

DIGITAL LITERACY DEVELOPMENT IN A CONTEXT OF THE OVERLAPPING OF ONLINE AND OFFLINE SOCIABILITY

Martina PORUBČINOVÁ

ABSTRACT

This paper examines intergenerational and socio-economic differentiation in the level of digital information literacy in specific age groups in Slovakia. Using statistical methods, we verify significance of the differences in the level of digital competencies in relation to work position and in relation to age. In this work we point to age-related differences in the structure of digital literacy. Based on empirical research realized on a sample of employment agencies' workers we point to significant differences in the assessment of the importance of digital competencies for blue and white-collar workers that reflect the impact of the offline social structure on digital literacy development.

KEY WORDS:

Information literacy, digital literacy, digital competencies, digital divide, generational divide, work position

INTRODUCTION

The intergenerational differences in the field of work competencies, particularly in the field of digital competencies has become recently a broadly discussed topic in a research community. Based on general experience, as well as the research focus of social scientists at present, the emergence of the Internet can be considered as one of key features defining and determining the way of life at the beginning of the millennium.

In this work we focused on the development of digital competencies in the context of the information society development. Creating the Internet, a new way of communication that also transforms ways of learning, working, doing business, has become a new gift for a present time. All of us, the younger as well as the older, have been gradually facing the possibilities and challenges offered by the internet. As we have started to recognize its advantages, requirements and risks associated with it, the process of socialization into the online world has become a challenge for all of us, regardless of the age or education.

Social analysis does not avoid this phenomenon. On the contrary, a significant part of the authors identifies a current society today as a part of Internet era in the context of the Information society (Tuukkanen, 2014, Webster 2002, Castells, 2004, Lévy, 2000). The information society, in which technical innovations are developed in relation to the values, preferences, abilities, and talents of the individuals, creates requirements for the development of the competencies of a new kind. So, the specific period of socialization of different social groups into the digital world, of adapting to new technologies and acquiring new competencies, is taking place in society now.

Specific requirements of the informational type of society include not only formal qualifications but also the set of key competences, which, according to the EU, should be strategically developed. Strategic competencies of today include also digital competencies. According to the experts, the area of digital competence represents not only part of the area of key informal competencies, but also a set of necessary work qualifications (Castells,

2004). While the content of the most desirable competencies can change, expand and enrich over the course of life, digital competencies as such slowly become a firm and dynamic part of human capital, due to the overlapping of online and offline sociability (Wooglar, 2004).

It is interesting to watch how different social groups are going through and entering the digital world. Regarding the different assumptions of digital socialization, are there significant differences among the different groups when entering the digital world? How does this process evolve, how do specific groups cope with it? What factors are involved in the development of digital competences?

As the identification of the Internet generation of children has opened a space for the exploration of a digital participation of children for whom the digital world has been always present as the natural environment in their lives (Herring, 2008, Prensky, 2001), it is not surprising that the digital participation was perceived through the lens of different patterns of behavior, experiences and attitudes to the digital world in an intergenerational comparison.

The different characters of the participation of children and parents in the digital environment are reflected in the concept of „*digital generational divide* “. The authors emphasized the age-related differences in the digital skills and attitudes to the digital environment that determine an extent and forms of digital participation. The digital generational divide has been defined for example in the form of a specific „*digital language of youth*“ (Prensky, 2001, p.2), or by the fact that „*the internet generation socializes more online, downloads more entertainment media and consults the Web for a wider range of purposes than do present adults or young people of the previous generation*“ (Herring, 2008, p. 71).

Different features of children and parents' participation in the digital environment have found their reflection in the context of digital generational divide as a specific kind of digital divide. In this context, the authors pointed to age-related differences in digital skills, attitudes towards digital participation, and patterns of digital competence use in practice.

Our interest focuses on the structure of digital literacy and the significance of the differences in the various areas of digital activity in the intergenerational and sociodemographic comparison, based on the data from international studies and from representative surveys in Slovakia. Demographic data are used as the basis for identifying key age groups for intergenerational comparison of digital habitus.

1. THE INTERGENERATIONAL COMPARISON OF INFORMATION LITERACY

When comparing digital habitus of children and parents as special age groups in the field of digital literacy in Slovakia, it was necessary to define the age of members of the examined groups: children, who are the first members of the Internet generation of children and their parents. Who exactly are, based on statistical and demographic findings, the members of the Internet generation and how can the generation of their parents be defined in terms of age?

As the origins of the introduction of the internet in Slovakia date back to the second half of the 90s and computer rooms were set up in schools by 2004, the period of the second half of the 90s can be defined as the beginning of a formation of the Internet generation of children in Slovakia, the first children born into the digital world.

According to the demographic findings, it is possible to determine the average age of parents of the first members of the Internet generation of children in Slovakia (born around 2000 in Slovakia), currently in 2016. If in the 90s, the average age of women at a childbirth was 26 years (ranging from 23 years to 31 years and the first to fourth order), and the average age of father was 28,6 years, the range of the age is 42-51 years (parents of the first members of

the internet generation are born in 1965-1974, average age of the parents of the period can be defined as 49-51 years (Megyesiová, Bačo, Ponišť, 2015, Böhmer, Luha, 2015).

What is the level of digital literacy in both examined age groups – in a group of the first members of the Internet generation and in a group of their parents in Slovakia?

Digital literacy is being measured by different indicators in different approaches, as for example by performance in digital and other literacy tests (PIAAC study) or by subjective self-assessment by respondents (Digital Slovakia). According to PIAAC study, focused on qualitative assessment of the different competences, including digital competences and the ability to use them in practice, digital competencies is broadly defined as “the interest, attitude, and ability of individuals to appropriately use digital technology and communication tools” (PIAAC, 2013, p.12). Competencies as goal setting and monitoring process, planning, accessing information and selecting and organizing information in web environment, email environment and multiple environment, are examined in relation to problem solving competency in technology-rich environment and were measured in paper test (or computer version) tasks.

In a study Digital literacy in Slovakia (Veštic, 2015a), digital competencies are measured by the self-assessments of respondents in twenty-eight digital competencies that can be divided into four main groups, such as the ability to work with hardware, the ability to work with software, the ability to manage the information in virtual space and the ability to communicate through information and communication technologies. According to the study, digital literacy of the age group is defined as a share of digitally literate within the age group. The analysis of digital literacy is based on the self-assessments of respondents in twenty-eight digital competencies and digitally literate person is identified as a person who can achieve at least one of the twenty-eight e-skills studied. Digital literacy of the age groups that include parents of the Internet generation (these are groups of 35-44 years or 45-54 years), reaches 88%, measured as a percentage of digitally literate within the population.

The digital generation divide can be confirmed at 12% level in the field of digital literacy for the Internet generation of the children and their parents, as the achieved level of digital literacy of parents that reached 88% of digitally literate lags behind the share of digitally literate in a group of the first members of the Internet generation in Slovakia that reached 100% in terms of self-assessments of respondents.

To follow the development of digital intergenerational divide, we focused on a comparison of digital literacy of the members of the Internet generation and the parenting generation that is currently being formed.

What is the level of the digital literacy of those who are currently in the average age at childbearing? As in 2011, the average age of mothers at childbirth rose to 28,3 years (27,7 in the first order to the fourth order of 31,6) and the average age of fathers at the mother's birth of child was 32,14 years (Böhmer, Luha, 2015), the range 28,3-32 years defines the age group that is currently of the average age at childbearing. In the age group of the average age at childbearing, the level of digital literacy increased in 2013 by 3% compared to 2011 from 93% to 96%, making the group close to the strongest age groups in terms of level of digital literacy.

So, we can observe the digital literacy of new parental generation approaching the level of digital literacy of the age group of 14-17. If in 2011 a group of 14 to 24 years old could be marked as the age group with the highest levels of digital literacy (98%), in 2013 the group of 14-34 years old (in which the level of digital literacy in a group of 14-17 years old achieves of 100% and in the group 18-34 years old 97%) is one of the groups with the strongest digital literacy.

Based on these findings, the generation that is currently in the average age at childbearing can be describe as „the Internet generation of parents”, that is able to accompany their children without the digital divide in the field of digital literacy. If we refer to children, who are surrounded by the digital world from the birth, as the Internet generation of children, we can use the term “the Internet generation of parents” to refer to those who around 2015 in the average age of 28-32 years realize their reproductive intentions in Slovakia. These parents born in the 80s are the first generation able to accompany their children of 10-14 years entering the digital world as the first generation of parents without the digital divide in the field of digital literacy.

This assumption is valid at an unchanged level of digital literacy in the groups studied, but even if there was an increase digital literacy among 41-50 years old, this group cannot be marked as Internet parents’ generation as an access to their children (aged 10-14 years) to digital space has already taken place.

As the children may enter the digital world according to some estimates at the age of 5-8 years, and some even earlier, parents can begin to accompany their children in the digital space earlier as in a case of 10-14 years old children (Livingston, 2011).

To verify the signs of digital generational divide, we focused on a comparison of the self-assessment in each digital competency within age groups. By Velšic (2016), digital literacy has been examined in four key groups of competencies such as work with hardware, software, work with information and services and communication competencies. Digital competencies of the component work with information and services included competencies: searching for the information and services on the internet, registration of the access to the information on the internet, searching for the information in LAN, searching for the information in databases and archives, filling in forms and documents, download and upload of data on the internet, internet-banking and online shopping competencies are included. Based on a comparison of digital competencies in the field of in groups the internet generation of aged 14-17 years (Gen1), the digital generation of parents (25-34) who currently including parents at the average age of childbearing without the digital gap in the field of general digital literacy (Gen2) and the parents of the members of internet generation (45-54) (Gen3) we tried to verify the inter-generational differences in each digital competency, according to the self-assessments of the members of the tested groups.

tab. 1: Indexes of the digital competencies in the field of the work with information and services by the examined age groups (Digital Slovakia, 2016)

Age	Searching for the information and services on the internet	Registration of the access to the information and services on the internet	Internet-banking	Searching for the information in databases and archives	searching for the information in LAN	filling in forms and documents	Download and upload of the information	Online shopping
14-17	0,90	0,90	0,27	0,60	0,43	0,55	0,74	0,52
25-34	0,85	0,79	0,70	0,53	0,57	0,72	0,70	0,76
45-54	0,62	0,62	0,44	0,32	0,25	0,40	0,37	0,44

Based on the self-assessment of respondents, the level of digital competence in the field of information and services is highest in the case of the Internet generation of children in all cases, except for *the Internet shopping and internet banking competencies*, with the highest level being reached by members of the 35-44 age group (**tab. 1**).

The lowest value of self-assessment in all observed the competences was achieved by a group of 45-54 years old who represent the parents of the internet generation of children, except for the Internet banking. In the case of internet-banking, the lowest level of self-assessment of competence was achieved by a group of 14-17 years old.

To verify statistically significant differences in the level of information literacy competencies between tested age groups, we applied Mann Whitney U test to test the age-related differences in the level of information and other digital competencies (**tab. 2**).

tab. 2: Statistical significance of the differences in digital competencies between Gen 1, Gen 2 and 3 (significance level 0,05)

	Internet generation (Gen 1) aged 14-17	Internet generation of parents (Gen 2) Aged 25-34	Parents of the internet generation (Gen 3) Aged 45-54	Mann Whitney U test Gen 1 vs Gen 2	Mann Whitney U test Gen 1 vs Gen 3	Mann Whitney U test Gen 2 vs Gen 3
searching for the information in databases and archives	0.60	0.53	0.32	p=0,01208*	p=0,02034*	p=0.4009
internet banking	0.27	0.70	0.44	p=0.15386	p=0.01072*	p=0.65272
online shopping	0.52	0.76	0.44	p=0.56868	p=0.03*	p=0,40654
work with scanner	0.66	0.71	0.43	p=0.20054	p=0.0151*	p=0.61006
install the facilities to PC	0.51	0.64	0.30	p=0.15854	p=0.0251*	p=0.74896
copying and transmitting data in LAN	0.51	0.57	0.38	p=0.04136*	p=0.01046*	p=0.8493
searching for the data in LAN	0.43	0.57	0.25	p=0.04136*	p=00734*	p=0.74864

In the field of information literacy, statistically significant differences between the Internet generation of children and older parenting generations have been confirmed in the case of *searching for the information in databases and archives*. On the contrary, in the case of the competency of *internet-banking*, the youngest age group of 14-17 years old achieved a significantly lower self-assessment compared to members of older age groups. As in the case of *Internet banking*, even in the case of *Internet shopping*, the highest index of self-evaluation was achieved by the Internet generation group of parents (25-34 years old). The group of parents of the Internet generation of children (45-54 years old) achieved a significantly lower level of self-assessment compared to 14-17 years old. The significance of differences between the 14-17 age group and 25-34 years old, or between the two older age

groups, was not confirmed.

Using statistical methods, we verified differences in the level of digital competence in the other three groups of digital literacy competencies (work with hardware, software, information literacy and communication). According to the findings of differences in the level of digital competencies: Gen 1 reached significantly higher level in one competency to compare to Gen 2 (*searching in databases and archives*), but in case of six competencies to compare Gen 3 (*searching for the information in databases and archives, work with scanner, install facilities to PC, searching the data in LAN and copying and transmitting data in LAN and online-shopping*).

Gen 2 achieved a significantly higher level of self-assessment in *competency copying and transmitting the data in LAN and in copying and transmitting the data in LAN*.

Higher level of literacy skills in the 25-44 age group compared to the 45-54 age group as well as the intergenerational comparison of the overall level of digital literacy suggest the emergence of the first internet generation of parents (Gen 2) that can accompany their children in digital world without significant differences in digital competencies.

Also, the significantly lower level of internet banking in the youngest age group and the highest level of online shopping ability at 25-44 years old may indicate age-related differences in information skills needs. Lower levels of competencies searching and copying data in LAN in Gen 1 to compare Gen 2 could suggest the significance of the practice use (or practical applicability) in developing of digital competencies in the context of the overlapping of the online and offline socialization.

Statistically confirmed *age-related differences in the structure of information literacy* within the examined age groups can be explained in the context of the overlapping of the online and offline sociability - higher level of self-assessment of digital competencies in older age groups is likely to reflect the different practical applicability of these competencies in practice and partly different forms of (online and offline) activities in relation to the age.

Could these findings suggest that the development of the digital intergenerational divide will not develop independently from generic distribution as such, assuming a further narrowing of differences in the level of digital literacy of the age groups?

The overlapping of the online and online sociability has been stressed by several authors, f. e. in the context of online community formation. Also, the empirical findings in the level of digital literacy in relation to the work position also foster the assumption, that the offline social structure (structure of work position) relates to the level of digital competencies of the workers (Vešić,2015).

2. DIGITAL COMPETENCIES OF THE WHITE AND BLUE-COLLAR WORKERS – SOCIAL STRUCTURE AS A BASIS OF THE DEVELOPMENT OF DIGITAL LITERACY

In the next part, the empirical findings reflect the findings on the level of digital competencies in relation to different work positions on the labor market.

In a study realized by a questionnaire method on a sample of the workers of 96 recruitment agencies (Porubčinová, 2015), we examined the significance of competencies specific for white collar workers and blue-collar workers, verifying the thesis of different types of the work culture specific for white and blue-collar workers by Manuel Castells (2004). The employers of the recruitment agencies were asked to assess the importance of the work competencies including digital competencies of persons in the situation of applying for a job. According to the findings of the assessment of recruitment agency workers of our sample, significance of

information society competencies was explored for the workers in blue and white-collar positions in examined set of competencies specific for the information society. The results confirmed the existence of different types of the work culture in the context of information society development as the significance of the competencies specific for the information society, including digital competencies, were significantly higher for white collar workers.

The empirical results based on the assessments of recruitment agencies workers are relevant for persons involved in the system of employment services (persons applying for a job and employed persons interested in applying for a new job). Empirical data collecting was realized by online questionnaire enquiry. Online questionnaire was sent to 865 email addresses of recruitment agencies collected in cooperation with ÚPSVAR (the managing board of system of employment services in Slovakia). The sample was created by 96 recruitment organizations (57 employment agencies from public sector, 14 agencies of contemporary employment, 24 employment agencies for recruitment for compensation and 1 agency for supported employment) that replied the questionnaires. Respondents (the employers of the recruitment agencies) were asked to assess the importance of the work competencies of job applicants and employed persons searching new job on the labor market in different work positions.

Statistic methods of Wilcoxon nonparametric test was used to clarify the significance of differences in the esteems of work competencies exploitation realized by employment agencies workers of the sample. Empirical results based on assessment of recruitment agencies workers are relevant for persons involved in the system of employment services (persons applying for a job and employed persons interested in applying for a new job).

Significance of the work competencies was examined in three sets of work competencies: information-society (IS) competencies, key (K8) competencies and universal competencies (UC). The first group of competencies was identified as specific for the work culture of information society (Himanen, 2004, Webster, 2002, Lévy, 2000, Castells, 2002) and include creativity, flexibility, digital competencies, analytic competencies and abilities to process information. The second group is one of key competencies relevant in the context of employability on the labor market and include communication skills, communication in foreign languages, mathematic skills, digital competencies, ability to learn, social competencies, leadership and cultural sensitivity. The third group covers universal competencies relevant in sector of economic activity (Belz-Siegrist, 2001), such as ability to learn, responsibility, independence and efficiency. The latter group was used as a benchmark of non-specific competencies.

The main research questions were focused on the significance of specific non-formal competencies on the labor market:

- What is the significance of the examined work competencies in the groups of white and blue-collar workers in the situation of applying for a job according the assessment of employers of the recruitment agencies?
- Is there a significant difference between the assessments of importance of examined competencies in relation to type of the work qualification (blue and white-collar workers)?
- Are the competencies defined as specific for the information society (IS, K8) assessed as more important in the situation for applying for a job to compare the set of universal work competencies?

2.1. THE SIGNIFICANCE OF WORK COMPETENCIES OF WHITE AND BLUE-COLLAR WORKERS IN THE SYSTEM OF EMPLOYMENT SERVICE

According to the findings of the assessment of recruitment agency workers of our sample, significance of information society competencies was explored for the workers in blue and white-collar positions in examined set of competencies (IS, K8, UC). *The results confirmed the existence of different types of the work culture in the context of information society development* as the significance of the competencies specific for the information society work culture (IS) and the significance of the key competencies (K8) were significantly higher for white collar workers

Within the competencies specific for the information society (IS, K8), competencies of flexibility and ability to process information (8,34) and creative capacity (8,30) were marked as the most important informal competencies of white collar workers, followed by assessment of importance of analytic skills (7,08) and digital competencies (7,07). As with white collars, but at the statistic significantly lower level, flexibility was assessed as the most important competency (6,7) of blue-collar workers, followed by ability to process information (5,40), creative capacity (4,04) and digital and analytic skills (3,19) (**tab. 3**).

tab. 3 *The assessment of the importance of work competencies IS and key competencies (K8) for blue and white collars and significance of differences.*

Respondents were asked to mark the significance of specific competencies on the scale from 10 points answering the question *According your opinion, how important are following personal competencies for job applicants and employed persons searching new job?*

	Work Competencies specific for information society	White collar workers (mean)	Blue collar workers (mean)	Wilcoxon (significance level 0,05)
Competencies IS	Creative capacity	8,30	4,07	0,00
	Flexibility	8,34	6,7	0,03
	Ability to process information	8,34	5,40	0,00
	Digital competencies	7,07	3,19	0,00
	Analytic skills	7,08	3,19	0,00
Competencies K8	Communication in mother language	8,96	5,58	0,00
	Communication in foreign languages	8,61	5,73	0,001
	Mathematic competence and basic competence in science and technology	6,19	3,58	0,00
	Digital competencies	7,08	3,19	0,00
	Social and civic competences	6,10	3,03	0,00
	Learning to learn	8,10	7,04	0,053
	Sense of initiative and entrepreneurship	7,38	3,61	0,00
	Cultural awareness and expression	6,30	3,47	0,00

The index of the significance of competencies IS, defined by the mean of significance of competencies IS to express the aggregate value of the significance of work competencies, was confirmed on a level 7,82 for white-collar workers to compare 4,51 for blue-collar workers. The importance of competencies IS achieved significantly higher level for white collar workers in all items. These findings support the thesis of the persistence of differences in the information society work culture of white and blue and collar workers, confirming the

thesis two different types of the work (generic-labor and self-programmable labor) of Manuel Castells (2002) in the information society.

The explored differences in the importance of the competencies defined as key competencies (K8) also support thesis of differences of work competencies specific for different types of work qualification. There was significantly higher degree of importance of all examined items for white collars except competency learning to learn, which was assessed as the only key competency not significantly different for white and blue collars (8,10 white collars and 7,04 blue collars) (Wilcoxon 0,053). The index of key competencies (K8) was created based on calculation of the mean of significance of K8 competencies, and confirmed on a level 4,40 for blue collar workers and 7,35 for white collar workers. According the assessment of significant importance of explored key competencies, competencies of communication in mother and foreign languages and ability to learn were marked as the most important key competencies in the process of applying for a job in the system of employment service both for white and blue collars. The next, the significance of digital competencies was assessed on the level 7,07 for white collar workers, but for blue collar workers it was assessed on the level below the average (3,19).

The significance of the competency learning to learn is reflected in a fact that the latter was included into the set of competencies specific for IS (based on the authors on the information society work culture) and into the set of competencies defined as key on the labor market. As the empirical findings didn't confirm significant differences on the significance of competency ability to learn for white and blue-collar workers, along with the highest assessment of significance of flexibility for blue and white-collar workers, the development of information society working environment through the forming of requirements towards human capital development could be indicated.

Significantly higher level of the importance of digital competencies assessed for blue and white-collar positions reflect the relation between the development of digital literacy and the structure of social position on the labor market.

As regard digital literacy, as stated by Velšić (2010), different digital competencies and experiences in a situation of applying for a job are closely related to the demands of the labor market. We believe similarly (based on findings in age-related differences in the level of digital competencies, as well as the findings on the level of the importance of the digital literacy in a situation for applying for a job) that the structure of social positions relates to the different set of demands even in digital competencies, that are reflected in different level of digital competencies, in relation to the age and socio-economic factors (type of work).

Thus, significant differences in the importance of the digital skills in relation to the work position could be explained in the frame of the overlapping online and offline activities, by the differences in requirements that emerge within a social structure.

SUMMARY

In this work we focused on the development of digital competencies in the context of the information society development. As we started to face possibilities and challenges associated with digital participation, our attention has focused on process of socialization into the online world of all of us, regardless of the age or education.

Digital socialization creates the challenges for different generations, for all of us. Differences in online activities including digital competencies are differentiated in relation to the age (age

related differences in the structure of digital information literacy) but also in relation to social structure (type of work, work position).

With the development of digital generational divide, we can suppose that it is not only age but also other social and demographic factors (work position, religion, family status) that affect the attitudes towards the digital world and online activities.

As digital participation affects us all, we can assume that the main challenges it brings will overcome the age limits, though with some differences in the development of digital competencies due to interdependent online and offline sociability. This can create a space for greater mutual understanding between generations in field of digital socialization, as the digital generational divide is gradually decreasing in field of digital literacy (digital generation of parents).

Regarding the findings on the development of specific digital competencies in relation to the age, we stress the age-related differences in the structure of digital literacy. Key findings of paper foster also the thesis of the overlapping of online and offline sociability.

- ❖ *The signs of the intergenerational digital divide in the field of digital literacy - disappearing for the raising generation of parents that is in the average reproductive age, currently 25 to 32 years to compare to the Internet generation of children in Slovakia*
- ❖ *The development of the digital generation parents (28-32) - without the digital divide to compare to the Internet generation of children (14-17) in a field of digital literacy*
- ❖ *Age-related differences in the structure of digital competencies due to overlapping of the online and offline sociability*
- ❖ *Significant differences in the level of the assessed importance of digital competencies in relation to different types of work positions*

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AUTHOR

Mgr. Martina Porubčinová, PhD.

Centrum spoločenských a psychologických vied SAV
Šancová 56
811 05 Bratislava
<http://www.prog.sav.sk/>
e-mail: progmpor@savba.sk