considered the Basic User, a combination of CEFR levels A1 and A2, the reference category and calculated the chances of a student attaining the Pre-A1 level and the Independent User level, which includes levels B1 and B2, while controlling for socio-economic status and gender. Results indicate that students' perception of the usefulness of language learning for entertainment, for reading books and magazines and the frequency with which they watch movies in the original version with subtitles explain achievement. In addition, the more the students find that their language lessons are good and easy the higher they tend to score in listening, reading and writing skills. Among the school factors that impact students' attainment the most we found that: 1) the earlier the onset of language learning the higher the attained language proficiency, 2) smaller class size is associated with higher achievement, 3) Content and language integrated learning and a wider than commonly available school choice of languages to learn results in higher proficiency levels.

**MAGDALENA SZPOTOWICZ (EDUCATIONAL RESEARCH INSTITUTE, POLAND):**

### **Comparing ESLC results with national language competence measurements in Poland**

This presentation focuses on the European Survey on Language Competences (ESLC) and its results in Poland. In secondary analyses ESLC scores (n= 3220) were compared with the national test scores of the same students. Moderate to high correlation coefficients between scores from both tests tend to confirm the reliability of the national exam. This is informative in the light of curriculum reform and a new form of a national foreign language test.

In addition to the main ESLC suite, in Poland alone, an oral test was administered to a sub-sample of the test-takers (n=499) to measure spoken competence, not included among the other tests. Results from the oral test were subsequently compared to a composite result derived from the three skills tested in ESLC. The speaking results confirmed very low attainment of some Polish learners. Comparison between results of the oral test and the written component of ESLC show there is room for improvement in production and mediation skills.

**ASTRID ROE (UNIVERSITY OF OSLO, NORWAY):**

### **To read or not to read – that is the question. Reading engagement and reading habits in a gender perspective. Northern Lights on PISA 2009**

In this presentation Nordic (Danish, Finnish, Icelandic, Norwegian and Swedish) students' reading engagement in PISA 2000 and 2009 will be compared. The PISA 2009 student questionnaire posed several questions about 15-year-olds' reading habits and reading attitudes, and many of these questions were also represented in the student questionnaire in PISA 2000. Thus, it has been possible to analyse students' reading habits and engagement over time. A variety of online reading habits were measured for the first time in PISA in 2009. Although there are some differences between the Nordic countries, the overall impression is that Nordic 15-year-olds spent less time reading for enjoyment in 2009 than they did in 2000. However, they spent more time online than they did in 2000. Gender differences favouring girls were great in 2000, both in terms of reading achievement and reading engagement, and this picture has not changed in 2009. Furthermore, the weakest readers read far less in their leisure time than the best readers. In all the Nordic countries and for both genders, reading engagement shows a higher correlation with reading scores than social background. When it comes to online reading, gender differences are not so apparent.

**ARLETTE DELHAXHE (EUROPEAN COMMISSION, EDUCATION, AUDIOVISUAL AND CULTURE EXECUTIVE AGENCY (EACEA)):**

### **Patterns in national policies and the provision of support for struggling readers across Europe**

Since the first PISA survey was implemented, many secondary analyses were conducted examining the relationship between contextual variables and student achievement in reading. Studies linking data from other sources to PISA results are rarer. This paper attempts to bring together data on national policies for improving reading achievement with the rates of low achievers according to the PISA 2009 data. It is based on a two-step analysis. Firstly, data from comparative analyses carried out by the Eurydice-Network on Education Systems and Policies in Europe is used to group European countries according to their national policies for improving reading achievement (i.e. specialist reading teachers, national tests for identifying individual learning needs and curriculum guidelines on reading comprehension strategies). Secondly, the educational outcomes in the different groups of countries are explored comparing the proportions of low achieving 15-year old students according to the PISA data. The results indicate that countries with extensive national policies for support to low achievers in reading achieve the best results. The availability of reading specialists for providing targeted support to students with difficulties and advice to teachers seems to be the most important measure.

## WORKSHOP 2. BASIC SKILLS: MATHEMATICS AND SCIENCE SKILLS

**LIV SISSEL GRÖNMO (UNIVERSITY OF OSLO, NORWAY):**

### **Results from TIMSS advanced**

International comparative studies such as TIMSS, TIMSS Advanced and PISA have attracted an influential audience of politicians, policy makers, curriculum developers and researchers in mathematics education. Especially have the achievement levels in different countries and how these changes over time got a lot of attention. These studies however, offer a lot of opportunities for additional analyses aiming to get an understanding of the educational system in different countries. Results of analyses of data from several of these international comparative studies will be presented as a background for a discussion about basic skills in mathematics and science. This include analyses of what may be referred to as different profiles in mathematics and science education in different countries, with a focus on to what extent basic skills is emphasized. The relation between mathematics and science will also be part of the discussion, especially the role of basic mathematical skills in science at higher levels in school.

**YVAN CLERMONT (STATISTICS CANADA, CANADA):**

### **Numeracy and skills in the Adult Literacy and Life Skills Survey: preliminary findings**

This presentation focuses on the numeracy test results obtained from the Adult Literacy and Life Skills Survey (ALL) conducted in eleven countries/regions between 2003 and 2008. It addresses the definition of numeracy as a concept and as being measured by the ALL and discusses why this basic skill is important. A comparison of the distribution of numeracy skills among the adult populations of countries surveyed is also presented. The presentation explores the factors influencing numeracy skills by analysing the impact of characteristics such as age, gender, and formal education. The presentation presents evidence about the development of affective responses to numeracy and examines the role of numeracy skills in labour market outcome variables such as unemployment, type of occupation and earnings from work. The presentation also examines determinants of the problem solving skills of population sub-groups, and explores the incremental role of problem solving skills in influencing important labour market outcomes. Further results on outcomes associated to multiple skills advantages and disadvantages are also presented. Finally, the presentation will address how the Programme for International Assessment of Adult Competencies (PIAAC) will bring continuity and additional information in the analysis of numeracy skills.

**TIMO EHMKE (LEUPHANA UNIVERSITY OF LÜNEBURG, GERMANY):****Bringing together PISA, the National Educational Panel Study (NEPS) and the Standard-based National Assessment (NA) in Germany**

Mathematical competence can be seen as an important prerequisite for active participation in society and culture. Therefore, the mathematical competence of students is regularly measured in national and international Large-Scale Assessments. But do these Large-Scale Assessments measure the same construct of mathematical competence and is it possible to link the scales from different mathematical assessments? To answer these questions, we analyzed the conceptual and dimensional equivalence of mathematical competencies assessed in TIMSS, in PISA, in the Standard-based National Assessment in Germany (NA) and in the multi-cohort National Educational Panel Study (NEPS). The conceptual equivalence between the tests was evaluated by expert reviews, where each of the NEPS test items was classified to the TIMSS, PISA and the NA frameworks. The results revealed a high conceptual correspondence between the assessment frameworks but also some specific differences. For the evaluation of the dimensional equivalence between the tests, multidimensional IRT models were applied to the data. The results show a very high overlap between the mathematical measures. However, the latent correlations between the mathematical sub dimensions of the tests were considerably lower.

**GABRIELLE MARIE STANCO (TIMSS & PIRLS INTERNATIONAL STUDY CENTER, BOSTON COLLEGE, USA):****Using TIMSS 2007 Data to Examine School Effectiveness Factors in the Czech Republic and Slovenia**

TIMSS 2007 data were used to investigate how school effectiveness factors known to be strongly associated with higher STEM achievement operated in the Czech Republic and Slovenia. Multilevel modeling was used to examine STEM achievement in relation to school effectiveness factors associated with school resources, fidelity of curriculum implementation, and school climate, controlling for student home resources. Findings from this research showed that across the two countries, there were differences in how important school effectiveness factors operated. In the Czech Republic, teacher preparation in mathematics and science and a school environment conducive to learning emerged as being strongly associated with high STEM achievement. In both countries, student attitudes toward learning were important predictors of STEM achievement. This research also showed the potential of using TIMSS data as a basis for conducting school effectiveness analyses across different country contexts.

**WORKSHOP 3.  
TRANSVERSAL SKILLS****BRYONY HOSKINS (UNIVERSITY OF SOUTHAMPTON, UK):****Comparing Young Peoples' Civic Competence in Europe: Ten years on**

This paper develops four measures of civic competence using the IEA ICCS study to monitor the levels of citizenship across Europe. The measurement model combines the traditions in Europe of liberal, civic republican and critical/cosmopolitan models of citizenship. The results indicate that Social justice values and Citizenship knowledge and skills of students are facilitated within the Nordic system that combines a stable democracy and economic prosperity with a democratically based education systems in which teachers prioritise promoting autonomous critical thinking in citizenship education. In contrast, medium term democracies with civic republican tradition, such as Italy and Greece gain more positive results on Citizenship Values and Participatory attitudes. This is also the case for some recent former communist countries that retain ethnic notions of citizenship. In a final step we go on to argue that the Nordic teachers' priority on developing critical and autonomous citizens perhaps facilitates 14 years olds' qualities of cognition on citizenship and the values of equality but may not be the most fruitful approach to enhance participatory attitudes or concepts of a good citizen which may be better supported by the Italian teachers' priority on civic responsibility.

**MARIA MAGDALENA ISAC (EUROPEAN COMMISSION, JOINT RESEARCH CENTER):****The Contribution of Schooling to Secondary-School Students' Citizenship Outcomes Across Countries: Using an Educational Effectiveness Theoretical Framework to Conduct a Secondary Analysis of the International ICCS 2009 Data**

This contribution illustrates the use of an educational effectiveness approach to model the impact of student, school, and educational system characteristics on several student outcomes related to citizenship. Using multivariate multilevel analysis, data from the IEA-ICCS 2009 study were analyzed, encompassing 102,396 lower secondary-school students (14-year-olds) in 4,078 schools in 31 countries. The results indicate that schools have a small influence on students' civic knowledge and hardly an impact on civic attitudes and intended civic behavior. Civic competences are mainly explained by individual student characteristics and out-of school factors. Factors at the school level that were found to make a difference in students' civic competences are related to stimulating a democratic classroom climate in which free dialogue and critical debate on controversial political and social issues are encouraged, nurturing positive interpersonal relationships and creating opportunities for students to learn and practice democracy. Scientific and practical implications are discussed.

**ANGELO PALETTA (UNIVERSITY OF BOLOGNA, ITALY):****Improving skills through school autonomy: Evidence from ICCS international surveys**

Researchers note that school autonomy is a rather complex concept to measure and the picture that emerged from several investigations showed rather mixed results indicating both positive and negative effects of school autonomy on educational performance.

To assess the impact of policy initiatives focused on school autonomy, the research tradition in the field is to link them with measures of student achievement. A particular advancement in the field was done by secondary analyses based on international comparative studies such as PISA and TIMSS.

Conversely, next to traditional outcomes this presentation considers also an alternative measure of student achievement. We make use of two data sets: the International Civic and Citizenship Education Study (ICCS 2009) and the ICCS data for Italy matched with national data on student achievement collected by INVALSI.

The presentation addresses the following research questions: What is the relationship between school autonomy and student civic knowledge? To what extent is the size and direction of this relationship generalizable across countries? What is the relationship between school autonomy and multiple measures of student achievement (civic knowledge, math and reading) in the Italian context? To what extent is the size and direction of this relationship generalizable across diverse outcome variables?

**VALÉRIE QUITRE (UNIVERSITY OF LIÈGE, BELGIUM):****Results from the 2011 European Survey of Schools on ICT in education**

The Survey of schools: ICT in Education was commissioned in 2011 by the European Commission and is one of a series within the European Union's cross-sector benchmarking activities comparing national progress to i2010 and Europe 2020 goals. Its primary goal has been to benchmark access, use and attitudes to ICT in schools in European countries, at three different levels of education (grades 4, 8 and 11). The current study is a follow-up of the Europe 2002 and EU2005 surveys and is the first in this series to have been conducted online. Questionnaires were administered to head teachers, teachers and students except at grade 4 where students were not included due to practical constraints. The survey findings provide evidence about ICT infrastructure and use, ICT-based learning activities, teacher and student digital confidence, school vision and strategies, attitudes and opinions. The presentation will focus on some of the significant findings. For instance, teacher's confidence and opinions about ICT use for Teaching and Learning affects the frequency of students' ICT use for learning. Furthermore, boosting teacher professional development makes a difference, and appears as a condition for an effective and efficient use of the available infrastructure.



## DAY 2 FRIDAY 15 NOVEMBER

### PARALLEL SESSION 2 WORKSHOP 4.

#### EDUCATIONAL ACHIEVEMENT OF MIGRANTS, ETHNIC MINORITIES AND DISADVANTAGED STUDENTS

**DIRK HASTEDT (IEA DATA PROCESSING AND RESEARCH CENTER, GERMANY):**

##### Mathematic Achievement of Immigrant Students

Globalization changed the challenges faced by educational systems around the world and increased migration between countries and regions affects the educational systems in a growing number of countries. Taking the example of Luxemburg, IEA PIRLS showed that of all 21 participating European countries, Luxemburg is the one with most students who have parents not born in the country. Nearly 60% of grade four students in Luxemburg have at least one immigrant parent. In most European countries the number of immigrants is still increasing; the group of immigrants and their situation in various countries, however, is very heterogeneous. Nonetheless, in most countries immigrant students lag behind the achievement of non-immigrant students.

IEA data provides a good basis for further research on the situation of immigrant students since it does not only include achievement measures but also rich information on student and school background. E.g. IEA TIMSS assesses mathematics and science achievement of grade four and grade eight students every four years. Analysis of this data can inform about trends of immigrant students' achievement as well as help understand their situation and find positive examples of immigrant students' achievement.

The presentation will highlight the characteristics of immigrant students, trends of their achievement and different situations of different subgroups of immigrant students.

**PAVLINA HADJITHEODOULOU LOIZIDOU (CYPRUS PEDAGOGICAL INSTITUTE, CYPRUS):**

##### Cyprus Educational Policy for the Students with Migrant Background: The impact of international studies results

Schools in Cyprus are experiencing the enrolment of greater numbers of children from diverse cultural backgrounds, whereas, by and large, schools and societies have traditionally considered themselves as being mono-cultural. All measures taken have focused on a superficial, orientalist approach. However, due to the results of the international studies, a shift from folklore approaches of culture and identity to their impact on school achievement has been noticed. The Cyprus Pedagogical Institute has promoted this shift in the areas of in-service teacher training and policy making. Since Cyprus did not participate in the previous PISA studies, the emphasis was on results from Greece, as a country with similar educational structures and policies in relation to immigrants, as well as on results from Germany which has been a traditional country of migrant reception. Although evaluations such as PISA do not offer solutions to remedy the situation or help identify best practices that will lead to achieving a curriculum of diversity, and efficiency and equity in education, secondary analysis of these results allows identification of trends and obstacles hindering the efficiency and equity of education systems. Such analysis should thus come in combination with a monitoring and evaluation system of the actions adopted as well as of the progress of the individuals.

**MASSIMILLIANO MASCHERINI (THE EUROPEAN FOUNDATION FOR THE IMPROVEMENT OF LIVING AND WORKING CONDITIONS (EUROFUND)):**

##### The social and economic cost of NEETs in Europe

Young people have been hit very hard by the economic crisis and since the onset of the recession youth unemployment grew considerably in most European countries. In order to better understand the vulnerability of young people, a new term entered in the policy debate: NEETs – young people 'not in employment, education or training'. NEETs are a heterogeneous category including all young people who are literally Not in Employment, Education and Training. The size of the problem speaks by itself: in 2011 almost 14 million of young people aged 15-29 were NEETs. In this regard, the aim of the presentation is to provide a picture of the characteristics and risk factors of the NEETs population and to broaden the understanding of the economic and social consequences of their disengagement from labour market and education. Finally, the presentation will provide an overview of the recent policy measures implemented in Member States to re-engage young people into labour market and education and the most effective practices to combat school-drops out will be discussed.

**ADÉL PASZTOR (NORTHUMBRIA UNIVERSITY, UK):**

##### Talking the Same Language: How Does Education in the Mother Tongue Affect the Pupils' Scholastic Achievement in the Parallel School Systems?

Since Gordon's classical theory of assimilation many scholars have researched the integration of immigrants (and their children) in terms of their educational and labour market performance. However, mostly due to the lack of suitable data, cross-national research on the integration of autochthonous minority pupils is still scarce. Thus the aim of the paper is to fill this gap in the current literature. While focusing on the parallel schools of Swedish-speaking Finns in Finland, Hungarians in Slovakia and German-speakers of Bolzano, the study attempts to uncover the potential differences in the degree of integration of autochthonous students. Compared to the considerably wide immigrant-native gap established through the analysis of PISA data earlier, the current results demonstrate less significant differences between the parallel school systems. For example, while Germans tend to outperform Italians and Swedish speakers do slightly worse than Finnish, there is no noteworthy difference between the Hungarian and Slovak school students' scholastic achievement.

### WORKSHOP 5. TEACHERS' PROFESSIONAL DEVELOPMENT, TEACHING METHODS AND LEARNING OUTCOMES

**STANISLAV RANGUELOV (EUROPEAN COMMISSION, EDUCATION, AUDIOVISUAL AND CULTURE EXECUTIVE AGENCY (EACEA)):**

##### Effective teaching approaches: National guidelines and Practices identified in international surveys

The effective teaching approaches are one of the main factors that can improve the learning outcomes of students and promote their motivation in subjects as Mathematics and Science. In the recent years many countries are promoting national guidelines for teachers on how to apply teaching approaches as collaborative activities and ICT, inquiry based or project based learning. The present paper analyses how these guidelines are applied in the daily teaching practices following the analysis of TIMSS and PISA data and tries to identify the possible gaps that still exist between the used teaching approaches and the guidelines or recommendations. In addition some findings on how teachers are trained to use these teaching methods during their initial education are presented with the aim to explore possibilities that will enable teachers to provide students with high-quality learning and improve their teaching skills.

**SIGRID BLÖMEKE (HUMBOLDT UNIVERSITY, GERMANY):**

##### Assessing strengths and weaknesses of teacher knowledge in Asia, Eastern Europe and Western countries: Differential item functioning in TEDS-M

The "Teacher Education and Development Study in Mathematics: Learning to Teach Mathematics (TEDS-M)", carried out under the supervision of the IEA, assessed the mathematics content knowledge (MCK) and the mathematics pedagogical content knowledge (MPCK) of more than 23,000 primary and lower-secondary mathematics teachers from 16 countries at the end of their training. Primary teachers from Taiwan and Singapore as well as lower-secondary teachers from Taiwan and Russia performed best on the tests.

The information provided by country means is sparse though in cases of country-specific strengths and weaknesses on subgroups of items. More specific achievement information is needed. By detecting and explaining differential item functioning (DIF), this presentation examines such strengths and weaknesses in future teachers' MCK and MPCK.

Content domains, cognitive demand and item format significantly explain variance in DIF. Teachers from Taiwan and Singapore are particularly strong on constructed-response items. Teachers from Russia and Poland are strong in non-standard operations. The USA and Norway do particularly well in MPCK. Thus, teacher knowledge matches national debates on mathematics education and the characteristics of the countries' student achievement as known from TIMSS and PISA. Such a result would point to cultural influences in education.

**LEONIDAS KYRIAKIDES (UNIVERSITY OF CYPRUS, CYPRUS):****Promoting quality of teaching: A dynamic approach to teacher professional development**

This presentation argues for the need to establish stronger links between teacher effectiveness research and research on teacher professional development. The first part refers to studies investigating the validity of the dynamic model of educational effectiveness which reveal that teacher factors can be grouped into distinct stages of effective teaching. These stages move gradually from skills associated with direct teaching to more advanced skills concerned with new teaching approaches and teaching differentiation. Teachers exercising more advanced types of teacher behavior have better student outcomes. Thus, the second part supports that teacher professional development should be focused on how to address groupings of specific teacher factors associated with student learning and on how to help teachers improve their teaching skills. The main characteristics of this approach, which is called dynamic approach to teacher professional development, are analyzed and experimental studies supporting its use for improvement purposes are presented. Based on these findings, an argument is then made for including more specific questions in international surveys that examine whether in-service training is informed by the results of studies on quality of teaching. Such international surveys can contribute to establishing an evidence-based and theory-driven approach to professional development.

**ANDRES SANDOVAL-HERNANDEZ (IEA DATA PROCESSING AND RESEARCH CENTER, GERMANY):****New teachers' working experience. A cross country comparison based on data collected from the OECD Teaching and Learning International Survey (TALIS) 2008**

According to the literature on the topic, the quality of teaching received by students has the greatest impact on their education outcomes outside the impact of individual and family characteristics. From a policy perspective, improving the quality of teachers is one of the most effective methods to improve student outcomes. Along these lines, the effectiveness of teachers new to the profession is an important policy issue, since an effective school education system requires the constant input of new teachers to provide high-quality education to students.

Using data from the 24 countries participating in TALIS 2008, this work analyses different aspects of teachers' working experience. The results of our analysis are presented as a comparison of the working lives of new and more experienced teachers related to four key policy issues: characteristics of the schools, support and development initiatives, classroom practices, and teaching efficacy. Then, the implications of these results to inform policy development aimed at increasing the effectiveness of new teachers are discussed.

**DANIELE CHECCHI (UNIVERSITY OF MILAN, ITALY):****Educational policies in a long run perspective**

In this paper we study the effects of educational reforms on school attainment. We construct a dataset of relevant reforms occurred at the national level over the last century, and match individual information from 24 European countries to the most likely set-up faced when individual educational choices were undertaken. Our identification strategy relies on temporal and geographical variations in the institutional arrangements, controlling for time/country fixed effects, as well as for country specific time trend. By characterising each group of reforms for their impact on mean years of education, educational inequality and intergenerational persistence, we show an ideal policy menu which has been available to policy makers. We distinguish between groups of policies that are either "inclusive" or "selective", depending on diminishing or augmenting impact on inequality and persistence. Finally we correlate these reform measures to political coalitions prevailing in parliament, finding support to the idea that left wing parties support reforms that are inclusive, while right wing parties prefer selective ones.

**ZBIGNIEW SAWIŃSKI (EDUCATIONAL RESEARCH INSTITUTE, POLAND):****Do school reforms decrease educational inequalities in Poland? A new look at the PISA data**

A deep reform of the Polish educational system was conducted at the beginning of the 21st century. The reform created a completely new type of school, namely middle-school (gimnazium in Polish), which has been placed between the previous primary and secondary schools. One of the aims of the reform was to create equal opportunities in the access to education for young people from different social backgrounds. To evaluate the extent to which this objective has been achieved, PISA data from the years 2000-2009 were used. The results demonstrate that although the reform temporarily reduced educational inequalities, after a few years they rose again to the level before the reform. When it began, the parents were confused about how to support their children in their educational careers, because the old selection mechanisms were replaced by the new criteria. But within a few years parents were able to adapt their strategies to the new circumstances. The results of PISA not only demonstrate that the reform decreased the educational inequalities for a relatively short period of time, but also show that PISA helps penetrate the social mechanisms which turned some of the benefits of the Polish educational reform into losses.

**LAURA PALMERIO (INVALSI, ITALY):****Reducing the gap? The Effects of EU funds for improving education in Southern Italy**

In the past decades, a substantive stream of empirical literature has discussed the effects of input-based school policies on student achievement, and the association between school resources and student results is often elusive. Still, to strengthen economic and social cohesion by correcting imbalances between its regions, the European Union addresses substantial shares of its budgets to economically depressed regions. In the 7th Framework Program 2007-2013, four Italian regions had access to these funds, and 3.8 billion euros have been devoted to improving the quality of education.

This paper aims at providing new evidence on the effects of increased school resources in improving student results. A small group of schools in Italy, which has been part of the OECD PISA 2006 and 2009 samples, is the treatment group. A control group is chosen via matching on observables in the PISA-2006 and 2009-sample-schools of adjacent regions with very similar socioeconomic conditions. PISA results (2006 and 2009) and INVALSI national assessment at grade 10 (2010-11) in these schools are pre-treatment and post-treatment data.

Preliminary findings suggest that European funds have a significant impact on student achievement. In fact, over a 3 years span, school results have improved both in Mathematics and Reading, thus overcoming the lag they had with the other schools under exam.

**WORKSHOP 6.  
THE EFFECTIVENESS OF EDUCATIONAL POLICIES****HARRY ANTHONY PATRINOS (THE WORLD BANK):****Private education provision and public finance: the Netherlands**

One of the key features of the Dutch education system is freedom of education – freedom to establish schools and organize teaching. Almost 70% of schools in the Netherlands are administered by private school boards, and all schools are government funded equally. This allows school choice. The Netherlands provides an ideal situation to examine the effects of school choice. In the Dutch national school choice system, policy is determined centrally but the administration and management of schools is decentralized to the school level. Students from the Netherlands do exceptionally well on international academic achievement tests such as Trends in International Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA). The substantial degree of competition in the system is possibly one determinant of its high academic achievement rates. We use data from PISA, including an instrument to identify private school attendance, to estimate if the Dutch school choice system promotes academic performance. The results show that private school attendance is associated with higher test scores. Private school size effects on math, reading, and science achievement are 0.19, 0.31, and 0.21, respectively.

# CHAIRS SPEAKERS AND PANELLISTS





## LUÍSA BORGES ARAÚJO

European Commission, Joint Research Center

Luísa Araújo holds a Ph.D in Curriculum and Instruction from the University of Delaware with a concentration in reading literacy and bilingual education. Her research interests include literacy and early reading development and second language learning. In particular, her research has focused on exploring links between curriculum, assessment and pedagogical practices, on the prevention of reading difficulties and on promoting good practices in the teaching of second/foreign languages. She has worked in the US as an assistant professor at William Paterson University and is a full professor at the Institute of Higher Education and Science in Portugal. She is currently working as a researcher for the European Commission in the Statistics and Econometrics unit of the Center for Research on Lifelong Learning (CRELL) at the Joint Research Center in Ispra, Italy.



## SUSANNE VON BELOW

Federal Ministry of Education and Research, Germany

Assistant head of division 323 „Performance of the Education System by International Comparison“ in the German Federal Ministry of Education and Research (BMBF), where she is responsible for national and international education reports. She was and continues to be a member of several EU working/expert groups. Prior to joining the BMBF in 2007, she was a researcher in Sociology of Education. She received her doctorate from Goethe Universität Frankfurt, where she was also an assistant professor. She held postdoc positions as Visiting Scholar at the Center for European Studies (Harvard University) and as Jean Monnet Fellow in the European Forum on „The Quality of Education“ (European University Institute, Florence).



## SIGRID BLÖMEKE

Humboldt University, Germany

Full Professor of Instructional Research at Humboldt University of Berlin in Germany and the Director of the Berlin Centre of Interdisciplinary Research. From 2007 to 2009, she was a Visiting Professor of Competence Measurement at Michigan State University in the USA. Her areas of research include the modeling and measuring of teacher competencies, international comparisons, and the effectiveness of ICT in instruction. Prof. Blömeke was the German head of IEA's large-scale assessment TEDS-M. Currently, she is the head of the federal (BMBF) funding initiative „Modeling and measuring competencies in higher education“ and the head of the department for „Design-based research and evaluation“ at the German Centre of mathematics teacher education (DZLM). Other current research projects include the measurement of competencies during teacher induction and professional development, and in the fields of mathematics, German and English as well as the measurement of kindergarten teachers' competencies.



## DANIELE CHECCHI

University of Milan, Italy

Daniele Checchi (PhD, MSc) is professor of economics at the University of Milan. His research interests cover the role of institutions in affecting market behaviour. He has also worked on inequality, trade union and intergenerational mobility.



## ARLETTE DELHAXHE

European Commission, Education, Audiovisual and Culture Executive Agency (EACEA)

Researcher at the experimental educational department at the University of Liege, Belgium between 1980 and 1990. The main fields of her research were pre-primary curriculum development and comparative studies. She was National Coordinator of the IEA pre-primary survey and author of books and video for pre-primary teachers. From 1997, part time teacher at the University of Brussels for the course "Introduction on comparative analysis of school systems in Europe". Arlette Delhaxhe has been managing editor of the Studies & Analyses sector of the Eurydice European Unit for over fifteen years. Currently deputy head of the Eurydice unit in EACEA which produces comprehensible comparative studies of European education systems, as well other thematic publications and indicators.



## YVAN CLERMONT

Statistics Canada, Canada

Deputy Director of the Labour Statistics Division at Statistics Canada where he assumes the responsibility of all aspects of the maintenance, production, analysis and dissemination of the Canadian monthly Labour Force Survey and other ad-hoc surveys related to Labour. Mr. Clermont has in the past headed several statistical programs responsible for the design and implementation of various administrative and household surveys in the field of education. He has also been in charge of the coordination of the International Adult Literacy and Life Skills Survey (ALL). In these duties, Mr. Clermont has headed the publication Literacy for Life: Further results from the Adult Literacy and Life Skills Survey (ALL) published in December 2011. He has also co-authored chapters in this publication and in the first publication of the ALL. Mr. Clermont coordinated the development of the literacy and various skills tests and contributed to the elaboration of the Numeracy test used in ALL study. In his career, Mr. Clermont has specialized in the design and conduct of large-scale ad hoc surveys to meet emerging public policy issues. His own work has included studies in test implementation of large-scale surveys in an international setting. Mr. Clermont graduated from the University de Montréal in economics in 1987 (Bachelor of Science) and from Les Hautes Études Commerciales in applied economics in 1990 (Master of Science).



## TIMO EHMKE

Leuphana University of Lüneburg, Germany

University professor for education/empirical educational research at the Leuphana University of Lüneburg, Germany, since December 2011. Mr. Ehmke, Prof. Dr. habil., studied Mathematics, Technology and Education at the Universities of Kiel and Universities of Flensburg, Germany, and received the 1st Staatsexamen in Mathematics and Technology Education (1997) and a Ph.D. in Education (2001). From 2001 to 2011 he worked at the Department of Education at the Leibniz-Institute of Science Education (IPN) and was involved in the large-scale assessments PISA 2003, PISA 2006, and PISA 2009. He was applicant of the DFG research study "Adult Mathematical Literacy: A Study with parents of PISA students" (2004-2006). In 2007 he was substitute professor for Didactics of Mathematics at the University of Regensburg and finished his habilitation for empirical educational research at the University of Kiel. Timo Ehmke has published several journal articles and book chapters. His main research interests include international student assessment studies, development of mathematical literacy over the life-span, and the effects of social background on educational processes.



## ANA MARIA COSTA FREITAS

European Commission, Office of the Chief Scientific Adviser of the Commission President

Ana Maria Costa Freitas has a PhD on biotechnology by the University of Évora, Portugal; she got her aggregation degree in 2004. She has been leader in several scientific research projects, head of University Department, and vice President of a research centre in Évora as well as responsible for a research line in a research centre in New University of Lisbon. From 2006-2010 she was vice rector at Évora University; was in charge of the implementation of the Bologna process, including curricula reform and in charge of the implementation of the LLL office and the organization and implementation of a graduate school. She was also in charge of international relations with the European University Association, as well as the Council for Doctoral Education. Since 2011 she is adviser in BEPA having the Higher Education port-folio, and since January 2012 she works within the team of the first Chief Scientific Adviser of the Commission President.



## LIV SISSEL GRØNMO

University of Oslo, Norway

Associate professor at ILS at the University of Oslo in Norway. She has been a teacher and supervisor for schools for many years. The last 20 years she has worked in teacher education and with international comparative studies such as TIMSS, TIMSS Advanced and TEDS-M. She has a rich experience in school practice as well as in research.



## JAN-ERIC GUSTAFSSON

University of Gothenburg, Sweden

Professor of Education at University of Gothenburg since 1986. One of Professor Gustafsson's research interests concerns individual prerequisites for education, where he has been working on models for the structure of cognitive abilities, and on instruments for selection to higher education. Another field of research concerns effects of education on knowledge and skills, which he has primarily studied in international comparative studies of educational achievement, among other approaches. Issues concerning organization of education, and the effects of resources, such as teacher competence, have also increasingly come into focus in his research. Another line of research, which is running in parallel with the substantively oriented research, concerns development of quantitative methods with a focus on measurement and statistical analysis.



## PAVLINA HADJITHEODOULOU-LOIZIDOU

Cyprus Pedagogical Institute, Cyprus

Teacher trainer in Pedagogics at the Cyprus Pedagogical Institute since 2000 with a research focus on managing sociocultural diversity in the education system. Dr. Hadjithiodoulou-Loizidou got her M.A. in Education and Society (1989-1990) at the University of Reading, UK, and her PhD in Pedagogics at the University of Ioannina (1996). She has worked at ASPAITE Pedagogy School in Athens (1996-2000), as a tutor at the Greek Open University (1998-2009), and as a post doc researcher for the Education of Roma Children project of the Greek Ministry of Education and the University of Ioannina (1996-2000). She has also worked for the Council of Europe Project on Teaching Socio-cultural Diversity and the Pestalozzi Modules on Intercultural Education.



## DIRK HASTEDT

IEA Data Processing and Research Center, Germany

Co-Director of the IEA Data Processing and Research Center (IEA DPC) in Hamburg, Germany since 2001 where he coordinates all international projects. He started working for the IEA Germany foundation in 1989 as an Assistant for Data Processing for the IEA Reading Literacy Study. From 1994 to 1997 he was Programmer and Data Processing Specialist for the Trends in Mathematics and Science Study (TIMSS) 1995 at the IEA DPC. He then held the position of a Senior Researcher at the IEA DPC where he coordinated the data processing for TIMSS 1999 as a project manager. Since 2001, he has been responsible for the data processing for, amongst other studies, TIMSS 2003 and 2007, and for the Progress in International Reading Literacy Study (PIRLS) 2006. Dirk Hastedt holds a diploma degree in mathematics from the University of Hamburg.



## SEAMUS HEGARTY

International Association for the Evaluation of Educational Achievement, IEA

Seamus Hegarty is Chair of the International Association for the Evaluation of Educational Achievement (IEA) and served as Director of the National Foundation for Educational Research (NFER) for twelve years until his retirement in 2005. His research and academic interests span special and inclusive education, Education for All, international assessment, the school of the future, and the management and evaluation of research. He has written or co-authored more than 20 books and numerous papers. He is founder editor of the European Journal of Special Needs Education, now in its 27th year, and edited Educational Research for 18 years. He has evaluated and advised on research for universities and national authorities in many countries, with current or recent commitments in Chile, Finland, Hong Kong, Ireland, Italy, the Netherlands, Norway and South Africa. He holds visiting professorships at the University of Warwick and three other universities. He has been a Marie Curie Fellow at Trinity College Dublin. He is a member of the Advisory Panel for the Cisco/Intel/Microsoft project on the Assessment and Teaching of 21st Century Skills. He has advised UNESCO and other international bodies on special needs issues for over 20 years.



## BRYONY HOSKINS

University of Southampton, UK

Dr Bryony Hoskins is an expert on Citizenship across Europe. Bryony started her career working in international organisations on Active Citizenship, both at the Council of Europe and then at the European Commission, where she created indicators on Active Citizenship and Civic Competence to monitor policy implementation on citizenship education across Europe. Since then she has led international and European research projects from the Institute of Education, University of London, and the University of Southampton where she is now based as a Senior Lecturer. The most recent EU project that she led was on Active Citizenship in the EU that mapped policy and practice from across Europe in the context of the economic crisis. Bryony was part of the Project Advisory Committee for the IEA International Civic and Citizenship Education Study (ICCS).



## MARIA MAGDALENA ISAC

European Commission, Joint Research Center

Post-doctoral researcher at the Centre for Research on Lifelong Learning, Institute for Protection and Security of the Citizen, European Commission – Joint Research Centre, Ispra, Italy. She is currently earning her PhD in educational sciences at the University of Groningen on the topics of educational effectiveness and civic and citizenship education. Within her PhD project she conducted national and international comparative studies assessing the impact of citizenship education on several aspects of young people's citizenship competences.



## LARS BO JAKOBSEN

European Commission, Education, Audiovisual and Culture Executive Agency (EACEA)

Lars Bo Jakobsen was recently appointed head of unit of the Eurydice and policy support unit in the Executive Agency with responsibility for policy support to the European Commission in the fields of education and youth. For several years he was a policy officer in the Directorate General for Education and Culture in the unit responsible for studies and analysis. He was responsible for the development and use of evidence to support European co-operation and policy making. Jakobsen started his career in the Danish national administration where he worked for the Ministry of Education and the Prime Minister's Office.



## MACIEJ JAKUBOWSKI

Ministry of National Education, Poland

Formerly assistant professor at the Warsaw University and analyst in the OECD PISA team, Maciej Jakubowski is currently the under-secretary of state at the Polish Ministry of Education, responsible for school funding, teacher policy and building the long term education strategy. He also worked as a researcher at the University of Pittsburgh, Ludwig Maximilian University in Munich and the European University Institute in Florence and as a consultant for the World Bank, UNDP and the Polish government. Mr. Jakubowski authored and co-authored several policy reports and academic papers in the area of education policy and labour economics.



## ANNE-BERIT KAVLI

Norwegian Directorate of Education and Training, Norway

Anne-Berit Kavli is educated as a scientist with a master's degree in physics. In addition to this she has studied some pedagogy, and has also further education in management and leadership. Kavli has 15 years of experience from upper secondary school as a teacher in mathematics and physics, and has also been part of the school administration. In 1997 she started work as an adviser in the Norwegian Ministry of Education, with responsibility for the evaluation of reforms in upper secondary education. From 2000 she has been head of the Department for research and International Affairs in the Norwegian Directorate for Education and Training. The Department for research and International Affairs coordinates and contracts research and evaluation programs within primary and secondary education in Norway, and is also responsible for Norwegian participation in international comparative studies of educational outcomes. Internationally Kavli represents Norway in the PISA Governing Board, and is the chair of the TALIS Board of Participating Countries in the OECD. From 2013 she is also elected chair for IEA, the International Association for the Evaluation of Educational Achievement.



## PAULINA KORSNAKOVA

International Association for the Evaluation of Educational Achievement, IEA

Dr Paulina Korsnakova is Senior Professional Officer and Researcher at the IEA Secretariat in Amsterdam. She oversees the international translation verification and quality control processes for IEA's large-scale comparative assessment projects including ICILS 2013, and is involved in instrument development and planning. She is also chair of the OECD TALIS 2013 Instrument Development Expert Group. Prior to her present position, she was head of the research unit of the Slovak National Institute for Education (SPU), National Project Manager of the OECD PISA (2003, 2006, and 2009) and TALIS 2008 studies in the Slovak Republic, and a member of the PISA 2006 Science Expert Group. She has also worked as a methodologist for adult education and teacher of mathematics and biology at the upper and lower secondary levels. Dr Korsnakova received a Master's degree in mathematics and biology (with teacher qualification for the ISCED 2 and 3 levels) and a Ph.D. in psychology from Comenius University. She has published a number of national and thematic reports and articles on results of educational assessments and their implications. She is Editor in Chief of the Slovak Journal for Educational Sciences and a council member of the European Educational Research Association and the Slovak Pedagogical Society.



## LEONIDAS KYRIAKIDES

University of Cyprus, Cyprus

Dr Leonidas Kyriakides is Professor in Educational Research and Evaluation at the University of Cyprus. His field of research and scholarship is the evaluation of educational effectiveness, whether of teachers, schools or educational systems. Currently his research agenda is concerned with the development of a dynamic model of educational effectiveness, and the application of effectiveness research to the improvement of educational practice. He is a member of the editorial board of several international journals with review process and the chair of the EARLI SIG on Educational Effectiveness. He acted as chair of the AERA SIG on School Effectiveness and Improvement and as a board member of the International Congress on School Effectiveness and Improvement. Finally, he is the author of more than 100 research papers in refereed journals, 6 books and 80 chapters in books.



## PIERRE MAIRESSE

Director for Lifelong learning: horizontal policy issues and 2020 strategy, European Commission

Pierre Mairesse is responsible in the European Commission for issues related to the European strategy for Education and Lifelong Learning that affect all the sectors of education systems in the EU Member States (general education, vocational training, higher education, adult education, etc).

These include the role of education and training in the 'Europe 2020' strategy, organisation and implementation of the coordination between Member States, the social role of education and training, as well as their role in the European integration, multilingualism and tools for a better understanding of education systems in Europe. An engineer by education, Pierre Mairesse has been working in different areas in the European Commission: information technology and telecommunications, information, culture, youth, sport, citizenship, education and training. He studied in France (Lille) and Canada (Montreal).



## MASSIMILIANO MASCHERINI

The European Foundation for the Improvement of Living and Working Conditions (EUROFUND)

Massimiliano Mascherini is a research manager at Eurofound, the European Foundation for the Improvement of Living and Working Conditions. His main research interests lie in the fields of social cohesion and labour market participation, with great emphasis on young people and the social consequences of their exclusion from the labour market. Before joining Eurofound he worked as scientific officer at the Joint Research Centre of the European Commission. He has been visiting fellow at the University of Sydney and at Aalborg University. Over the past few years he has produced in these fields a steady flow of publications in international peer-reviewed journals, conference proceedings and policy reports.



## ATHENA MICHAELIDOU

Cyprus Pedagogical Institute, Cyprus

Dr Athena Michaelidou is the Director of the Cyprus Pedagogical Institute. She is a graduate of the Cyprus Pedagogical Academy and holds a Master's Degree (MED) from the University of Manchester and a PhD from the University of London, Institute of Education. She has been an in-service teacher trainer and a researcher, as a staff member of the Cyprus Pedagogical Institute for many years, as well as staff member of the Open University of Cyprus. She has worked as the Head of the Research and Evaluation Department of the Institute and also of the Centre for Educational Research and Evaluation of the Cyprus Ministry of Education and Culture. She has taught in many in-service training programmes for teachers from different levels of the educational system and different posts. She is the coordinator of several research and European projects carried out by the Ministry of Education and Culture and she is a member of working groups at the EU level. Her research interests combine teachers' professional development, teachers' role in research efforts and action research within schools, etc. She has presented her work in several educational conferences and publications.



## ANGELO PALETTA

University of Bologna, Italy

Angelo Paletta is Associate Professor of Management at the Department of Management, University of Bologna. He is scientific director of the Master in Management and leadership of educational institutions at the Alma Mater Studiorum and member of the scientific committee established by INVALSI for the evaluation of schools and principals. His current research interest is in public governance, school accountability, performance management in professional organisations.



## LAURA PALMERIO

INVALSI, Italy

Laura Palmerio has a Phd in Innovation and Evaluation of Educational Systems, and a degree in Psychology. Since 2008, she has been senior researcher with tenure at INVALSI (National Institute for the Educational Evaluation of Instruction and Training), Italy, with experience in the evaluation of European projects and in international and national surveys regarding pre-primary, primary and secondary education. Collaborating with INVALSI since 1999. Currently responsible for the OECD PISA project in Italy. She is also adjunct professor in Educational evaluation and assessment at the University of Rome "Tor Vergata".



## ADÉL PASZTOR

Northumbria University, UK

Dr Adél Pásztor is a Lecturer in Sociology at Northumbria University (UK), having previously worked at the University of Amsterdam as a Marie Curie Experienced Researcher and at the European University Institute Florence as a Jean Monnet Fellow. Her main research interests are in the field of sociology of education and migration. She is particularly interested in educational inequalities, questions of higher education choice and access of non-traditional students, the immigrant-native gap in scholastic achievement, and internationalization of HE and the Bologna process. She has published journal articles and book chapters on the subject.



## HARRY ANTHONY PATRINOS

The World Bank

Lead Education Economist at the World Bank. He specializes in education, especially school-based management, demand-side financing and public-private partnerships. He managed education lending operations and analytical work programs in Argentina, Colombia and Mexico. Recent publications include Indigenous Peoples, Poverty and Development (Cambridge University Press, 2012). He is one of the main authors of the reports, Making Schools Work (2011), The Role and Impact of Public-Private Partnerships in Education (World Bank, 2009). Mr. Patrinos has many publications in the academic and policy literature, with more than 50 journal articles. He is co-author of the books: Policy Analysis of Child Labor: A Comparative Study (St. Martin's, 1999), Decentralization of Education: Demand-Side Financing (World Bank, 1997), and Indigenous People and Poverty in Latin America: An Empirical Analysis with George Psacharopoulos (World Bank/Ashgate, 1994). He has also worked in Africa, Asia, Europe, the Middle East and North America. He previously worked as an economist at the Economic Council of Canada. Mr. Patrinos received a doctorate from the University of Sussex.





## VALÉRIE QUITTRE

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Valérie Quittre holds a Master in Biochemistry. She is working as a Research Fellow at the University of Liege (Belgium) in the Department of Education and Training. Her first research interests focused on sciences teaching and assessment, contributing to the PISA science assessments in French speaking Belgium. She currently centers her analysis on the international large-scale assessments and undertakes PhD studies.



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## STANISLAV RANGUELOV

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Stanislav Ranguelov holds a PhD degree in Business Economics and a Master degree in Management and Innovation. Since July 2008 he is Coordinator for Education Policy and Systems Analysis at the Education, Audiovisual and Culture Executive Agency of the European Commission in Brussels. His main area of responsibility is the management of comparative studies on European Education Systems combining statistical, empirical and administrative data sources. His main research interests are related to forecasting analysis, human resources development, informal learning as well as innovation processes and intangibles assets measurement.



## ANDREA SALTELLI

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Andrea Saltelli has worked on physical chemistry, environmental sciences and applied statistics. His main disciplinary focus is on sensitivity analysis of model output, a discipline where statistical tools are used to interpret the output from mathematical or computational models. A second focus is the construction of composite indicators or indices. Presently he leads the Econometric and Applied Statistics Unit of the European Commission at the Joint Research Centre in Ispra (I). The Unit, with a staff of 35 employees, develops econometric and statistic applications, mostly in support to the services of the European Commission, in fields such as lifelong learning, consumer empowerment, employment, competitiveness and innovation. He contributes to the training of European Commission staff on impact assessment.



## ASTRID ROE

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Senior researcher at the Institute for Teacher Education and School Research, University of Oslo, Norway. Since 1998 she has been a member of the Norwegian PISA team, and from 2008 - 2010 she was the leader of the Unit for Quantitative Analyses of Education (EKVA) at the institute. Astrid Roe was one of the authors of the national PISA reports that were published on behalf of PISA 2000, 2003, 2006 and 2009, and one of the editors of the two Nordic PISA reports based on PISA 2000 and 2003. She has led the development of a reading test for the community of Oslo since 2002 and the Norwegian national reading tests since 2003, and she participated in the group of researchers who developed the PISA 2009 reading test and reading framework. She has published several articles based on secondary analyses of national and international reading surveys, and she has done qualitative classroom research based on problematic PISA results in Norway. In 2008 she published the book *Lesedidaktikk – etter den første leseopplæringen* ('Reading Didactics – After the first reading instruction'). Astrid Roe has also worked as a secondary school teacher and as a principal of an art college in Oslo, Norway.



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## OLYMPIA STYLIANOU

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Mrs. Olympia Stylianou is the Permanent Secretary of the Ministry of Education and Culture in Cyprus since December 2004. From 1992 to 2004 she held the post of Director of Industry, a title renamed as Director of Commerce and Industry, at the Ministry of Commerce, Industry and Tourism. Within the framework of the competences, she assumed an active role in dealing with issues of harmonization with the European Union, especially concerning the Chapters of free movement of goods, energy and industry. Mrs. Stylianou has also worked at the Planning Bureau of the Republic of Cyprus where she attained the post of Senior Planning Officer.

Mrs. Stylianou was a member and Chairperson of the Cyprus Apprenticeship Board, member of the Boards of Management of the Productivity Centre, the Higher Technical Institute and Vocational Rehabilitation Centre, Vice Chairperson of the Cyprus Organization for Standard and Control of Quality and Chairperson of the Cyprus Energy Foundation. She studied Economics at the University of London and obtained the degrees of BSc Economics from London School of Economics and MSc Economics from the School of Oriental and African Studies.



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## DANIELE VIDONI

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Daniele Vidoni is Head of the Evaluation Research Unit at INVALSI, the Italian National Institute of Educational Evaluation. His work deals with assessing the effectiveness of educational policies, as well as with comparative analysis of educational system laws and policies with specific attention to accountability, management models, and incentive systems. His work is published in various Italian and international journals. He holds a Ph.D. in Economics of Education from Boston University (USA). From 2005 to 2008, he has worked in the European Commission – Centre for research on Lifelong Learning (CRELL).

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#### Abstract

The Improving Skills conference, which took place November 15-16, 2012 in Cyprus, was organised by the European Commission, DG Education and Culture (DG EAC), in close cooperation with the Cypriot Presidency and with the input from CRELL. The aim of the conference was to generate and disseminate knowledge derived from recent secondary analysis of large scale international surveys and assessments such as PISA, TIMSS, ICCS, ESLC and PIRLS. Participants of the conference discussed policy goals and areas requiring further research in the field of improving skills, both in terms of improving basic skills (such as literacy and reading competencies) and transversal skills (enhancing employability, social inclusion and civic participation).

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Key policy areas include: environment and climate change; energy and transport; agriculture and food security; health and consumer protection; information society and digital agenda; safety and security including nuclear; all supported through a cross-cutting and multi-disciplinary approach.