***Original Research Article***

# Digital Aspects of Modern Society and Education Realities


## ABSTRACT

This article shows the importance of digitalization as an essential process in modern society and institutions. Different dimensions of digitalization and its entry into society are presented, following NSI data in regional and age aspects. The digitalization of education is shown, following various policies and measures taken at the national level. An important element of the analysis is the data on online learning and arguments of different groups of parents about its place in the situation of the Covid-19 pandemic. The main conclusion of the article is that in Bulgarian society there is a relatively good digital environment as an important prerequisite for the development of digital skills that are important for modern processes.



**Keywords**: digitalization, policy for digitalization, Covid-19, online learning




## 1. INTRODUCTION

Digitalization is becoming an important element of modern life and relationships, as well as social inclusion. This article presents various dimensions of digitalization and its development. Central to the analysis are data from the National Statistical Institute, as they focus on creating a generalized view of the digitalization of society, such as the use of various digital devices, and the provision of Internet connection, which become conditions for using the digital environment. The results of various studies also contribute to showing the views and assessments of individuals to the processes of digitalization [1].

An important place in the article is occupied by online education in secondary education in the situation of the Covid-19 pandemic, which has become a serious challenge. In a short time, teachers were able to adapt to the requirements of the online environment and prepare educational resources that meet the digital requirements. The research questions formulated in the article are: What are the main characteristics of digitalization? To what extent are people and society as a whole prepared to meet the challenges of digitalization? Do educational institutions meet the requirements of digitalization?

The innovativeness of the article consists in the approach to show different sources of information and data that becomes a basis for further reflection.

## 2. MATERIAL AND METHODS

The methodology of the article includes several different methods:

- Statistical data from the National Statistical Institute, they are key because they relate to the entire population of the country and thus create a representativeness of the conclusions and reasoning. The statistics make it possible to trace the distributions by various characteristics, including areas of residence, in order to analyze them in more depth from different points of view, including to create an idea of the integrity of the existing social environment.

- Secondary analysis of results from other secondary education surveys on online learning in Bulgarian schools.

These empirical sources provide a variety of information about the type of institutions and educational levels studied, as well as about the time axis and the scope of the included target groups. This creates an enriched picture of the state of digitalization and the digital environment in Bulgarian social and educational conditions.

## 3.THEORETICAL FRAMEWORK

In this article there are several basic concepts that are key in the study of the topic of digitalization and its manifestations in different areas of life. Important topics are digital skills and digital literacy as well as digital learning and education, which have been mainly addressed in the study.

[2] describe digital literacy as a combination of technical-procedural, cognitive and emotional-social skills**.** Digital skills include "instrumental skills"[3]**.** These are skills for: search, selection and processing of information in computer and network sources, content creation, Internet safety skills [4]**.**

According to Hargittai and Hsieh [5] digital literacy includes five basic skills: reading (digital comprehension and reproduction of content), branching skills (building content from nonlinear, hypertext navigation), information skills (assessment of information quality and validity) and socio-emotional skills (understanding the rules in cyberspace) + "real-time thinking skills". Digital literacy is the ability to understand, evaluate and use information that exists in various formats that are provided by computer. Digital literacy is deeply social and presupposes multidimensionality and interactivity and it is constantly being upgraded because it is a function of the development of digital tools that enter everyday life and professional structures. That is why digital literacy requires critical thinking, critical understanding, and interpretation of constructed content [6]. Digitalization is a process of digital technologies entering the social environment and relationships. In this sense, it also implies a change in the processes, culture and overall strategy and vision of organizations and society. In the process of integrating new digital technologies in all spheres of life, there is a change in the way people and institutions work and the idea of their development. That is why digitalization requires constant cooperation between people, teams and the environment. It is related to digital skills, it influences the way people communicate, act and think. Digital literacy and skills refers to the perception of both the individual stages and the overall vision of the work process, and influences the choices and decisions that are made. Various social actors are involved in the formation of digital skills and literacy, who adopt the values and rules that require flexibility of technological solutions and approaches.

In general, organizations operate under significant competitive pressure, which is an incentive to seek technological solutions, to implement and choose strategies and results. One of the challenges in the processes of digitalization is the individuals themselves and their acquisition of skills and habits that correspond to technological innovations, so that these innovations can really enter their professional activities and activities, but also in their free time. In this way, technology becomes the basis for innovation and the achievement of goals and potential. Digitization and the formation of adequate skills is not a short-term project, but a way of working, building a holistic approach and attitude to training and improvement in accordance with the development of technology. In this process, there are results that are important both for organizations and for individual communities and individuals. Personally, flexibility and understanding are important in order to acquire digital skills and competencies, because the technological environment is changing dynamically. Understanding, on the other hand, presupposes awareness of the changes in the environment that legitimize the requirements for personal skills and abilities.

The digitalization of public life has positive effects related to the development of the economy, services, the labor market, as well as the identification of different communities and emphasizing their features and uniqueness. Digitalization has a key place in modern education and its development, especially in recent years.

Digital processes in education are based on digital skills and literacy, which is the ability of a person to perform tasks effectively in a digital environment. Digital learning is a technologically created environment for learning and communication, in which users publish lessons, data, and their experience and communicate each other. Learners of all ages are actively involved in a two-way process of posting and informing, sharing comments and discussion. Online platforms facilitate and support mobile learning, as they connect individuals regardless of distances or situations that do not allow in-person learning.

The effectiveness of digital learning is also supported by the following facts. According to a study conducted by the Institute for Educational Research, nearly 25% of teachers believe that their students have shown higher motivation in

distance learning than in-person. 39% of teachers believe that there is no decline in the results and motivation of their students. Over 50% of students have easily adapted to e-learning and nearly 70% have acquired new skills that are generally not acquired through face-to-face teaching. 30% of students have shown a more serious interest in distance learning [7].

There is a series of documents showing the commitment of the government on the need to digitalize education process and teaching. In 2014 A National Strategy for the Introduction of ICT in Bulgarian Schools has been developed [8]. This Strategy is oriented to identify ways for modernization the education system, improve access to quality education and increase the use of information technology in formal and non-formal education. Computers and information technologies cover the entire education system: from kindergartens, through secondary, higher education and postgraduate levels. The formation of basic digital skills begins at an early age, and the most effective is the school age, when students easily acquire new skills and knowledge, open to innovations. The digital environment requires skills as: information retrieval, navigation, sorting, resource assessment and network and publication security. Arguments for digitization of education relate to the fact that digital literacy helps to adapt education systems to the requirements of the EU policies. It is an opportunity to increase diversity and efficiency of education. Digital learning involves the use of home or mobile devices by students to perform various tasks.

One of the key priorities of the Ministry of Education and Science (MES) is conducting a comprehensive and in-depth review of the current situation in the education system after nearly a year and a half of distance learning in an electronic environment (ORES). The analysis focuses on the main target groups in the education system - children, students and teachers - and covers the following key areas:

- ✓ Health and well-being
- ✓ Access to technical devices and levels of readiness to work with them
- ✓ Educational results
- ✓ Dropout, absences and motivation to learn
- ✓ Qualification and support of the pedagogical staff

Special focus was placed on teachers, kindergartens, children and students with special educational needs (SEN) and schools located in small settlements. So far in Bulgaria there has been no detailed analysis of the effects of the pandemic on education. However, it is fundamental so that effective interventions and policies can be formulated, to minimize the negative effects of the BSEC and to ensure an effective educational process and maximum attendance time in schools and kindergartens during the new school year. The priorities and the goals are selected according to the priority areas of action of the main European strategic documents. The achievement of the objectives in each priority area will provide balanced support for the supply and demand of ICT to derive sustainable economic and social benefits, both from their widespread application in Bulgaria and from facilitated access to the digital single market of the EU.

According to the Bulgarian Law on school education the digital competence is one of the main key competences that students must acquire through mainstream schools' education [9]. In Ordinance № 5 of 30.11.2015 on general education /Prom. - SG, no. 95 of 08.12.2015, in force since 08.12.2015/ the subjects of informatics, information technologies and computer modelling is fundamental to acquisition of digital competence. The Ministry of Education and Science creates manuals for teachers, which clarify basic concepts such as digital competence, competence approach, etc. [8, 10, 11]. Digital literacy is a term adapted to the digital competencies that children and adults need to acquire through digital technologies. Digital competence includes not only digital skills but also social and emotional skills and attitudes in a specific context [12]. Digital competence includes proper understanding and knowledge of the nature, role and capabilities of information society technologies and their confident and critical use in everyday context – in private and public life, as well as work. It has found a place in the state educational standard for general education in computer modelling (III - IV class) and in information technology (V - X class), through the curricula are proposed educational activities for its integration into other curricula items [10]. The area of focus on competencies is defining the skills, knowledge, contributions and behavior that successful people possess. Competencies are a collection of knowledge, skills and characteristics that allow you to perform various activities [10]. The competence approach is based on interactive methods and new learning technologies that contribute to the development of independence, initiative, creativity, critical thinking in students and them orient to the specific effective result [11]. Transition from acquiring encyclopedic knowledge to the formation of problem-solving skills in various areas of life. An important prerequisite is the application of a competency-based approach in education. The leading emphasis is on the development of learning tasks that stimulate critical thinking, teamwork, creativity, entrepreneurship, emotional intelligence, decision-making and other skills important for personal success. Although the documents declare good intentions to change the teaching model, there are still no real results from these reforms in education. The classroom-lections system is still dominant.

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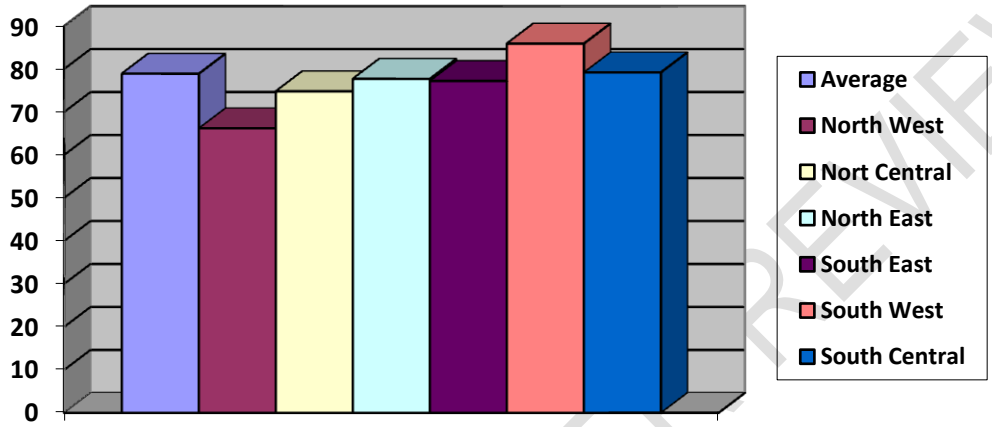
## 4. RESULTS AND DISCUSSION

### 4.1. Digitalization and its social dimensions

According to NSI data, household access to the Internet is almost 80% (Graph 1) (Data refer to NUTS 2).

**Graph 1 Household access to the Internet**




This means that there is a relatively good picture in terms of the availability of an Internet connection and respectively of individuals who use the digital environment for various activities in their daily lives. The highest use is in the South-West region, where the percentage is 85.9, and the lowest access is in the North-West region. In general, the latter is the least populated area, with the lowest rates of young people and economic activity. On the contrary, the South-Western region includes the capital Sofia and in general the population there is the most numerous, the educational and economic activities are the most numerous and this creates good preconditions for the use of the Internet. On average, 78.9% of the population in the country has access to the Internet.

The following data refer to the intensity of Internet use during the week - every day or at least once a week (Table 1).

**Table 1: Intensity of Internet use during the week**

| NUTS 2 | % |
|---|---|
| North West | 60.4 |
| North Central | 64.4 |
| North East | 67.5 |
| South East | 63.2 |

| | |
|---|---|
| South West | 80 |
| South Central | 65.4 |
| Average | 69.2 |

Source: NSI https://nsi.bg/bg. 1.12.2020

The table shows that by statistical regions (NUTS 2) the highest consumption is in the Southwestern region (80%) and the lowest in the Northwestern region (60.4%).

The intensity of Internet use on the basis of "gender" for the country is as follows.

- men - 70.6%
- women - 67.8%.

This even distribution shows that there is almost no difference in the use of the Internet on the basis of gender, and in activities related to profession or leisure, gender has no effect. It can be said that men and women are equally active on the Internet and their daily lives require digital devices and a digital environment.

From the point of view of education, the most active are people with higher education 93.8%, followed by people with secondary education 69.3% and primary or lower than primary 41.7%.

Here are some important trends:

- Definitely digital skills and literacy, which are a prerequisite for using the Internet, are related to education, which becomes the basis for their systematic formation. Even in older age communities, having an education supports the formation of digital literacy. Conversely, the older and less educated or less educated a person is, the more difficult it is for him to acquire digital skills.

- It is noted that 69.3% of people with secondary education use the Internet, which is almost 2/3 of the total, which means that both in professional work and leisure, the Internet has become an important part of everyday life, which is an indicator of the digitalization of the environment.

- Persons with primary and lower than primary education is also a relatively well-represented part of the population in terms of numbers. Here it is necessary to emphasize that the instrumental skills that people can possess do not necessarily mean that they have digital literacy. The latter requires a higher degree of use of information, in the form of navigation, sorting, including criticality and reflexivity. Often, the presence of digital literacy and skills can be combined with a low general culture, insufficient social skills, which means that concepts must be handled carefully. However, the presence of this percentage, which shows that almost half of people use the Internet, is indicative on the one hand, how mandatory part of modern life is digitalization, but also how active people themselves are, regardless of their education to be adequate of time.

The other important characteristic is age (Table 2).

**Table 2: The other important characteristic is age**

| AGE | % |
|---|---|
| 16 – 24 | 91.5 |
| 25 – 34 | 90.3 |
| 35 – 44 | 86.0 |
| 45 – 54 | 75.6 |
| 55 – 64 | 54.5 |
| 65 – 74 | 23.8 |

Source: NSI https://nsi.bg/bg. 1.12.2020

The most active are the generations born after 1980 or those born digitally, "digital natives" (Thomas, 2011). Here are the age group subdivisions regarding the use of the Internet in the "digital natives" community:

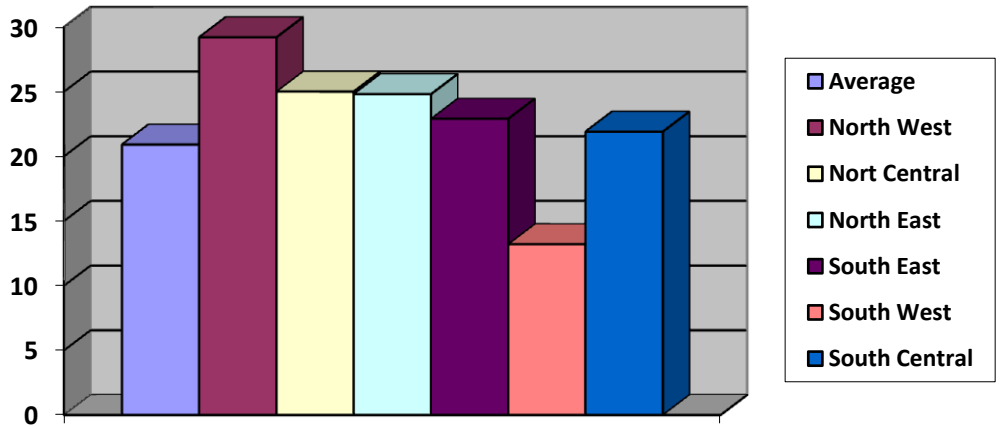
- 25-34: 90.3%
- 16-24: 91.5%
- 35-44: 86%.

From the data in the presented table 2, it can be seen that with increasing age (especially over 55 years) the share of Internet use decreases and this is understandable, given the difficulties faced by generations called "analog", whose socialization and youth activity have passed under other conditions of print media and print environment. It is important to have a certain activity in the older generations and a desire to use the products of digitalization.

From the point of view of the various activities shared by the individuals, it can be said that the Internet is most often used by students - 98.1%, followed by the employed - 86.4%. This is understandable given the nature of the activities related to the profession or the training activities. It is in these two areas that there is a high degree of initial needs - the professional specifics and the educational environment. In the last two years, both categories have been linked to the digital environment, given the closure of most institutions due to the Covid-19 crisis and the transition to online work and study. At the same time, the other two categories: unemployed and other inactive population, also use the Internet. The reason must be sought in the fact that the digital environment in general and the Internet provides opportunities for contacts, communication, receiving information and socializing with relatives, acquaintances, former colleagues, which is important for the development and maintaining people's social capital. It is obvious that the Internet is connected to all contexts of life.

If we continue our reasoning and take a closer look at the data of people who have never used the Internet, we notice that the lowest percentage is in the Southwest region 13.2% and the highest is in the Northwest region 29.2% (Graph 2).

**Graph**
**2 People who haven't used the Internet**




In this regard, it is important to focus on the reasons why households do not have the Internet, i.e. to enter into the grounds of this situation (Table 3). The largest share of 12.5% indicated that they "do not need the Internet", which means that their professional activity, as well as their leisure activities are not related to the need for a digital environment and Internet connection. 10.4% said that they "do not have the skills to use the Internet" and 6% said that the costs are too high as well as that "the equipment is expensive" (4.7%).



**Table 3 Reasons for lack of internet**

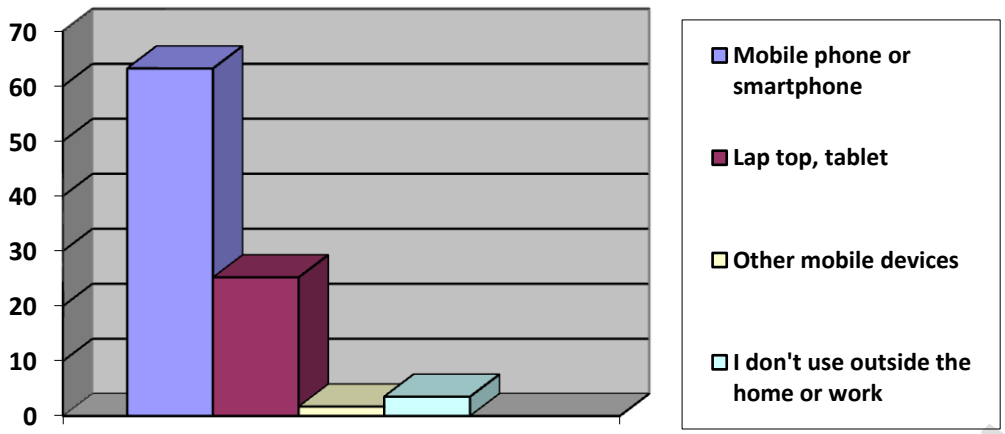
| Types of reasons | % |
|---|---|
| Internet access elsewhere | 0.9 |
| I don't need Internet | 12.5 |
| The devices are too expensive | 4.7 |
| Access costs are too high | 6.0 |
| Lack of skills to work with Internet | 10.4 |
| Security concerns | 0.1 |

Source: NSI https://nsi.bg/bg. 11.12.2020

These are data that show various aspects related to digital divisions [12], in which the existing inequalities in education, age, ethnicity, race, income reproduced in the digital environment. Low incomes are becoming the most significant obstacle to digitalization and the formation of digital skills, because the purchase of digital devices, as well as maintaining a good Internet connection has to do with financial resources and opportunities.

The most used mobile devices outside the home or workplace for Internet access are a mobile phone or smartphone (63.2%) and a laptop (laptop or tablet 25.2%).

**Graph 3 Use of mobile devices (outside the home or work)**




Source: NSI https://nsi.bg/bg. 11.12.2020

The data presented by the NSI show a precise picture of the use of the Internet and the availability of digital skills in the Bulgarian population, in terms of age, education, gender and size of companies. The age, education and size of the enterprise are brought to the fore as leading characteristics influencing the formation of digital skills. The next part is focused on presenting the results of an online sociological survey on the topic of digitalization.



### 4.2. Digital processes in education

The digitalization of education depends on the technological state of the learning environment, as well as on the preparation of teachers to work in a computer environment. In this direction are the results of the Survey of Schools: ICT in Education, 2019 (https://data.europa.eu/data/datasets/2nd-survey-of-schools-ict-in-education?locale=en), where describes the state of digitalization of education, which is symptomatic of the provision of computer equipment in Bulgarian schools in 2017-2018 (before Covid-19 lockdown). The study shows that 25% of primary school students, 28% of junior high school students and 36% of high school students study in schools that have the required number of digital devices and a very good internet connection. About 35% of Bulgarian schools have their own virtual learning environment. In 90% of them, it is accessible from devices that are outside the school. During the academic year 2017-2018. half of the Bulgarian teachers had computers, laptops, etc. digital devices that have been provided to them personally by schools.

Regarding the digital skills of Bulgarian teachers, the same study found that 75% of primary and junior high school teachers and 87% of high school teachers say they have more than 6 years of experience using digital devices and the Internet for purposes of the learning process. 23% of junior high school teachers rate their skills for work and use of ICT in the learning process as very good. About 31% believe that they are not prepared to use ICT. Based on the above results, which refer to 2017-2018, it can be said that the picture in the Bulgarian school from the point of view of the provision of computer equipment is not at a high level. Schools in general in the capital and larger cities have computer rooms and are technologically provided, but this is not the case in all schools in the country. The balance is achieved through the personal supply of digital devices of the students themselves, who have computers, laptops and smartphones, through which they enter the network and make a digital connection. It was this personal security with digital resources that was the hidden reserve of online learning in the conditions of the Covid-19 lockdown.

#### 4.2.1. Mobile learning in a Covid-19 situation

The normative basis of the lockdown in 2020 started with the regulations and orders (MES), focused mainly on ensuring the safety conditions for students and providing educational materials in schools and universities. It is concerning the shifting to emergency remote teaching. In line with broader social distancing and lockdown measures all universities, schools and kindergarten closed in Bulgaria. Efforts have been made to develop suitable infrastructure of technology and digital pedagogy for the situation. Facing different divides related to access to the use of technologies for educational purposes, some of which are resolved through Providing funding for students, parents and families living in the most marginalized communities.

Platforms for ML in Bulgarian schools and universities are Moodle, Zoom, Google classroom, Blackboard, MS Teams, as the most used platforms. In many schools and universities, the platforms were changed in the process of work. About 8%

of schools used only applications (Viber, Messenger) and social networks (Facebook, Instagram). Different schools have used different approaches to choosing platform (s), mainly based on teachers' preferences. Despite the freedom of choice - for 48% of the schools the leading factor was the recommendations of the Ministry of Education and Science.

Several measures were undertaking for supporting teachers, students and parents in distance learning process during lockdown:

- An e-learning hotline was opened for receiving questions and recommendations related to e-learning.

- The National Electronic Library for teachers was created to enable teachers to share educational resources, personal experience and innovative practices.

- Providing systemic responses for the long term educational, social and economic challenges generated by the pandemic.

As part of the online training at the Covid-19 measures, different opinions were expressed about “for” and “against” distance learning. The study conducted by the Institute for Research in Education in 2020 forms the following views:

- 47.4% of parents are entirely for face-to-face training; 22.2% are for online distance learning.

The challenges for distance learning are:

-“Difficulties to master the learning material” - 47.9%.

-“Process at a distance”- 38.5%.

-“Interaction between teachers and students”- 37%.

-“Communication with classmates”- 34.6%.

-“Parents workload with children's learning"- 33.3%.

-“Technical problems with electronic platforms"- 29.9%.

-"Opportunities for teachers to organize an effective distance learning process "- 28.8%.

It is established that in the course of the lockdown in 2020-2021 the attitudes of the people also change:

- In the first wave (March 2020), the most important issue is access to education, educational technology and digital teacher training.

- In the next waves (November-December 2020 and January-June 2021), the most discussed topic is related to the health of teachers and students.

One of the important things in online learning is tracking the results in the conditions of face-to-face and distance learning.

The results of online education in secondary education, shown at the State Matriculation Exams (in 2021) are similar to the results shown in the previous 2 years. In general, the Ministry of Education and Science reports at the end of the academic year 2021, that distance learning does not show high results[16]. 40% of teachers and 60% of principals believe that students' knowledge has worsened, with over 30% of them seeing a decline in learning outcomes. On the other hand, the average grade from the state matriculation exam in Bulgarian language and literature for 2021 for the whole country is Good 4.14. This result is completely comparable to the results of the previous two years: Good 4.20 for 2020 and Good 4.06 for 2019. The results of the exams in the other subjects are also comparable with the previous years. The matriculation exams include the same amount of study material and complexity as in 2019 and 2020 ( www.mon.bg/bg/news/4183).

All this means that online learning is assessed differently by participants in the educational process. According to some, digital learning does not worsen the quality, but creates a good and positive environment for students, maintaining attitudes, stimulating proactivity. According to other social actors, online learning impairs students' motivation and knowledge, creating a risk of an increase in dropouts. The biggest challenges are for students from vulnerable groups. In general, the results obtained from the state matriculation exams are a good indicator of the effectiveness of online learning and its contribution to providing a learning environment and opportunities for young people.

In the Ministry and Education and Science survey [16] on the consequences of ORES 2020/2021, two thirds of the students (66%) state that that they have access to a desktop computer, laptop or tablet. However, one third (29.7%) of the students rely only on their smartphones, which is not a prerequisite and condition for conducting a quality and effective learning process in an electronic environment. This share is the largest among students with mother tongue Roma or Turkish - 46.3% and 42.7%, respectively. In contrast, students indicated Bulgarian and other languages, mostly use a computer, laptop or tablet for the purposes of distance learning in an electronic environment. 41% of the students in the villages are studying on a smartphone in the conditions of ORES (compared to 25% in Sofia) [16].

Despite the efforts and investments of the Ministry of Education and Science and the broad public to provide all teachers and students with technological teaching devices from a distance, there is still a serious need among the most vulnerable students. According to the data of the Ministry of Education and Science as of 19.07.2021 over 43 thousand students in Bulgaria do not have a device to participate in the EORS.

The provision of the Internet is insufficient, according to the data of the MES study of the consequences from ORES 2020/2021. Providing the Internet for students who do not have one at home is has been funded exclusively by school budgets. However, school principals say that this is not sustainable because students do not use the internet cards provided only for education, and school budgets cannot afford to provide them every month. Necessary condition for safe on-site training in the next school year is a higher proportion of workers in the education system to be vaccinated against Covid-19. This is due to the expectations for the next waves of the virus and relatively the low percentage vaccinated in the system at the moment. According to data from the Ministry of Education and Science from July this year. 43% of school principals and kindergartens are vaccinated. Only 4% of schools and 3% of kindergartens have reached over 70% of vaccinated staff, and in 64% and 75% of schools and kindergartens, respectively, less than 30% of pedagogical and non-pedagogical professionals are vaccinated.

Statistics in practice means that in the absence of a change in the percentage vaccinated, a new wave from the virus will again lead to the closure of schools and the transition to the BSEC. Maybe to expect a significant loss of lives among pedagogical and non-pedagogical staff from Covid-19 and related diseases. According to the study, the main reasons for the low levels of vaccination among employees in the system are fears of negative side effects, incl. allergic reactions, the presence of concomitant diseases, advice from GPs not to be vaccinated, the presence of antibodies after Covid-19 and a lack of faith in the effectiveness of vaccines.

It could be concluded that there are a lot of positive and negative prerequisitec in results of digital education in secondary Bulgarian schools [15].

One of the problems of distance learning during the pandemic is that many teachers choose asynchronous learning. And while for a primary school this is more of a rule and is in line with the requirements for children not to stay in front of the screen for a long time, for the secondary schools it is not justified to send them presentations by e-mail. Stidents spent in front of the screen a lot of hours. Some families do not have enough training devices - they do not have a computer at home and / or internet connection; insufficient qualification and skills of teachers for effective use of ICT in the learning process, as well as lack of adequate electronic educational resources. The students do not receive adapted online content in the environment that is most familiar to them. It is a need to create a response readiness model that is clearly communicated [17].

## 5. CONCLUSION

This article was aimed at showing digitalization as an important aspect of modern life and education. From the presented data on the digitalization of society it can be concluded that serious steps have been taken in this direction, and that there is a significant share of people, especially at a young age, for whom digitalization is a key moment in their lives. At the same time, there are social groups, such as the older population, illiterate, ethnic minorities, who remain excluded from the digitalization process. In general, education can be seen as an environment for the development of digital skills and literacy, for the promotion of self-education and the creation of attitudes towards lifelong learning. In this direction, it is necessary to restructure the approaches to teaching and education, as well as the ways in which the various forms of teaching and communication between teachers and students are organized. Teachers themselves need to be better prepared for digital learning, it is necessary to develop innovative pedagogical and didactic models that are adequate to the digital environment and the expectations of the students themselves. n general, the processes of digitalization affect the nature of the interactions between individuals in different social communities that have different characteristics and specifics, and at the same time leads to the enrichment of resources, experience and understanding.

## CONSENT

Not applicable for this study.

## ETHICAL APPROVAL

"All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki."

## REFERENCES


1. Milenkova, V. and Lendjova, V. (2021) "Digital citizenship in the conditions of social crises: the Bulgarian case". *Computers*, 10 (4), 40. https://www.mdpi.com/2073-431X/10/4/40
2. Aviram, R., Eshet-Alkalai, Y. 2006: Towards a theory of digital literacy: three scenarios for the next steps. Eur. J. Open Distance E-Learn (2006). http://www.eurodl.org/materials/contrib/ 2006/Aharon_Aviram.htm
3. Eshet-Alkalai, Y., Chajut, E. 2009: Changes over time in digital literacy. Cyber Psychological Behavior. **12**(6), 713–1715
4. Bisht A., A. Radhakrishnan 2013 The Digital Talent Gap Developing Skills for Today's Digital Organizations, Digital Transformation Research Institute, Capgemini Consulting. Available:https://www.capgemini.com/resource-file- access/resource/pdf/the_digital_talent_gap27-09_0.pdf
5. Hargittai, E., P. Hsieh 2012 "Succinct survey measures of web-use skills". *Social Science Computer Review*. **30** (1). Available:
   https://journals.sagepub.com/doi/abs/10.1177/0894439310397146.
6. Merchant, G. 2007 Writing the future in digital age. Literacy. UCLA. **41(**3), 118-128
7. The effect of e-learning, Institute for Educational Research: https://cutt.ly/jRtCTZT
8. National Strategy for the Introduction of ICT in Bulgarian Schools https://www.president.bg/docs/1352306506.pdf
9. Bulgarian Law on preschool and school education. /Promulgated, State Gazette, no. 79 of 13.10.2015, in force since 1.08.2016, last amended and add. no. 58 from 18.07.2017, in force from 18.07.2017
10. For the transition from knowledge to skills the transition from knowledge to skills. https://www.mon.bg/bg/100770
11. Competencies and reference frameworks. https://www.mon.bg/bg/100770
12. Van Dijk, J. 2005 The Deepening Divide. Inequality in the Information Society. Sage Publications: London, UK
13. R. Papancheva, K. Dimitrova, "Indicators and criteria of qualitative and quantitative measurements of digital competences at primary school age," ICERI2017 Proceedings, pp. 6115-6122, 2017
14. Strategy for effective implementation of information and communication technologies in education and science of the Republic of Bulgaria (2014-2020) https://www.mon.bg/bg/143
15. Implementation plan on the Strategy for effective implementation of ICT in education and science (2014-2020) https://www.mon.bg/bg/143
16. Study of the Ministry of Education and Science on the consequences of the BSEC 2020/2021 ) https://bntnews.bg/f/news/o/1163/eccb666029b2707f4bf8fcb53e1189e0.pdf
17. M. Zamfirov, M. Stefanova-Bakracheva, T. Kolarova, E. Sofronieva, M. Blajieva, "Working and learning online during COVID-19", Education and technologies, vol. 11, no. 1, pp. 91–98, 2020.