

RESEARCH STUDY OF TEACHERS' QUALIFICATION AND ATTITUDE TOWARDS THE FORMATION OF DIGITAL LITERACY OF PRESCHOOL AND PRIMARY SCHOOL PUPILS IN BULGARIA PILOT RESULTS

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ABSTRACT

The paper presents different aspects of digital literacy at early ages. Based on theoretical research and trends observed, some diagnostic tests of the level of digital literacy are proposed. Some results of survey studies that identify digital literacy and teachers' attitude to technologies usage are presented and analysed.

The study observes preschool and primary school teachers. The authors study the way the educational institutions (kindergarten and primary school) affect the formation of digital skills at early age. Important accent of the research is the teachers' attitude to technologies' use into the everyday teaching and learning process. Teachers with different pedagogical experience were surveyed.

Keywords: ECRAL analysis, control of emotions, emotional psycho-types, attention concentration, attention de-concentration, language acquisition

Introduction

The new generations also known as „digital natives” (Prensky, 2001), grow and develop in an environment that changes their way of perception and thinking. This fact requires new changes in the whole educational system. Researchers from all over the world view the issue from different perspectives. Regardless of the different views about the changes in this generation, it is a fact that children use information technology from an early age and are active Internet users at 8 years old (Zero to Eight: Children’s Media Use in America, 2013).

The attitudes of children show that they are ready to study through digital technologies, all the more so that they are their natural environment and naturally will perceive the presentation of the material with the help of the new technologies (Parijkova, 2017).

The new social environment implies and requires the formation of digital skills. They are defined as a set of skills that enable effective information management and the proper use of ICT (Wallis, 2006). The participation of children and young people online requires the skills they need to be fully involved in society. They learn them as part of their lives just like a language - without realizing that they do it (Andersen, 2002). Digital technologies are the tools through which the growing generation learns and experiences the world. These are the skills of the 21st century, which are a guarantee for future success. The qualitative education, which prepares the future citizens, must include a compulsory component - digital competence.

Digital competence is a complex notion. According to the Digital Competence Framework for Citizens in Europe (DIGCOMP) (DIGCOMP, 2016) (Ferrar, 2013), digital competence is determined in terms of five criteria: information processing, communication and collaboration, digital content creation, safety, and problem solving. DIGCOMP was at the heart of developing the EU-wide Digital Economy and Society Index, which can be used as an indicator of the digital skills of a country’s citizens. According to EC data, Bulgaria is almost at the bottom of the list of EU countries with less than 40% individuals with basic digital skills (Digital Single Market, n.d.).

Despite the progress achieved, there is still drastically gap between Bulgaria and EU in the process of introducing information and communication technology (ICT) in education. There are huge differences also in the level of schools, teachers and infrastructure in different towns in Bulgaria. The budget for ICT in education is formed apart from the state and co-financed of schools, also from national operational programs. The hard measures – infrastructure, basic

software, wireless networks will be funded by the national budget. Support for the soft measures – educational content, training, Ministry of Education and Science will try to integrate into various operational programs (Parijkova, 2017).

The term and the concept of digital competence are still new and insufficiently studied and described. The fact that technologies lie at the basis of digital competence makes it even harder to identify precise criteria to define them. Information technologies change extremely rapidly and hence follows a change of practices and necessary competences. Digital competence is defined as a dynamic term. Several terms are used to describe the skills of working with digital technologies: ICT skills, technological skills, 21st century skills, information literacy, digital literacy, and digital skills. Digital literacy changes with the development of technology.

In today's society, digital competence is part of the key ones. It is a main factor in the development of a digital culture and the information society (Council, 2018). The formation of digital competence is based on certain knowledge and skills that are structured in a specific hierarchy (Deursen, 2010), (Van Deursen. A. & van Dijk. J., 2009), (Dijk, 2005):

- Operational skills - a set of basic skills for efficient use of technology and media;
- Formal skills - using a specific technology and media structure - working with menus and hyperlinks;
- Information skills - related to searching and finding information, making a critical assessment;
- Strategic skills - aimed at achieving a certain goal.

The development of digital competency is a permanent process that begins with instrumental skills and focuses on productive and strategic personal competence (Ala-Mutka, 2011). As a result of conducted research, digital media deficits have been brought out, which have to be overcome through targeted and systemic activity (Kanchev. P, E. Georgiev, M. Haydinyak, G. Apostolov., 2016):

- Low motivation to meet educational needs through the Internet.
- Insufficient skills to assess online information.
- Passive interaction on the Internet, which leads to passivity in the creation and sharing of information and online content.

- Missed opportunities for online collaboration and civic activity.
- Insufficient skills to provide online child safety.

Research objectives

This study is part of bigger research on digital competencies and media education at pre-school and primary school age. It includes five modules with objectives as follows:

- To study (theoretically) and explore (experimentally) the conditions, methods, and approaches that need to be applied for the propaedeutic acquisition and formation of digital competences by pre-school and primary school age children; to establish the level and content aspect of digital culture.
- To study the effect of media and ICT on the transformation of modern family, its values and their influence on the personal development of the generations in it, and social integration as a whole.
- To study the connection between reading and digital literacy of children (up to 11 years old).
- To study the formation of child's personality in the modern sociocultural situation through the achievements of media education on national and international scale.
- To develop a web-based platform serving the online research laboratory.

The paper is focusing on the first module – the study of formation of digital competences at pre-school and primary school age. The goal of the concrete study is:

- To establish the attitudes of teachers to the formation of digital literacy of pupils.
- To define adequate methods, approaches and instruments to form digital skills to pupils from preschool and primary school.
- To establish the level of digital competence of teachers of Pre-school and Primary school level.

Exploratory design

To explore the level of digital literacy of teachers and the process of ICT integration of teaching and learning process, two surveys were developed. The first one put the accent on the level of teachers' digital skills, while the second one focuses on the methods and practices of ICT integration into teaching and learning process.

The first survey consists in 11 questions. The first part of questions studies the teachers' level of understanding some terms from the field of information technologies and computer science (digital literacy, cyberaddiction, internet safety, storing, processing and accessing information). The second part of questions serves as self-estimation of teacher's digital skills level – in general and with respect of concrete skills for working with graphics, text, multimedia and so on.

The second survey consists in 13 questions that structure the content of the study into the following modules:

- Frequency of using of ICT in teaching and learning process.
- Kinds of technologies used.
- Methods and tools used in pedagogy work.
- Pross and cons of ICT integration into teaching and learning process

Methods and Results

The study is nationwide. It is planned to be realized with 1000 teaches from different towns and schools. Factors under investigations are the size of the town or school and the ethnicity of students. The period of research is February – June 2018. The methodology of work includes one pilot research, correction of the survey's design and final full-volume research work.

The pilot research work was done with 100 preschool and primary school teachers from a big city. Under big city, according to the national parameters in Bulgarian, the authors accept a settlement of over 150,000 inhabitants. The results from the pilot research work outline some trends and additional problems to be study in future.

The level of the teachers' digital skills

The level of digital skills was measured in general and with respect of working with concrete technology – skills for working with graphical editor, with software for text processing, with presentation software, on Internet. The results are presented on Figure 1. According digital skills in general, one can see that almost half of the teachers estimates their skills on intermediate level. The skills most of the teachers determine on expert or advanced level are the skills for working on Internet. About 30% of teachers estimate their skills to work with graphics on basic level. Question of interest is whether these teachers could create some digital resources themselves. For preschool and primary school level the visualizations and animations are of great importance, and low level of digital skills for image editing leads to low quality of learning resources for this educational stage. Other question is whether such teachers should create theirs resources or they should be given an access to variety educational resources by the school management.

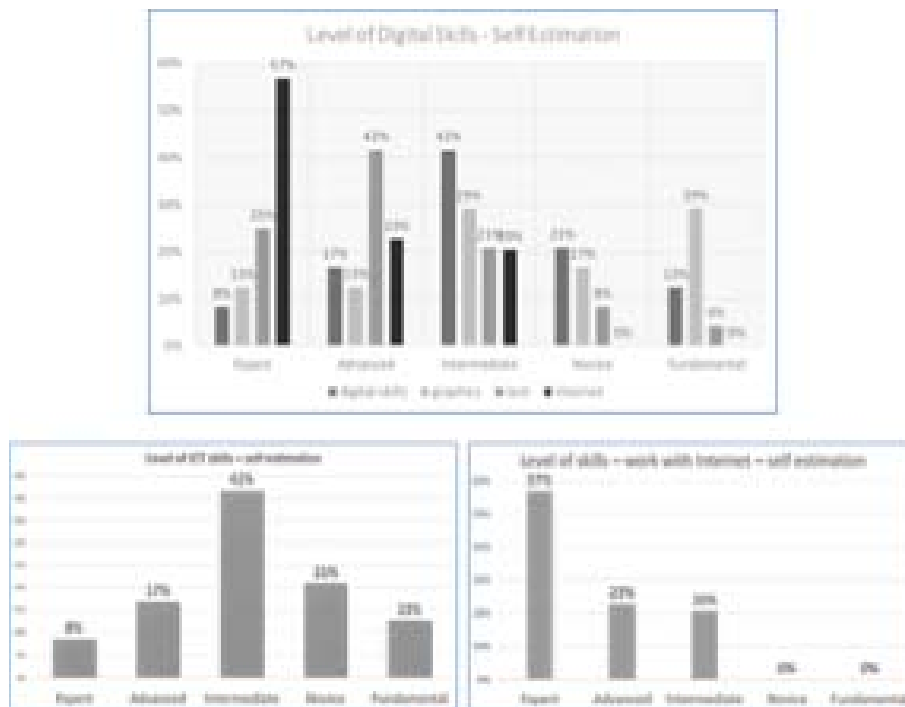


Figure. 1. Self-estimation of teachers’ digital skills

In direct dependence with the level of digital skills is the additional ICT qualification of the teachers. Results from the survey show that 63% of the teachers have not additional ICT qualification. Most of the teachers create some digital skills by self-learning or through sharing experience with colleagues.

The level of digital literacy of teachers corresponds to their knowledge for some terms and concepts from information technologies and computer science. For most of the teachers interviewed the digital literacy is almost equal to the ability to use computer and tablet. Individual teachers answer in different way to the question “What the term “digital literacy” means?": “the digital literacy means students to use software programs, that are appropriate for their age”; “skills to process with information and to protect your personal data online”; “the ability to integrate ICT into teaching and learning process at school”; “the knowledge to use terms like digital technologies, types of information, commands and programs”.

Some of the answers that teachers give to the question “What the term “cyberaddiction” means?” are as follows: “The constant need to be in cyberspace.”; “Dependence on the Internet”; “Spending too much time for games, both on the phone and on the computer”; “Need for permanent use of digital technologies”; “More than 10 hours on the Internet” and so on.

For Internet safety, the respondents formulate definitions as follows: “knowledge about how to surf the web, without problem”; “Becoming familiar with cyber-violence and ways to protect ourselves”; “Awariness of what can be published on web”; “Compliance with Internet safety rules”, and so on.

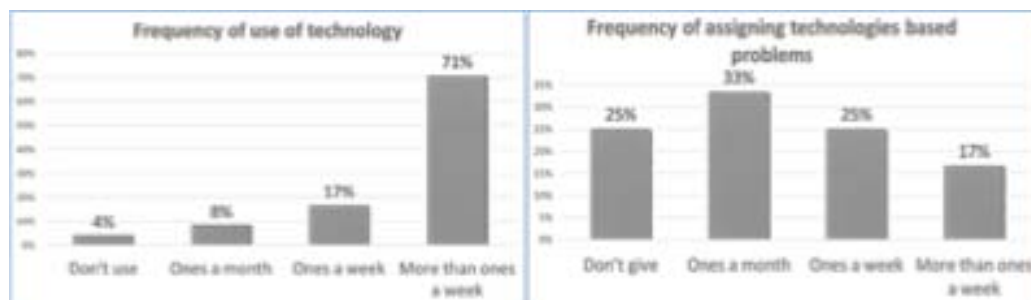


Figure 2. Frequency of using technologies and assigning technologies-based task

About the meaning of the term “information processing” almost 80% of teachers answer that this is editing and formatting of text.

Teachers’ opinion is that internet rules should be discussed with children at an early age. Observations show that if this problem is intended to be implemented in schools in third grade, most of the children will have already accessed the Internet many times. It is necessary to look at

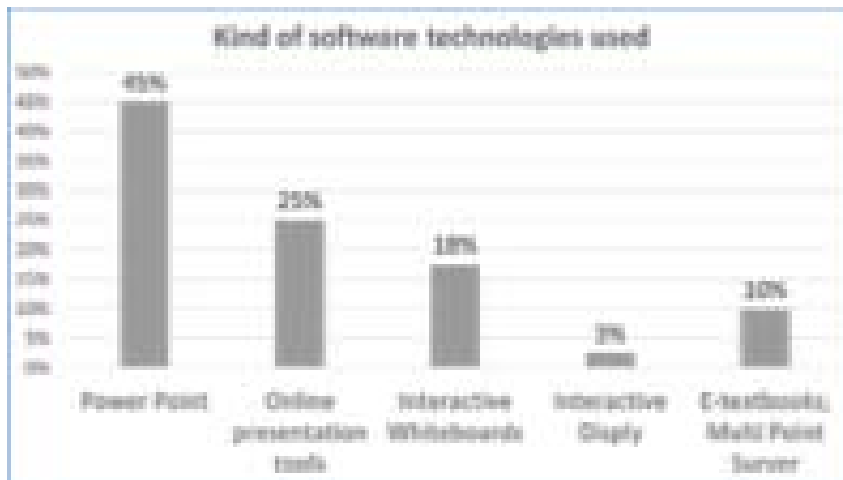


Figure 3. Kind of technologies used into teaching and learning process

different cases in which children can get into a dangerous online situation and how they can react.

Methods and practices of ICT integration into teaching and learning process

70% of teachers use different technologies more than ones a week. At the same time only 17% of

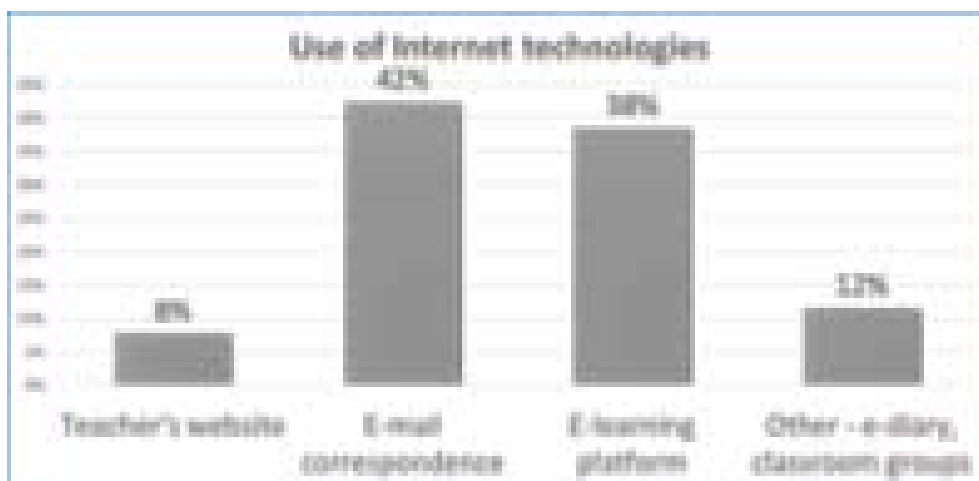


Figure 4. Use of Internet technologies for communication with students and their parents

them assign technologies based tasks to their students more than once week. A quarter of teachers even don't assign such kind of problems to their students. In this way students are in position of watching ICT integration but not doing and implementing ICT-tasks into teaching and learning process at school.

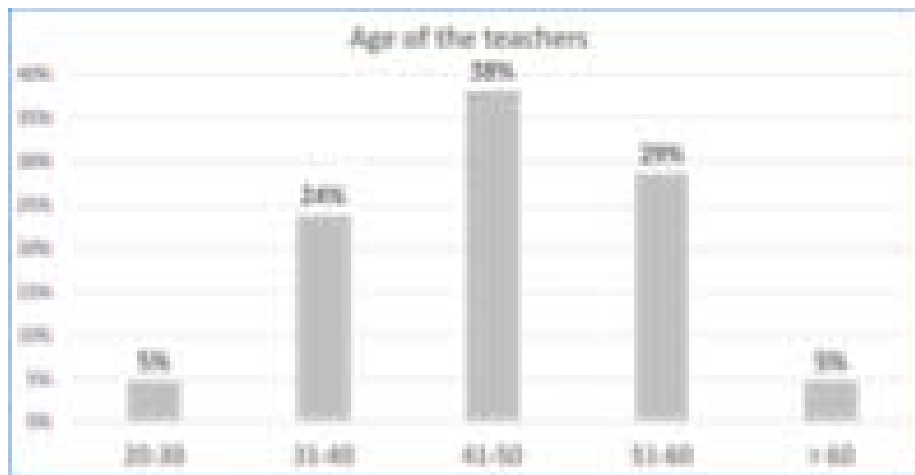


Figure 5. Age distribution of teachers participated into the study

A problem in this area that is common for teachers the initial stage of learning is that they do not have free access to a computer room at school. In this way, they can not carry out classroom classes using technology where students are active participants. Some of the teachers have solved this problem by preparing exercises in different learning disciplines, and the pupils implement them from home. This practice, however, is not possible in certain areas where the family environment does not provide a digital access facility – there are no digital devices and Internet access.

About 70% of the teachers use different presentation software technologies – mainly PowerPoint and some online presentation tool as Prezi or Sway. The level of use of interactive technologies is quite low and is limited to implementation of new interactive hardware devices as interactive boards or interactive display. The results are shown of Figure 3, and can be seen that technologies for realizing real E-learning are used from 10% of the teachers only.

Part of the teachers who use technology in the classroom admit that they prefer ready-made resources. These are usually presentations on a topic found on the Internet or electronic textbooks provided by publishers.

When asked “Do technologies help to increase students’ success” about 45% of the teachers said that they can’t state this, and other 45% answered positively. So half of the teachers actually don’t believe that if they integrate new technologies they could improve the results from teaching and learning process.

Important part from technological point of view is the way of communication between the main subjects of the educational process – students, teachers, parents, the community in general. When teacher were asked if they used Internet technologies to communicate with students and parent, about 75% said “Yes”. On figure 4 the results show the way of Internet communication used. About 40% of the teachers use e-mails to communicate with students and parents, and one third of the respondents said that they use E-learning platform for communication within teaching and learning process.

The age distribution of the teachers surveyed is presented on Figure 5. More than 70% of the teachers are above 40 years old. This situation reflects the real situation in Bulgaria, where in next 5 years more than 50% of the teachers will be retired. Higher average level of the age corresponds with the not surficial level of digital literacy and the efficiency of technologies integration into teaching and learning process.

Conclusions and Discussion

The results from the pilot study outline trends and arise new questions to be answered with future study. Base on the data, presented here, one can conclude that most of the teachers use passive way of technologies integration – mainly presentations for better visualization of the teaching material and e-mail-based communication with students and parents. The level of digital skills is quite low and the process of integration of technologies at school is quite standard. In most of the situations we have technologies used mainly by the teachers, not by the students.

New correlation could be find in future work with accent on teacher's age, on size and localization of the school, on the family environment of students and so on.

The school is the most appropriate institution for acquiring digital skills, as well as developing online safety, critical thinking, social skills and creative problem solving skills. We support the suggestions made at the level of the education system and at school level (Kanchev, P, E. Georgiev, M. Haydinyak, G. Apostolov., 2016):

Increase the frequency of lessons about the safe use of the Internet.

Integration of digital literacy into curricula and content.

Identify "digital school stars" and standardize their expertise.

Digital and media literacy measures and activities need to be implemented purposefully and systematically, starting from pre-school and primary school age.

References

- Ala-Mutka, K. (2011). Mapping Digital Competence: Tower and conceptual understanding. Luxembourg: Publications Office of the European Union.
- Andersen, N. (2002, November). New Media and New Media Literacy. Retrieved from Center for Media Literacy: <http://www.medialit.org/reading-room/new-media-and-new-media-literacy>
- Council, E. P. (2018). Proposal for a COUNCIL RECOMMENDATION on Key Competences for LifeLong Learning. Brussels: European Commission.
- Deursen, v. (2010). Internet skills. Vital assets in an information society. Enschede: Universiteit Twente.
- DIGCOMP. (2016). The Digital Competence Framework 2.0. Retrieved from <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>
- Digital Single Market. (n.d.). Digital Scoreboard - Data & Indicators. Retrieved from Digital Single Market, EU: <https://digital-agenda-data.eu/>
- Dijk, V. (2005). The deepening divide: Inequality in the Information society. London: Sage Publications.
- Ferrar, A. D. (2013). A Framework for Developing and Understanding Digital Competence in Europe. European Commission, JRC Scientific and Policy Reports.
- Kanchev, P, E. Georgiev, M. Haydinyak, G. Apostolov. (2016). Digitalno gramotni li sa rodenite v digitalnata epoha detca? Nacionalno predstavitelno izsledvane "Detcata na Balgaria online". Sofia: safenet.bg.
- Parijkova, L. (2017). Research of connection between reading and digital literacy of children up to 11 years old. ICERI2017, (pp. 2996-3006). Seville (Spain).
- Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. On the Horizon, 9(5), 1-6.
- Van Deursen. A. & van Dijk. J. (2009, June 25). Using the internet: Skill related problems in users' online behavior. Interacting with Computers, pp. 392-402.
- Wallis, C. (2006, Mar. Monday, 27). The Multitasking Generation. Retrieved from Time: <http://content.time.com/time/magazine/article/0,9171,1174696-2,00.html>
- Zero to Eight: Children's Media Use in America. (2013). Retrieved from <https://www.common sense media.org/research/zero-to-eight-childrens-media-use-in-america-2013>

Biography

Prof. Paapncheva, PhD is a lecturer at University "Prof. Dr Asen Zatarov", Burgas, Bulgaria. The main field of interest are technologies based teaching and learning and the use of alternative teaching methods and organization of the teaching/learning process at preschool and primary school, pedagogy of teaching mathematics at primary school, e-learning. She is the editor-in-chief of Education and Technologies journal – open access journal for pedagogy and education research and practice. Author of books and papers concerning the content and organization forms of teaching and learning at early age.

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