

DIGITAL EDUCATION IN PRIMARY SCHOOLS IN THE REPUBLIC OF SERBIA

Vasiljka MIKIĆ^{1*}, Gordana PETROVIĆ², Cipriana SAVA³

¹ Faculty of Education in Jagodina, University of Kragujevac, Jagodina, Serbia, vasiljka88@gmail.com

² O.Š. Živadinka Divac, Kragujevac, Serbia, milicakg98@yahoo.com

³ Faculty of Computers and Applied Informatics, "TIBISCUS" University of Timișoara, Timișoara, Romania, cipriana.sava@gmail.com

Abstract: The goal of this research is to identify the main problems related to digital technology and skills in the elementary school education system of the Republic of Serbia, as well as opportunities for its improvement. The paper first analyzes the situation in the field of basic education, while the main part of the paper presents an analysis related to the innovative approach to the education process, with the application of information technology and comprehensive digitization. The strategy for the development of education and upbringing in Serbia until 2030 emphasizes the development of education aimed at the needs of modern society as a whole, conditioned by the progress of artificial intelligence, information and communication technology (ICT) and refers to the improvement of teaching content, standards of general cross-curricular competences, especially in cross-curricular multidisciplinary access to teaching in this field. Descriptive analysis was applied in the paper - application of usual scientific research instruments and relevant literature. The research results point to the conclusion that continuous measures are needed for more successful digital education, as well as the education of students in primary schools.

Keywords: elementary school, digitization, education strategy, digital education, society of knowledge and skills

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1. Introduction

The current strategy for the development of education and upbringing in the Republic of Serbia refers to the third decade of the 21st century. For the purpose of the future development of the education system, it is emphasized that it is necessary to develop lifelong learning and critical thinking, to strengthen media and IT literacy, to permanently harmonize the development of education with the achievements of science and modern technology, in accordance with the goals of sustainable development, while emphasizing the importance and role of participation at all levels of education (Strategy for the development of education and upbringing in the Republic of Serbia until 2030, "Official Gazette of RS", number 63 of June 23, 2021). Basic education and upbringing are set concrete goals for the development of creative abilities. Upon completion of this level of education, students should be trained to identify and

* Corresponding author

solve problems using a critical approach and creativity, as well as the relevant acquired knowledge (Law on Basic Education and Education, "Official Gazette of RS", No. 55/2013, 101/2017, 10/2019, 27/2018 - etc. Law and 129/2021). Special support is provided for students with exceptional abilities and interests. At the same time, the emphasis is on improving the quality of teaching and learning, fairness, availability of education and strengthening the educational function, as well as on innovations and digitization, in the sense of how to achieve them, starting from the situation and the application they require.

Looking at the problem of today, when it comes to education, we can often encounter students' reluctance to learn, which can be reflected in the questions: Why should I learn this? I know I write on my phone, why do I have to learn the letters? Why do teachers teach? This indicates that it is necessary to teach students, from the earliest periods, how to learn and create complete images that are causally connected. It is necessary, especially in this time of digitization, to teach students how to apply knowledge, how to be functionally literate, self-regulated learning should be encouraged (Conesa et al., 2023; Burak, 2023).

Many foreign and domestic authors, as well as competent international and national institutions in the field of education, point to the importance of digitization in the education process. Thus, for example, among many authors, Pea (2004), in the context of education and a series of contemporary activities of people, investigates social and technological dimensions, that is, theoretical concepts of learning, while Dishon (2022) raises the question of the necessity of in-depth considerations and re-examination of techniques and methods education, above all, in the time of COVID-19, which is considered a very current issue, both for science and for practice in the field of education. Satisfaction and initial perceptions of teachers about the quality of digital textbooks in Serbia are investigated by Šijaković and Savić (2022), as well as by many other authors in the country and abroad. Certain specific issues, such as the role of television in the education and upbringing of children, are the subject of analysis by many authors (Đekić et al., 2017), while Kalmar (2022) focuses on the informal education of young people, and Đorđević and Mladenović (2021) consider mentoring. As an element of improving the organizational and functional performance of educational institutions in Serbia, while Mikić and Đorđević (Mikić & Đorđević, 2021) deal with the problems of digital teaching during the pandemic in the teaching of Serbian language and literature.

2. Foundations for the development of digital education

Digital education is a term that refers to two different but complementary areas of education policy. At the same time, one includes measures aimed at the digital competence of teachers and students, while the other includes the pedagogical application of digital technologies, with the aim of improving the quality of teaching and learning (Strategy for the development of education and upbringing in the Republic of Serbia until 2030, 2021: 36-37). The goal of digitization in the education process takes place within the framework of the following measures: development of digital education; development, application of the Unified Information System of Education and the use of data in making decisions about education. For this purpose, pre-university education institutions are provided with support for improving digital capacities, digital competences of students, but also digital competences of employees in education, which implies the integration of ICT in the teaching and learning process, with access to the revision of existing competences, if they relate to the application of "selfies" instrument in the process of self-evaluation of the digital capacity of institutions and training for strengthening the capacity of schools for the development of the digital segment of the development plan of each specific institution. Additionally, in order to ensure quality, a set of

indicators is defined for the long-term continuous monitoring of the development of digital education, which aims to establish a system for monitoring its development.

Primary education partially reached the goals set by the Education Development Strategy in Serbia until 2020 ("Official Gazette of RS", No. 107/2012 of November 9, 2012). At the same time, the process of reforming teaching and learning plans and programs began in 2017 (with the introduction of three new subjects - Informatics and Computing, Technology and Technology, and Physical and Health Education, the implementation of which began in the 2017/2018 school year, and from the school year New teaching and learning programs are successively implemented in 2018/2019. In addition, significant progress has been made in strengthening school autonomy, through pedagogical autonomy in the implementation of teaching and learning programs.

Innovations in educational systems, i.e. acceptance of new services, introduction of modern information and communication technologies, i.e. digitization in educational institutions, can significantly contribute to improving learning outcomes and increasing the efficiency of the education system (OECD, 2016).

Digitization affects the way people live and work, their mutual interactions, learning and work. Although there are numerous opportunities arising from digitalization, it is still necessary to adequately prepare for it, and education in that process is one of the main determinants of the success of the application of digital technology.

The digital agenda of the European Union (EU) in the field of education aims to help people to better manage themselves in the digital world, because today digital technologies have become a part of everyday life and are present in solving almost all the challenges we face.

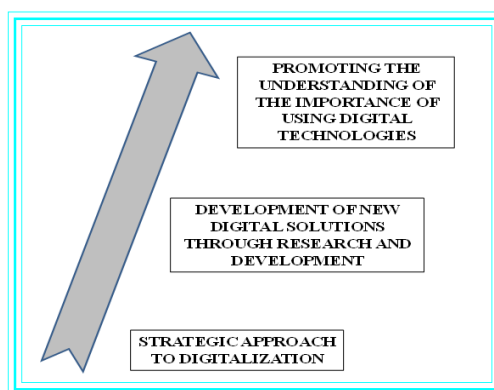


Figure 1. Key dimensions of digitalization development
Source: Rouby (2019)

In the European Union, ICT research is focused on the following relevant areas (European Commission, 2014):

- robotics – it is believed that robotic services will help solve many contemporary social challenges;
- subsystems and systems - with a special emphasis on financing key technologies relevant for future development;
- support for high-quality education - with the aim of developing the digital skills of EU residents, as well as for the better use of digital technology in the education process at all levels and in all educational institutions, and with the aim of practical application of acquired knowledge.

The EU action plan defines certain measures within three priority areas, which include sub-measures within the framework of the following three main measures to support the use of

modern technology and support the development of digital competences (European Commission 2018a):

1. Support measures for better use of digital technology for learning:
 - connection in schools;
 - SELFIE self-assessment tool and mentoring program for schools;
 - digitally signed qualifications.
2. Development of digital competences and skills:
 - platform for digital higher education;
 - skills for open scientific research activity;
 - programming week in schools;
 - cyber security in education;
 - training in the field of digital and entrepreneurial skills for various interest groups.
3. Improving education, based on better data analysis and forecasting:
 - studies on the role of ICT in education;
 - artificial intelligence and accompanying appropriate analytics;
 - strategic forecasting.

In 2018, at the Digital Assembly in Sofia, the European Commission launched the Digital Agenda for the Western Balkans. The agenda is aimed at providing support for (EU Delegation in RS, 2018):

- investing in broadband connectivity;
- increasing cyber security, trust and digitization of the economy, to ensure that all sectors reap the benefits of digital innovation;
- strengthening the digital economy and society: e-government, e-health, e-education, etc., which would integrate the countries of the Western Balkans into the digital European research area, and also from a wider perspective.

Some ICT progress has been made in the field of education. Many schools are equipped with additional computer and network equipment and access to the Internet is provided through the Academic Network of Serbia. About 2,000 digital classrooms have been equipped, a Digital Competence Framework for teachers has been created and trainings for teaching staff have been conducted, both online through many platforms and in institutions (Education Development Strategy in the Republic of Serbia until 2030, 2021).

3. The role and importance of teachers in the digitization process

The greatest responsibility for the realization of all planned activities of digitization of teaching and learning rests with the teaching staff. School pedagogues and psychologists are engaged in school institutions, who should contribute to the realization of educational and educational goals, through achieving better understanding among the key actors of the educational process (Maksić and Pavlović, 2022, p. 74).

Digitalization requires financial and human resources. Financial resources in education can be divided into: salaries paid to teachers, administrators and support staff; costs of maintenance or construction of buildings and infrastructure; operating costs, such as transportation and meals for students, etc.

According to research by the OECD - Organization for Economic Co-operation and Development (OECD, 2014), the majority of teaching staff have attended some training or development programs for teachers, related to the use of new technologies in the workplace. Of course, the professional development of teachers during work should be achieved through accredited professional development programs. The goal is for teachers to encourage the

development of competences, curiosity, free thinking in students, critical evaluation, self-regulated learning, as well as to nurture the possibilities of students based on their affinities.

The conditions for the functioning and successful achievement of all educational goals are also faced with unfavorable circumstances of a global scale. The latest pandemic caused by the corona virus (COVID-19) also showed this. The work of educational institutions was interrupted and changed, and teaching activities took place remotely. In this way, theoretical foundations were presented to the students through recorded lectures or presentations, without opportunities for practical work and immediate exchange and cooperation. In this regard, students and teachers were exposed to very unfavorable influences in which the educational process took place in the 2019/2020 school year. and 2020/2021. years.

Mikić and Đorđević (2021) in the paper Attitudes of teachers and teachers of Serbian language and literature on the teaching of the Serbian language at a distance during the Covid-19 virus pandemic showed research on a random sample consisting of 302 respondents from the territory of the Republic of Serbia - 173 teachers of the Serbian language and of literature in primary school and 129 teachers. The data were processed through a qualitative thematic analysis of the inductive type, and it was concluded that the advantages of distance learning are that the obvious and simplest example of working on cross-curricular competencies is the use of ICT in the classroom (digital competence): different ways of presenting materials, different ways of organizing information, using various sources of information, selection of data and verification of their relevance (Mikić & Đorđević, 2021). Also, the authors pointed out that the development of ICT provides exciting opportunities for improving the quality of education. Interactive educational software, open access digital libraries, and cheaper and more intuitive technology can facilitate new forms of interaction between students, teachers, education employees and the community and improve the quality of education by making it more accessible (Mikić & Đorđević, 2021:165-166).

However, Klepić's research (Klepić, 2021), which was conducted from the perspective of teaching Serbian language with students who have special abilities for computing and informatics, shows that by searching for models and approaches that would encourage the development and progress of students, an individualized approach to students, differentiated teaching, with the use of ICT, conditions the development of various competencies, especially competence for solving problems, competence for learning, social competence, competence for managing one's own behavior and readiness for action (Klepić, 2021: 140).

Starting in 2000, the OECD organizes the International Program for International Student Assessment (PISA) every three years, except for delays due to pandemic conditions.

As one of the indices of the availability of ICT resources in schools, the PISA study uses an index obtained by dividing the total number of available computers by the number of students who are 15 years old. Data show that this index in the Republic of Serbia, in 2018, for computers is 0.31. The resulting index is significantly lower than the OECD average, which is 0.83. In other words, computers are a less available teaching resource for students in Serbia, compared to the average of OECD countries. At the same time, there was a significant jump in this index in OECD countries (from 0.69 to 0.83). It is observed that in Serbia, about 84% of computers in schools have Internet access. A similar percentage was in 2012, i.e. around 83%, while that percentage in OECD countries is significantly closer to 100%, that is, it is as much as 96% (Videnović & Čaprić, 2020: 118).

3. Conclusion

The vision of the development of education in the Republic of Serbia is to provide quality education to achieve the full potential of the population, especially every child, that is, young

person. At the same time, the mission of education is to provide high quality education, which serves the development of society as a whole. In this context, it is clear that the future depends on the readiness of citizens to successfully overcome the problems posed by modern challenges, accelerated technological development, pronounced globalization and major changes in the world (such as pandemics, international conflicts, etc.), which, above all, reflect in suspense. Given that unpredictability is an important feature of modern society, it is clear that the education system must successfully and permanently improve the capacities of people, especially young people. The digitization of education, that is, the introduction of digital platforms, electronic diaries, online classrooms, electronic books, etc., is highlighted as a special goal and necessity. Of course, it can be seen that today there is a lot of inequality between rural and urban educational institutions, between regions and countries, etc., so it is clear that digitization is a long-term process that needs to be worked on permanently. School space, conditions, school equipment, school organization, influence that whether the school will be innovative or not, but the teacher is the key factor and the bearer of innovation, so the school can be innovative only if it has innovative teachers; teachers who are ready to improve their work, inclined to teamwork, accepting innovations in education, and it is especially important that they love their work (according to Potkonjak, 2012).

We can also conclude that in addition to the positive changes, they did not fully contribute to the generation of innovation and creativity, with the aim of supporting sustainable development and the transfer of knowledge to overcome contemporary problems in development. phones - smartphones and other very modern information and communication technologies, their creativity and innovation is still not at an enviable level. In fact, the question arises of the positive and negative effects of digital technologies on strengthening the creative spirit of elementary school students, and in theory and practice there are very different views and opinions on this issue. Consequently, we come to the conclusion that the efforts of all relevant actors in the education process are continuously needed, and institutional support measures are especially necessary for a more successful application of digital skills in the education process. Also, the role of the mentor is very important. According to the student, an "ideal mentor" should be constantly available and inclined to build a respectful and supportive relationship with the student (Prlić, 2021). Therefore, the teacher's task is not easy, it should be respected diversity, try to make every child successful and help students to master teaching content and acquire functional knowledge, using different methods and techniques, and "meaningful learning results in a person consciously and explicitly connecting new knowledge with relevant concepts that he already possesses" (Ausubel, according to Stoic et al., 2011: 567).

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