

BULGARIAN PROJECTS IN THE FIELD OF THE DIGITAL TRANSFORMATION OF EDUCATION AND THEIR ROLE IN BUILDING DIGITAL LITERACY IN THE CHILDREN IN PRIMARY SCHOOL

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Abstract

In the recent decades the digital transformation has been radically changing every aspect of our social life on both global and national level. Following the development of the new ICT technologies, there has been a growing need for rapid adaptation to the new professional, educational and recreational possibilities. In 2020 was developed a strategic document outlining the national guidelines for the digital transformation of Bulgaria for the 2020-2030 period. It contains the essential principles of digital transformation and aims to facilitate the development of innovative models in a number of areas, such as scientific research, digital education etc. The contemporary education requires the development and implementation of flexible platforms and appropriate electronic content suitable for all age groups. This calls for modern ICT equipment and software as well as trained educators that can provide appropriate digital education and relevant learning content.

The article examines the Bulgarian projects for digital transformation in education and their key role in ensuring the learning process (*improving the learning conditions*) for primary school children in the current situation of a global pandemic as well as their prospects in the context of the evolving modern information environment. The good practices and projects in Bulgarian education and the challenges they are facing in the implementation of a successful digital transformation are described.

Keywords: Digital transformation, education, e-education, digital literacy, Bulgarian projects, elementary school, primary education.

INTRODUCTION

In this report, we set out to look at the process of digitalization of education, what is its development in Bulgaria and how the recent COVID-19 epidemic has affected it.

In order to discuss the digital transformation of education, we must first specify what education is and what it means to us. The root of the word is derived from the Latin word "educare", which means "to train" or "to mold". The famous French sociologist Émile Durkheim has based his definition on this translation by defining education as "the methodical socialization of the younger generation" (Durkheim, 1956).

Education can be interpreted in a broad and in a narrow sense. In a broad sense, education is important not only for our personal life, but also for society as a whole. It is a continuous process that begins at birth and ends with our death. It gives us the possibility to preserve and transmit the accumulated knowledge and social norms. Education is the social institution that teaches young people what are the accepted norms in society and what are the expectations for every person.

Education is not only about acquiring knowledge. According to the functional theory in sociology, it also serves several social functions. These include socialization, social integration, social placement, and social and cultural innovation (Ballantine & Hammack, 2012).

Socialization is maybe the most important one. Through education, children learn the culture of their society and society provides a conscious teaching program to instill the values, norms and social skills that people are going to need for their adult role in society. Another function of education is social integration. According to functionalists, for a society to work, people must subscribe to a common set of beliefs and values. The third function of education is social placement. Starting in primary school, the motivation level of students is identified and they are taught accordingly. It is presumed that they are better prepared for life this way. The last social function of education is the social and cultural innovation. It reads that scientists cannot make great scientific discoveries unless they have been educated in the different subjects they need to know for their career.

In a narrow sense, education is an organized and formalized process. It takes place at a certain institution - a school, college or university and has certain time limitations. It has a fixed curriculum and can be almost synonymous to schooling or teaching. For the purpose of this paper, we are going to accept and use this narrow and more specific sense and examine the digitalization of this formalized process and the educational institutions.

The rapid development of information and communication tools since the end of the 20th century has transformed every aspect of our lives. These new technologies have not only created new opportunities, but also the need to learn new competencies. The term digital education has emerged and established itself and is now widely used. But what does it mean?

The term "digital education" is used to describe interactive learning methods that use computers and communication technologies as a teaching tool. This is not about replacing the teacher with a computer. Instead, new technologies are involved in the whole learning process - in the preparation and presentation of new information as well as testing the children's knowledge. However, the teacher remains the leading figure who structures and prepares the curriculum. The idea of e-learning is not to displace live contact, but to be combined with other teaching methods to increase the effectiveness of the educational process.

METHODOLOGY

In order to get a better idea of the digitalization of education, we conducted a study of sources and previous research on the topic. We also reviewed the available documents and legal materials issued by the Bulgarian government. Using this secondary data, we made a content analysis of these sources and synthesized our findings in this paper.

RESULTS

The e-learning is a self-paced method that uses new multimedia learning technologies. The use of Internet can improve the quality of training by facilitating access to resources and services. It can also facilitate the cooperation and communication. Through sound, graphics and interactivity, e-learning offers the learner a multi-sensory experience that allows for better understanding and memorization of knowledge. The e-learning is an attribute of the global information society as well as a response to the needs of the contemporary learner for flexible learning, access at any time and from any place.

The first computers were introduced in Bulgarian schools at the beginning of the century, but their number is insignificant – in 2004 there were on average 2,1 computers per 100 students in secondary school and only 0.4 computers per 100 students in primary schools (Bulgarian Ministry of Education). For the first time in 2003, 1 million Bulgarian leva were allocated from the budget of the Ministry of Education and Science for the purchase of computers and the equipment of about 100 computer rooms. There has been an improvement since then and in 2011, there was on average one computer per 11 students (Bulgarian Ministry of Education). In

2020, the Bulgarian Minister of Education has stated that there are about 100 thousand computers available to teachers and students in schools (Yanev, 2020), and 80 thousand more will be purchased for the purpose of digital education (Dnevnik, 2020).

However, it should be noted that the digitalisation of education does not only mean the purchase of equipment. No less important is the training of educators in the proper use of these new technologies. Another important aspect is the development of new platforms and systems that take advantage of the opportunities that new technologies provide. It is also important to work on children's digital literacy. Many children start using digital devices before they learn to read (Parijkova, 2020) but it is important that this process is monitored and controlled by the parents.

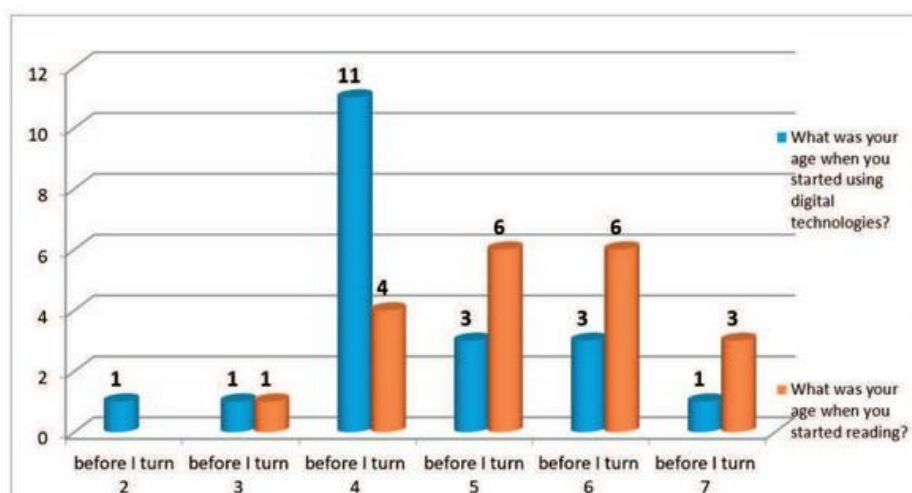


Figure 1. Comparison between ages of starting reading and using digital technologies (by Parijkova, 2020)

We are going to examine a few of the most popular Bulgarian platforms working towards the digitalization of the education process and institutions and outline what are the good practices that they have introduced. We are also going to discuss the challenges that have emerged with the digitalization of the education.

Bulgarian projects aimed at digitalizing the education field

Shkolo

Shkolo (shkolo.bg) is an online platform and the leader in the process of digitalization of education in Bulgaria. In 2016 in close cooperation with the Ministry of Education, they built and introduced an electronic diary and the first version was officially launched in 2017. Its purpose is to completely replace the book diary. It has seen a rapid growth- 3 years after the start, more than 1700 out of 2400 schools in Bulgaria are using their software (Shkolo, 2020).

According to the creators of the platform, its three main goals are:

- Reducing bureaucracy in schools through and automating administrative processes. Their product replaces the need for paper diaries as well as the need for parent meetings by providing all the information online. They also introduce the possibility of electronic payments to the school (Shkolo, 2020).
- Engaging parents in the educational process by improving communication, real-time notification with applications for iOS and Android smartphones, etc. Parents have quick and convenient access to information about their children's

- performance. It is also possible to inform about extracurricular activities (Shkolo, 2020).
- Engaging students - educating technological culture among adolescents, adequate to modern trends in the modern world. Introduction of new teaching methods, such as playfulness of school tasks. It is possible for students to provide feedback to teachers and the tasks they set (Shkolo, 2020).

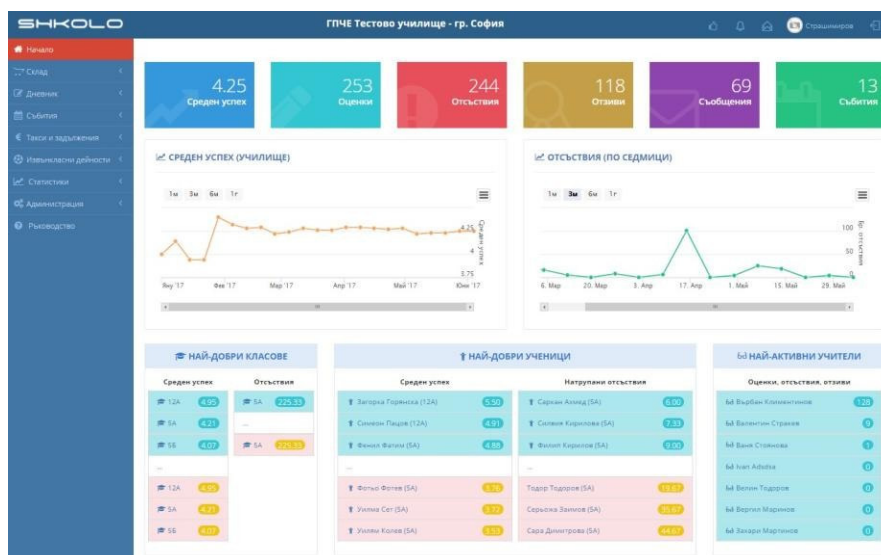


Figure 2. Screen capture of Shkolo's interface

Ucha.se

Ucha.se is an online platform containing school lessons and striving to present them in an understandable language. The platform received more than 20 awards, including the award for the best educational site in Bulgaria for 3 consecutive years (2012 - 2014) (Ucha.se, 2020).

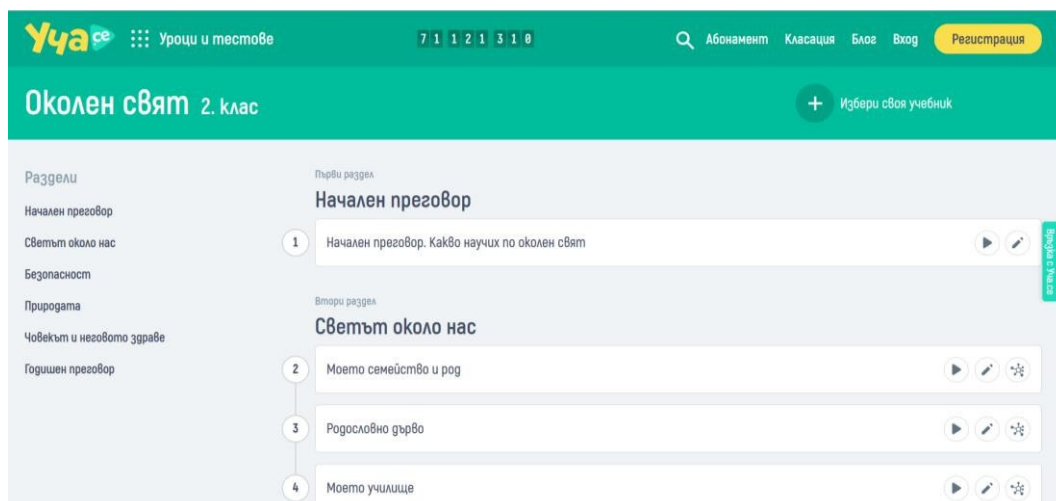
The platform is extremely popular and up to this moment, more than 16 thousand video lessons are available, which have been viewed more than 70 million times (Ucha.se, 2020). According to their data, there are more than 900 thousand registered users. Android and iOS apps are also available for a better mobile experience.

Ucha.se contains a combination of video tutorials and tests. Video lessons present the material through situational examples and require simultaneous viewing, listening and writing - stimulation of the three main types of memory. The videos are short and entertaining, which makes learning more focused, fast and easy.

What you learn from the video lessons can be practiced and reinforced with the available tests after the lesson. In case of a wrong answer, the platform automatically offers the exact excerpt from the lesson to make up for the omission.

A game element has also been added to the platform - each student on the site develops his virtual character in real time, as in a game. When the student watches videos, solves tests and participates in discussions under the lessons, his character goes to different levels, gets better and better and collects badges.

Figure 3. Interface of Ucha.se



Knigovishte

Knigovishte is an educational internet platform that strengthens children's ability to make sense of the text they read - its purpose is to be an innovative "reader's diary" with questionnaires for children's and adolescent books. The start of the project was set in May 2019. The platform includes over 1000 questionnaires for books for children from 6 to 14 years old, and in the future, it is planned to expand to older children (Knigovishte, 2020).

The children choose the title of the read book on the site, answer the questions to it and earn points. Using techniques developed in electronic games (so-called gamification), the platform aims to make reading a fashionable and popular activity among children. As in any electronic game, in Knigovishte, users compete with the computer and with themselves, as well as with their classmates, by reading more and understanding reading better. It gives children topics to talk to classmates and ideas for new books that others like them like.

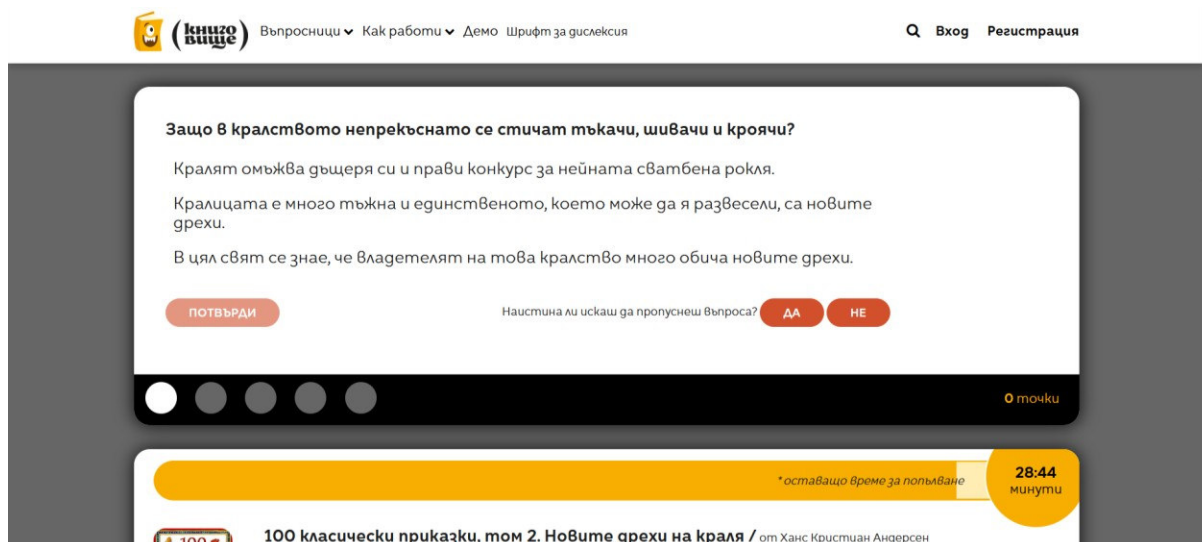


Figure 4. Knigovishte's questionnaire

Smart Classroom

Smart Classroom is a platform consisting of several separate modules that are interconnected. It is part of the Smart Classroom project of Samsung Bulgaria, developed in collaboration with Bulgarian teachers and authors of teaching materials. The modules include a basic module for

creating content, a communication module meant to facilitate communication between students and teachers; module for creating exercises with augmented reality (AR), which are performed in the mobile application Smart Classroom AR (for Android) and a teacher and student portfolio (Smart Classroom, 2020).

Together, these modules create a digital classroom that can be used by teachers and students. This virtual classroom also has several types of boards that the teacher uses, but can also give students access. The main board is graphical and loads by default. The others are a math board that allows the use of special symbols, a media board on which the teacher can upload video from his computer, and also a link board on which he can upload a link to material from the Internet. Depending on the subject, boards can be added and several can be worked on at the same time, with the teacher choosing which one to visualize.

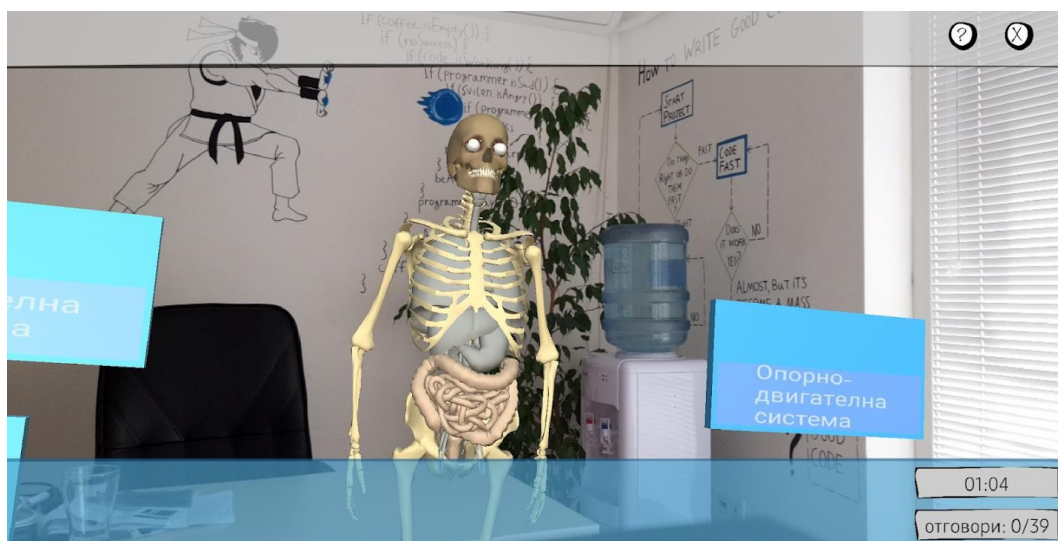


Figure 5. Smart Classroom AR

Project "Digital Competencies and Media Education at Pre-school and Primary School Age"

The purpose of the fundamental project "Digital Competencies and Media Education at Pre-school and Primary School Age" (DN 05/8; funded by the Bulgarian Science Fund) is to study and explore the conditions, methods, and approaches that need to be applied for the propaedeutic acquisition and formation of digital competences. To accomplish the aim, there are specific objectives. Dr. Parijkova is a leader of the project's Working Group „Research of the connection between Reading and Digital literacy“. The main purpose of the study in this Working Group is to seek the correlation between the formation of digital literacy in children up to 11 years and the development of their reading skills. In the first stage of the project /2017-2018/ there are made three types of surveys – for students (priority from fourth grade), for parents and for teachers. The greatest responsibility for the formation of digital literacy in early childhood has parents (Parijkova, 2019).

Challenges of digital education

New technologies may provide new opportunities for development that are yet to grow, but they also create certain challenges that could hinder successful adaptation to this new environment.

The first challenge facing children is related to the role of education as a socializing environment for young people and their social skills. Children communicate significantly less when everyone is at home in front of the screen. For primary school students, this can have a

negative impact on the development of their communication skills.

Another challenge is the technical problems that could arise. When children are online, problems that cannot be foreseen or prevented, such as power outages or internet connections, are possible.

A third challenge is achieving equality for children. Digital education requires the possession of certain ICT equipment, as well as access to the Internet. This can put some parents in a difficult position and put children from these families at risk of falling behind in school, resulting in a digital divide.

Motivation and concentration of students can also be an obstacle to the successful introduction of e-learning. In the classroom, it is often easier to encourage students to focus on the task and not be distracted. When they work from home, it is possible that other things outside the class will attract their attention. Of course, in the classroom students can distract each other, but messages pop up on the computer screen, pets jumping on the keyboard and children shouting in the distance can distract the student at home.

CONCLUSIONS

All areas of our lives are affected by the entry of new digital devices into our daily lives and education is not far behind. Today's children learn to work with smartphones and tablets before they learn to read books. This raises the need to develop new systems that make the most of these new technologies, thus improving the quality of education. The recent COVID-19 crisis has been a catalyst for this process and has forced schools to adapt to new teaching methods within days.

However, these new technologies do not only offer opportunities and positives. They bring with them challenges that will need to be addressed by all stakeholders in education – teachers, students and parents. Teachers need to adapt their teaching approach using all available means. Students must take a responsible approach to the new learning environment, and parents must pay due attention to their children and make sure that students take education seriously despite the challenges posed by online education.

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