# DIGITAL SKILLS IN PERSPECTIVE: A CRITICAL REFLECTION ON RESEARCH AND POLICY

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**ABSTRACT** *In this article we will reflect on the evolving focus of research on digital skills over the past 15 years and discuss the outcomes of this research and their implications for policy. Policy issues regarding digital skills have shifted over time. The present focus on media literacy ties digital skills to the broader theme of citizenship and calls for a wide agenda to improve skills, knowledge of media systems and attitudes towards the media. It reaches into policy domains such as education, work and social participation. We will also reflect on the question as to just how far research is able to feed these policy discussions. The argument is organized in four sections, following more or less chronologically the stages of research on digital skills. We begin with the largely descriptive research on digital skills in the context of the digital divide. The second and third sections follow the theoretical turn in the research agenda with a focus on the causes and consequences of differences in digital skills. In the fourth section we discuss a more recent development, where digital skills are included in a broader research agenda of media literacy.*

**KEY WORDS**

DIGITAL SKILLS, POLICY, MEDIA LITERACY, RESEARCH AGENDA

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The rise of the Internet opened up new opportunities for media use and led to calls for new skills to fully benefit from those opportunities. These digital skills became part of the research agenda in the context of studies on social inequality (digital divide) and the diffusion of innovations. Later research focussed on digital skills as a mediating factor between Internet use and its positive and negative outcomes. Questions were raised as to whether more skills would expand the personal, social or educational benefits on the one hand and curtail the negative consequences associated with Internet use on the other hand. With the growth of online information, the ongoing convergence of media and the rise of computers in schools the study of digital skills became part of a wider research agenda, that of media literacy. In this article we will give a historical account and a critical reflection of the research on digital skills and conclude with placing the issue of digital skills in the European perspective of media literacy.

The context of research on digital skills inspired specific questions, highlighting some aspects and neglecting others. This research focus was linked with certain policy concerns and in turn had implications for the further development of policy. Research on the digital divide, for example, started with questions on the control of basic skills. How to make sure people are not excluded from life in an information society? Research on both the educational impact and on skills as a part of media literacy stresses the importance of information skills. Which information skills need to be taught at school and how can school work benefit from media literate students?

In this article we will reflect on the evolving focus of research on digital skills over the past 15 years and discuss the outcomes of this research and their implications for policy. Policy issues concerning digital skills have shifted over time. In the late 1990s, mostly inspired by American studies such as the National Telecommunication and Information Administration's *Falling through the Net* (NTIA,1999), European policy makers expressed concerns about a lasting digital divide. Digital skills became part of a wider e-inclusion agenda. Over time we witnessed a further proliferation of policy issues connected to an ongoing specification of skills types and far-reaching discussions on the implications of mastering digital skills. The present focus on media literacy ties digital skills to the broader theme of citizenship and calls for a wide agenda of improving skills, knowledge of media systems and attitudes towards the media. It reaches into policy domains such as education, work and social participation. We will also reflect on the question as to just how far research is able to feed these policy discussions.

The argument is organized in four sections following more or less chronologically the stages of research on digital skills. We begin with the largely descriptive research on digital skills in the context of the digital divide. The second and third sections follow the theoretical turn in the research agenda with a focus on the causes and consequences of differences in digital skills. In the fourth section we discuss a more recent development where digital skills are included in the broader research agenda of media literacy.

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## DESCRIBING INEQUALITIES IN DIGITAL SKILLS

Some 15 years ago the OECD (1997) recognized that the skills to handle information and communication technologies (ICT) were becoming a key attribute for life in an information society. These digital skills were seen as crucial for communication and processing information. OECD referred to these skills as 'informacy', distinguishing them from both literacy (the ability to use information from books, newspapers and magazines) and numeracy (the ability to handle quantitative information). These skills were seen as the tools to increase the potential to use computers for a variety of applications.

Concerns about digital skills were initially framed within the debate about the digital divide. In 1995 this concept of 'digital divide' was launched into our vocabulary by journalists Jonathan Webber and Amy Harmon of the LA Times (Gunkel, 2003: 501). It became more widely known when Al Gore started using it in May 1996. The initial thinking on the digital divide focused on the differences across households and citizens in terms of having (home) access to the Internet. In many countries the diffusion of Internet access was measured. Some noteworthy initiatives include the Eurobarometer Internet surveys[1] and the North American '*Falling through the net'* series (NTIA, 1998, 1999).

The debate about the digital divide was soon extended to include inequalities in digital skills. A gap was perceived between those who could effectively use new information and communication tools and those who could not. Eszter Hargittai (2002) referred to varying levels of digital skills as a 'second-level digital divide'. With growing penetration rates she considered the digital divide to be less about having or not having access to the Internet, but rather on the degree of Internet skills required to participate in society. She identified at least seven significant socio-demographic factors for both access and skills along which differences could be described. These included income, educational level, gender, age, employment status, ethnicity and type of household (e.g. single-parent).

The concept of the digital divide has often been criticized for its simplistic binary representation (Gunkel, 2003), in other words, with regard to skills, that either one is able to effectively use ICTs or not. In the place of this binary form is a complex continuum with some people capable of little, others with extensive skills and many in between.

Other critiques was directed towards the static nature of the divide, as if it were impossible to cross. Focussing on the dynamics of inequalities delivers a more realistic picture: a non-user today can be a user tomorrow. This picture emerges when the inequality of technological access and digital skills is set within the framework of the diffusion of innovations. During this diffusion process an increasing number of people come to possess the technology and master its use. This diffusion generally follows a S-curve with a relatively slow beginning, followed by an acceleration and finally a slowing down at the end, as market saturation occurs (Rogers, 1995). The S-curve not only informs us about

[1] See for example: Eurobarometer 56.0 Information and Communication Technologies, Financial Services, and Cultural Activities, ZA3625 doi:10.4232/1.10944, and Eurobarometer 58.0 Services of General Interest, New Technologies, ICT, Health, Environment, and Public Safety, ZA3692 doi:10.4232/1.10952 (19.12.2012).

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the degree of diffusion of a product or an idea in society, but it also provides information about the moment product or idea is adopted by one individual compared to another. Dividing the curve into five stages provides a typology of adopter types: innovators, early adopters, early majority, late majority and laggards (Rogers, 1995). Technology-minded people are often among the first to adopt a new technology, while others prefer to wait. Early adopters have more experience and capabilities in handling new media compared to late adopters. The late majority and especially the laggards are relatively late with their decision to adopt the innovation (Rogers, 1995; De Haan, 2003).

The dynamics of the digital divide placed shifting emphasis on socio-demographic factors. In the early stages the digital divide was strongly related to gender, with men having more digital skills than women. Shortly after women caught up with men gender was no longer regarded as a strong indicator for access to technology. Levels of access to new media as well as the skills to operate these technologies turned out to be more strongly related to age and educational level. At the early stages of the diffusion curve, gender and income particularly distinguished between users and non-users. Later on the curve the relative weight of educational level and especially age became more important (De Haan, 2010).

As digital skills seem to influence who participates fully in an information society and who does not, most Western countries have launched public and private initiatives to raise the level of digital skills among the population. Not substantiated by academic research and possibly influenced by the simplistic binary conception of the digital divide, the popular belief at the time was that an increase in digital skills would not come naturally but required educational reform and training courses.

Schools have traditionally played a key role in imparting skills such as language and arithmetical ability. Around the year 2000 schools were also seen as the primary location where new generations would learn digital skills. Besides introducing PCs and Internet connections into schools, training teachers to use computers and raising the level of IT support at schools, many schools started providing special courses for students to improve their digital skills. However, the influence of schools on acquiring digital skills has proved to be very limited (De Haan and Huysmans, 2002). This finding also concurs with statements by pupils themselves that they learned most from experimenting themselves. Differences in digital skills between teenagers reflected the home setting in which they grew up. Both the equipment in the household and the characteristics of the parents influenced the level of digital skills. The presence of a PC in the household where a teenager grew up proved to be a strong indicator. Furthermore, teenagers with access to the Internet at home and a PC in their own room turned out to possess more digital skills than those without these facilities in their home situation. In line with the diffusion of innovation theory, teenagers who have had more years of experience in using a PC turned out to be more digitally skilled. The characteristics of the parents - their average education level, the PC experience they have acquired at work and the presence of a father in the household – had no direct influence on the digital skills of their children. They did however help to explain the degree to which households possess a technological infrastructure

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that is evidently so important for young people (De Haan and Huysmans, 2002). These characteristics overshadowed the efforts made by schools and teachers to increase the digital skills of their pupils. To make matters worse for the educational system, no clear indications were found for a compensation effect: the use of computers at school did not help children lacking computer facilities at home to catch up with their fellow students who live in more ICT privileged homes. Digital skills turned out to be gained largely at home by learning through experimentation.

Outside the educational context the spread of technological innovations has made demands on the skills of people at work in particular and on citizens in general. The rise of the PC and the Internet also generated a demand for increased computer skills. Many courses and other opportunities for on-the-job training were offered at the workplace, and employers and employees assumed joint responsibility to enable the latter group to develop and utilize digital skills.

Around the turn of the century training courses were also offered for people not in school or at work. Such courses bloomed and included both public free initiatives as well as private market initiatives. At the European level a curriculum was developed for navigating the 'electronic highway': the European Computer Driving Licence (www.ecdl.com). Clearly there was a high demand for these initiatives for courses were organised even in the backrooms of local pubs. Older persons in particular were looking for alternative learning pathways, when they decided to take the new highway. Notwithstanding the uncertainty among this group with regard to the new technological opportunities Eurostat (2006) concluded that self-study via learning-by-doing was the most important learning strategy to obtain basic computer or Internet skills, followed by help from the social network. Informal assistance came from colleagues, relatives and friends, although the often acclaimed help from children and/or grandchildren did not turn out to be very successful (Duimel, 2007).

Discussing inequalities in digital skills within the framework of the digital divide highlighted the need for a new type of skills seemingly unrelated to previous types. This stimulated the isolated examination of digital skills, neglecting the broader context of media literacy. Policy efforts were mainly concentrated on bridging the gap, which often led to a technology push in schools and public facilities. In a somewhat instrumental focus on basic skills, courses were set up but proved to be more helpful to the elderly and low educated people than to high school students. Furthermore these efforts were detached from other measures and tools, and were only later integrated in a wider e-inclusion agenda.

## EXPLAINING DIFFERENCES IN DIGITAL SKILLS

The first phase of digital divide research was mainly descriptive. It focused on recording the presence or absence of information and communication technology (ICT) and on determining whether gaps in access and digital skills were closing or widening. Although

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it connected a set of socio-economic characteristics to the distribution of access or skills, it failed to take the causes of these inequalities into account (De Haan, 2004; Van Dijk and Hacker, 2002). At best multivariate analysis was applied in order to establish which of the characteristics was most important (Robinson et al., 2003), or it proposed more sophisticated methodological tools to measure the closure or widening of the digital divide (Martin, 2003). Given the rising importance of digital skills in knowledge societies the question into the causes of the skills disadvantage was unavoidable.

In the second phase various social science disciplines were called upon to explain differences in access and skills: the *uses and gratification theory* from communication science, the *model of media attendance* from social psychology and *resource theory* from sociology.

The *uses and gratification theory* accounts for differences in people's motivation for media usage and access (Katz et al., 1973). Based on a specification of needs, this theory aims to explain differential patterns of media exposure resulting in intended and unintended gratifications and other consequences at the personal level. This theory emphasizes the active role of the user, and more so over time since the central question has shifted from 'what do media do to people?' to 'what do active audience members do with the media?' (Ruggiero, 2000). As the focus of this theory is more on usage than on skills we will not discuss it in more detail.

Based on Albert Bandura's (1986) social cognitive theory the social psychologists Robert LaRose and Matthew Eastin (2004) presented the *model of media attendance*. This model assumes that behavior is largely determined by expected outcomes and these expectations are in turn formed by a person's own experience (enactive learning) or by observing the behavior of others (observational learning). Prior media consumption, habit strength, self-efficacy and self-regulation play a central role in this theory.

Lastly, the *resource theory* was introduced to explain differences in access, skills and usage (De Haan and Rijken, 2002). This theory assumes that differences in skills can be explained by differences in constraints between individuals. People are constrained in their possession of various kinds of resources: material, cognitive, social and time resources. This distinction draws on the work of the sociologists Pierre Bourdieu (1984) and James Coleman (1990). In short, material resources refer to the technological equipment at hand or the income to buy these assets. Cognitive resources are the mental competences or available knowledge to acquire digital skills. Social resources refer to the social network of a person and the help that can be mobilized through this network. For some topics, time resources are added to the explanatory model, meaning the amount of (free) time available. The general assumption is that more resourceful people will acquire digital skills earlier than people with fewer resources (cf. Rogers, 1995). Social resources may partly explain differences in digital skills between age groups and educational groups and fully explain differences between people who do household work and those who are in paid employment (De Haan and Rijken, 2002). Material resources also matter. Disposable

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income is a barrier to the acquisition of digital skills especially for the economically inactive. Having access to computer facilities in several locations also influences the level of digital skills. Multiple access (at home, at school, at work) is associated with more skills. Ethnic minorities in particular seem to benefit from multiple access. A lack of cognitive resources proves to be a hindrance for both the low-educated and for ethnic minorities (De Haan, 2010).

Resource theory has highlighted that differences in skills is not related solely to differences in infrastructure; social embedding and cognitive capacity also matter. Those with more literacy skills also have more informacy skills. These insights have opened the door for more integrated policy.

## ASSESSING CONSEQUENCES OF DIFFERENCES IN DIGITAL SKILLS

The early studies on the digital divide neglected to investigate the consequences of inequality in access. This rapidly changed when alarming messages hit the headlines like 'the Internet makes you lonely'. This news message resulted from a publication by American psychologists called the Internet paradox (Kraut et al., 1998). How could a social technology like the Internet result in a decrease in social involvement? It turned out that at the moment of investigation there were too few people online for wider social contacts and the innovators who were online might not have been the people with the highest social talents. A few years later the situation had changed and Robert Kraut et al. (2002) revised their conclusions.

In Europe the social implications of Internet use became part of the e-Inclusion strategy of the Lisbon agenda. A landmark was the Riga Ministerial Declaration[2] on 'ICT for an inclusive society' signed on 11 June 2006 by 34 European countries which promoted a broad definition of e-Inclusion:

*eInclusion means both inclusive ICT and the use of ICT to achieve wider inclusion objectives. It focuses on participation of all individuals and communities in all aspects of the information society. eInclusion policy, therefore, aims at reducing gaps in ICT usage and promoting the use of ICT to overcome exclusion, and improve economic performance, employment opportunities, quality of life, social participation and cohesion.*

The Riga Declaration set concrete targets for European states, to be achieved by 2010 in four priority areas, including promotion of digital literacy.

The e-Inclusion objectives have a strong focus on economic benefits. As labour markets are transforming and the new economy calls for a different skill base (information literacy rather than physical strength), the focus in research is directed to the influence of digital skills on labour market participation and on productivity. In this context digital skills are often referred to as e-skills, with particular stress on those skills needed to be

[2] http://ec.europa.eu/information_society/events/ict_riga_2006/doc/declaration_riga.pdf (09.09.2012).

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productive in the labour market. The complexity of these skills ranges from basic skills to high technical competence and is often linked to the level and sector of work.

A broad research agenda has focused on the influence of digital skills in a changing labour market. Two competing views are relevant here. According to the upgrading perspective, the new economy is associated with growth in information intensive sectors. Typically, these involve more knowledge workers and the demand for higher educated people with more digital skills and literacy. These skills significantly differ between the employed and the unemployed, with the former being more digitally skilled (Van Damme et al., 2005). On the other hand the downgrading perspective emphasises the deskilling of labour (Steijn and Tijdens, 2007) with machines taking over a lot of thinking (e.g. the need for supermarket cashiers to learn prices by heart being replaced with scanners), and large groups of workers doing manual work (e.g. digging up streets to install cable infrastructure). Given these divergent trends on the labour market the consequences of lacking sufficient digital skills can be quite serious for lower educated people and for the unemployed, in that this affects their opportunities for active labour market participation or for moving ahead in their profession (Van Ingen et al., 2007). Learning to work with computers may lead to a large improvement in productivity, which for a large part will return to the employees in the form of higher wages (Weda et al., 2008). This learning process may also spare people from ending up in low skilled, routine driven jobs.

New technology not only plays a role in economic participation, it also affects all spheres of life. Digitisation is changing, amongst others, the way we use media (Jenkins, 2006), the way we shape our social lives (Wellman et al., 2001), the way we use public information (Van Deursen and Van Dijk, 2009), the way we learn (Tapscott, 1998), and Nicholas Carr (2010) even claims that it is changing the way we think, read and remember. In all these fields promoting digital skills can result in empowerment and bring disadvantaged groups into an information society.

From the standpoint of e-Inclusion special attention has been paid to those who are lagging behind in the diffusion process. The elderly, low educated people, unemployed and ethnic minorities have been slow to adopt new technology and acquire sufficient digital skills. It is critical to assess the effects of the skills-biased technological change on the position of less-educated people and people currently out of work. For older people, social involvement is important and Internet use can enhance their feeling of 'belonging.' For members of ethnic minorities it seems that more digital skills and better (social) integration go hand-in-hand (Van Ingen et al., 2007).

The focus on consequences highlighted the need for a broad research agenda with digital skills in a pivotal position. The impact of ICT runs mainly though variations in use closely tied to differences in skills. Showing the consequences gave new inspiration to policy targeting the improvement of skills.

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## PLACING DIGITAL SKILLS IN A BROADER CONTEXT

In the context of the discussion on the digital divide, the skills to handle information and communication technologies have often been referred to as basic skills. Examples include competences such as knowing how to start a word processor, attach files to an e-mail, click with a mouse or copy a file to a floppy disk. Of course when computers were introduced to the work place more advanced skills were soon needed, as the discussion of the complexity of skills in previous section illustrates. Young people apparently had little trouble mastering the basics and were somewhat misleadingly called 'digital natives' (Prensky, 2001). Their ability to handle online information was not to be overestimated, however, and their skills were no guarantee that they would stay out of trouble in the risky environment that the Internet can be (Livingstone et al., 2012). It was soon realized that there were more aspects to digital skills than basic competences. There are many types of skills. They exist on a continuum rather than taking the form of a simple binary opposition (being skilled or not), and the value of these skills varies depending on the social circumstance (Gunkel, 2003: 506).

An early approach to clarify the concept of digital skills was made by Jan Steyaert (2000) who categorized these skills in three groups: instrumental skills, structural skills and strategic skills. He referred to basic skills as *instrumental skills*, knowing how to deal with the technology as such, in other words keyboard knowledge (there is a dimension of complexity to these skills). A second cluster of skills he called *structural skills* which refer to the (new) structure in which information is contained, for instance the skill to make use of hypertext (jumping via keywords to other information sources) or looking for dynamic information (via discussion sites, rather than via static information on websites). The use of search engines and especially the capacity to search, find and evaluate information also fall within this category. Thirdly, the term *strategic skills* includes the basic readiness to search proactively for information, the attitude of taking decisions based on available information and the continuous scanning of the environment for information that is relevant to work or personal life. This classification was further developed by Alexander van Deursen and Jan van Dijk (2011) who subdivided the structural skills into formal Internet skills (skills of navigation and orientation) and information Internet skills (skills to fulfil their information needs). An important contribution of their work is the quantitative measurement of these types of skills based on performance tests of around 100 people. In the Netherlands, the level of operational and formal Internet skills was found to be quite high, while Van Deursen and Van Dijk (2011) concluded that the level of information and strategic Internet skills was 'questionable'.

By distinguishing between different types of skills they were also able to show that some groups perform better on basic skills while other groups stand out with more advanced skills. In general, highly educated people turned out to be more skilled than low educated people, while young people excel mainly in basic and formal skills with their information skills leaving room for improvement. This latter finding corroborates messages from teachers who complain that young people's capacity to adequately handle information

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is quite poor. The Joint Information Systems Committee (2008: 12) concluded that young people have a poor understanding of their information needs, find it difficult to develop effective search strategies and spent little time on evaluating information, either for relevance, accuracy or authority. Having access does not guarantee the comprehension of content. Young people thus show considerable *hands-on* experience which should not be confused with *heads-on* interpretation.

The difference in competencies illustrates the relevance of treating skills as a multifaceted concept. Given this complexity it is no surprise that different names have been presented for various forms of literacy: digital literacy, information literacy and visual literacy. Some aspects of literacy are also relevant for using media other than digital. Steyaert (2000) already noted that the issue of information skills is not restricted to digital media, thereby blurring the difference between informacy and literacy. The recent convergence of media platforms also makes it less relevant to distinguish skills for separate media. For integrating various kinds of skills useful for different platforms the concept of media literacy seemed more appropriate. Sonia Livingstone (2003) defined media literacy as the ability to access, analyse, evaluate and create messages across a variety of contexts. This four-component model has the advantage of applying equally well to print, broadcasting and the internet. Many other definitions have been given; most of them are not restricted to skills but refer to a combination of skills, knowledge and attitude (e.g. Livingstone, 2009).

There is growing consensus on the relevance of improving media literacy, however it is not yet clear what aspects of media literacy should first be developed and how. Being digitally literate thus not only refers to being able to understand digital information, but also to using digital information in a critical way and for one's own good, as well as being able and willing to participate in a digitalized society. Many different organizations are involved in activities that aim to achieve the goal of increasing media literacy. The educational system is often considered to be a primary actor for teaching more advanced skills. However, most curricula are tightly packed and it is hard to find sufficient room for a concept as broad as media literacy. In the labour market the search for the most suited policies to enhance e-skills also continues. The same holds for the best approaches to include all citizens by improving their digital skills or even broadening their media literacy.

## CONCLUSIONS AND DISCUSSION

Fifteen years of research on digital skills shows a history of growing complexity and increasing relevance for policy. Research has abandoned a simplistic binary conception of these skills and embraced approaches that treat differences in skills as a multifaceted spectrum. These approaches distinguish different types of skills and allow for variations on each dimension. There is continuing discussion on which types of skills should be distinguished and there are serious problems with the measurement of digital skills. Although performance tests are the most reliable method for a valid measurement,

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they require extensive tools and large time investment by the respondents. From a cost perspective this research needs to be restricted to small-scale experiments. However, investigating distributions in skills among a population and establishing the consequences of differences in skills require large-scale population research. This kind of research has to rely on self-reports (Sonck et al., 2012). These reports are obviously subject to over- and/or under-estimation. Validation of a set of questions for a survey to measure digital skills is still needed (see Van Deursen and Van Dijk, 2010 or Hargittai, 2005). The problems of classification and measurement, for obvious reasons, even increase when digital skills became part of a wider media literacy agenda.

A broader focus on the causes and consequences of digital skills enables us to move beyond techno-deterministic views on the impact of technology. The availability and characteristics of technology are not the only factors that influence who is acquiring what kind of skills and with what consequences. The acquisition of skills is embedded within a wider set of both online and offline factors. Modelling how these factors are related to each other is an ongoing task for research. In order to grasp the consequences of differences in skills it is important to distinguish between direct and indirect effects. Whether it concerns economic performance, employment opportunities, quality of life or social participation, all aspects of life will be directly influenced by digital skills as well as by other factors independent of skills, while some factors exert their influence via skills. This approach will result in a more balanced view on the impact of digital skills.

As the initial research on digital skills was tied up with a simplistic view of the digital divide it comes as no surprise that it coincided with equally elementary policy interventions. In the early years of internet penetration, governments supported a technology push. Policy was directed towards more computers and Internet connections in homes, schools, public facilities and workplaces, followed by training courses in basic digital skills. The broader contextualization of digital skills within a framework of media literacy contributes to questions on who should learn what and where. There is no hard standard on what a single individual should be able to do with media. This is dependent on needs, contexts and desired outcomes. The primary responsibility for acquiring digital skills lies with individuals themselves. However for improving individual and collective outcomes supportive policy can raise the skill level in information societies.



**References**

>Bandura, Albert (1986) *Social foundations of thought and action: a social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.
>Bourdieu, Pierre (1984) *Distinction, a Social Critique of the Judgment of Taste.* London/New York: Routledge & Kegan Paul.
>Carr, Nicholas (2010) *The shallows: How the Internet is Changing the Way We Think, Read and Remember.* London: Atlantic books.
>Coleman, James (1990) *Foundations of Social Theory.* Cambridge: The Belknap Press.
>De Haan, Jos (2003) IT and Social Inequality in the Netherlands, *IT and Society* 1 (4): 27-45.
>De Haan, Jos (2004) A Multifaceted Dynamic Model of the Digital Divide, *IT and Society* 1 (7): 66-88.

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>De Haan, Jos (2010) Late on the Curve: Causes and Consequences of Differences in Digital Skills, pp. 292-308 in Ferro, Enrico, Kumar Dwivedi, Yogesh, Gil-Garcia, Ramon and Williams, Michael (eds) *Handbook of Research on Overcoming Digital Divides: Constructing an Equitable and Competitive Information Society*. Hershey, PA: Information Science Reference.
>De Haan, Jos and Huysmans, Frank (2002) *Van huis uit digitaal; verwerving van digitale vaardigheden tussen thuismilieu en school*. The Hague: The Netherlands Institute for Social Research | SCP.
>De Haan, Jos and Rijken, Susanne (2002) The Digital Divide in the Netherlands: The Influence of Material, Cognitive and Social Resources on the Possession and Use of ICTs, *Electronic Journal of Communication*, 12 (1&2).
>Duimel, Marion (2007) *Verbinding maken: Senioren en Internet.* [Making Connections: Older People and Internet]. The Hague: The Netherlands Institute for Social Research | SCP.
Eurostat (2006) How Skilled are Europeans in Using Computers and the Internet? *Statistics in focus* 17/2006.
>Gunkel, David (2003) Second Thoughts: Toward a Critique of the Digital Divide, *New media & society* 5 (4): 499–522.
>Hargittai, Eszter (2002) Second Level Digital Divide: Differences in People's Online Skills. *First Monday* 7 (4).
>Hargittai, Eszter (2005) Survey Measures of Web-Oriented Digital Literacy, *Social Science Computer Review* 23 (3): 371–79.
>Jenkins, Henry (2006) *Convergence Culture. Where Old and New Media Collide*. New York: New York University Press.
>Joint Information Systems Committee (JISC) (2008). *Information Behaviour of the Researcher of the Future*, http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf (07.08.2012).
>Katz, Elihu, Blumler, Jay and Gurevitch, Michael (1973) Uses and Gratifications Theory, *Public Opinion Quarterly* 37 (4): 509-523.
>Kraut, Robert et al. (2002) Internet Paradox Revisited, *Journal of Social Issues* 58 (1): 49-74.
>Kraut, Robert et al. (1998) Internet Paradox: A Social Technology that Reduces Social Involvement and Well-Being? *American Psychologist* 53 (9): 1017-1031.
>LaRose, Robert and Eastin, Matthew (2004) A Social Cognitive Theory of Internet Uses and Gratifications: Toward a New Model of Media Attendance*, Journal of Broadcasting and Electronic Media* 48 (3): 258-377.
>Livingstone, Sonia (2003) *The Changing Nature and Uses of Media Literacy*, http://www2.lse.ac.uk/media@lse/research/mediaWorkingPapers/pdf/EWP04.pdf (07.08.2012).
>Livingstone, Sonia (2009) *Children and the Internet. Great Expectations, Challenging Realities*. Cambridge: Polity Press.
>Livingstone, Sonia, Haddon, Leslie and Görzig, Anke (2012) *Children, Risk and Safety Online: Research and Policy Challenges in Comparative Perspective*. Bristol: Polity Press.
>Martin, Steve (2003) Is the Digital Divide Really Closing? A Critique of Inequality Measurement in a Nation Online. *IT and Society* 1 (4): 1-13.
>NTIA (1998) *Falling Through the Net II: New Data on the Digital Divide.* http://www.ntia.doc.gov/ Washington: US Department of Commerce.
>NTIA (1999) *Falling Through the Net: Defining the Digital Divide, a Report on the Telecommunications and Information Technology Gap in America.* http://www.ntia.doc.gov/ Washington: US Department of Commerce.
>OECD (1997) *Literacy Skills for the Knowledge Society: Further Results from the International Adult Literacy Survey*. Paris: Organisation for Economic Co-operation and Development.
>Prensky, Marc (2001) Digital Natives, Digital Immigrants, *On The Horizon – The Strategic Planning Resource for Education Professionals* 9 (5): 1–6.
>Robinson, John, Dimaggio, Paul, and Hargittai, Eszter (2003) New Social Survey Perspectives on the Digital Divide, *IT and Society* 1 (5): 1-22.
>Rogers, Everett (1995) *Diffusion of Innovations*. Fourth Edition. New York: The Free Press.

IZVORNI ZNANSTVENI RAD / UDK 316.774:8, 004:37 / PRIMLJENO: 09.08.2012.

>Ruggiero, Thomas (2000) Uses and Gratifications Theory in the 21st Century, *Mass Communication & Society* 3 (1): 3-37.
>Steijn, Bram and Tijdens, Kea (2007) The Use of ICT in the Workplace: Opening the Black Box, pp. 208-221 in Anderson, Ben et al. (eds) *Information and Communications Technologies in Society: E-Living in a Digital Europe*. London: Routledge.
>Sonck, Nathalie, Els Kuiper and Jos de Haan (2012) Digital Skills in the Context of Media Literacy, pp. 87-98 in Livingstone, Sonia, Haddon, Leslie and Görzig, Anke, *Children, Risk and Safety Online: Research and Policy Challenges in Comparative Perspective*. Bristol: Polity Press.
>Steyaert, Jan (2000) *Digitale vaardigheden; geletterdheid in de informatiesamenleving.* Den Haag: Rathenau Instituut.
>Tapscott, Don (1998) *Growing up Digital: The Rise of the Net Generation*. New York: Mc Graw-Hill.
>Van Damme, Maike et al. (2005) *Verzonken Technologie; ICT en de Arbeidsmarkt* [Domesticated Technology: ICT and the Labour Market]. The Hague: The Netherlands Institute for Social Research | SCP.
>Van Deursen, Alexander and van Dijk, Jan (2009) Improving Digital Skills for the Use of Online Public Information and Services, *Government Information Quarterly* 26 (2): 333-340.
>Van Deursen, Alexander and van Dijk, Jan (2010) Measuring Internet Skills, *International Journal of Human-Computer Interaction* 26 (10): 891–916.
>Van Deursen, Alexander and van Dijk, Jan (2011) Internet Skills and the Digital Divide, *New Media & Society* 13 (6): 893-909.
>Van Dijk, Jan and Hacker, Ken (2002) The Digital Divide: As a Complex and Dynamic Phenomenon, *Information Society* (19): 315-326.
>Van Ingen, Erik, De Haan, Jos and Duimel, Marion (2007) *Achterstand en afstand; digitale vaardigheden van ouderen, laagopgeleiden, inactieven en allochtonen* [Disadvantage and Distance: Digital Skills of the Low-Educated, the Elderly, Ethnic Minorities and the Economically Inactive]. The Hague: The Netherlands Institute for Social Research | SCP.
>Weda, Jarst, Theeuwes, Jules and De Nooij, Michiel (2008) *Maatschappelijke baten van eVaardigheden: een verkenning* [Social Benefits of eSkills: An Exploration]. Amsterdam: SEO Economisch Onderzoek.
>Wellman, Barry et al. (2001) Does the Internet Increase, Decrease or Supplement Social Capital? Social Network, Participation and Community Commitment, *American Behavioral Scientist* (45): 437-456.

IZVORNI ZNANSTVENI RAD / UDK 316.774:8, 004:37 / PRIMLJENO: 09.08.2012.

# DIGITALNE VJEŠTINE: KRITIČKO RAZMATRANJE ISTRAŽIVANJA I POLITIKA

**Jos de Haan :: Nathalie Sonck**

**SAŽETAK** *U ovom radu autori prikazuju istraživanja o digitalnim vještinama, rezultate tih istraživanja te primjenu rezultata istraživanja u stvaranju politike u posljednjih petnaest godina. Tijekom vremena promijenile su se teme rasprava o digitalnim vještinama. Sadašnja povezanost s medijskom pismenošću veže digitalne vještine sa širim temama koje se tiču građanstva te poziva na proširenu istraživačku agendu koja uključuje unapređenje vještina, znanja o medijskim sustavima i stavove prema medijima. To utječe i na politike koje se tiču obrazovanja, rada i socijalnog uključivanja. Autori razmatraju i do kojega stupnja istraživanja mogu pomoći u raspravama o tim politikama. Rasprava je organizirana u četiri dijela, pri čemu se prati kronologija razvitka istraživanja digitalnih vještina. Autori prvo prikazuju deskriptivno istraživanje digitalnih vještina u kontekstu digitalne podjele. Drugi i treći dio slijede teoretski zaokret u istraživačkoj agendi s fokusom na uzroke i posljedice razlika u posjedovanju digitalnih vještina. U četvrtom dijelu autori raspravljaju o suvremenom razvoju, odnosno o uključivanju digitalnih vještina u šire područje istraživačke agende o medijskoj pismenosti.*

**KLJUČNE RIJEČI**

DIGITALNE VJEŠTINE, POLITIKA, MEDIJSKA PISMENOST, ISTRAŽIVAČKA AGENDA

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