

## Subject Approach in Digital Education

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**Abstract:** The work considers the main subjects of the educational process in the conditions of digital education, namely teachers, students, and parents of students. In modern education, focusing exclusively on the first two main subjects significantly reduces its quality. This is due to the fact that the student's parents are practically excluded from participation in the formation and activities within the digital educational space, especially outside the educational organization and using distance learning technologies. Moreover, the level of digital competence of parents is extremely heterogeneous. Below, we have reviewed the main ways of integrating this subject into digital education as its participant and customer. We presented the expected levels of education and our ideas about the content of the training, which, in the author's opinion, allow us to harmonize the intergenerational gap and form the digital intelligence of young people.

### 1. Introduction

The universal digitalization of education actively raises the question of the formation and nature of the digital competence of the subjects of education. This competence is not only and not so much technical or technological, as cognitive and ethical. The latter can largely be attributed to the structure of the concept of digital security of the person. As always, the questions are not so much the used methods of forming digital competence and learning content, as the measurement of the formation of competence and the assessment of its dynamics are the most difficult. Speaking of digital competence, we will proceed from understanding it as a combination of specific skills and ways of working. Namely: digital security activities in the digital educational environment (DEE); skills in data analysis and presentation; skills in data management and storage; data transfer skills; design and development skills within the chosen activity. All of them, inevitably, become priorities for all subjects of educational activities.

### 2. Materials and Methods

Considering the challenges and risks for the subjects of the educational process in the digitalization of education, first of all, it is necessary to describe these subjects. It should be borne in mind that the digitalization of the life of society can be implemented in two basic, very conventional forms. These are "active" subjects of education informatization — teachers, students, teaching aids, and "passive" subjects — the student's parents and the DEE formed by them according to the student's residence. The level of digital competence (DC) of modern teachers seems to be relatively sufficient and higher than that of students and their parents [1].

Earlier studies on the DEE examined them during the transition from computerization of education to its digitalization, focused on the possibilities of information and communication technologies (ICT) in terms of knowledge representation and analysis of learning outcomes [2].

### 3. Results

Pedagogical support in the conditions of digitalization of education is realized not so much within the framework of a traditional educational organization (EO), but rather outside the framework of such. And the main communication component is not local networks or wireless access (Wi-Fi) to the Internet within an educational organization, but a different, rapidly progressive and unsupervised teachers, the mobile Internet. With the transition to 5G networks, it will be irrelevant to talk about traditional restrictions on content in Wi-Fi networks of an educational organization due to the fact that the availability of mobile networks and the

speed of access to information will significantly exceed existing ones. In fact, the actual DEE of a student will be some symbiosis of the traditional, controlled environment of an educational organization and no one controlled by the digital environment of the student's residence. An almost massive shift to wearable means of access to the Internet and the use of anonymizing software is an additional factor [4]. In the annual report "Children. Media consumption. 2017" [5], the Institute of Contemporary Media showed that more than half of children from birth to 12 years of age have the opportunity to use a smartphone or tablet of parents every day (59%). Children own digital devices, including mobile ones, appear as never before: at the age of 3, every 10th child owns a personal gadget. By 10 years, 9 out of 10 children have their own tablet or phone or both devices at once. For a preschooler, the main digital device is a TV, for a teenager it is a smartphone. However, the study notes that the development of modern technologies occurs without the participation of parents, as a rule, since they do not have sufficient competence in digital and media technologies.

The modern stage of digitalization of education differs, first of all, in the fact that "passive" objects of digital education are becoming increasingly important. This is most vividly illustrated by the example of countries with practically universal informatization of all aspects of society's life. Studies in South Korea showed that ICT accessibility in the three main groups of subjects (teachers, students, and parents of students) is 95%. But when analyzing the categories of competencies in the application of ICT and satisfaction with their use for educational purposes with teachers, less than 80%. For students, the category of possession of DC was 71%, and for their parents less than 70% [6]. Accordingly, those conditions for the integration of the DEE of the educational organization and the student's place of residence for approximately one out of every four students do not correspond to the necessary ones, which complicates the possibility of its control by parents. This is especially true in terms of non-educational use of ICT, which studies of domestic authors confirm [7]. This suggests that the trends in the development of the information society are the same. Ownership of ICT in terms of access to social networks and network communication is not identical to the competence of the subject in terms of using ICT for educational purposes, which implies not only the training of parents in obtaining, processing and presenting educational information, but also increasing their satisfaction in this process.

The dynamics of modern ICTs in terms of the presentation of information also requires that trainers regularly improve their skills in shaping, presenting and distributing educational content, as well as analyzing the effectiveness of this process. It is actually about advanced training of trainers in the part of informatization of education.

According to the Law "On Education in the Russian Federation" dated December 29, 2012 No. 273-FZ, Article 44, "... Parents must lay the foundation for the physical, moral and intellectual development of the child's personality (clause 1); ... familiarize themselves with the content of education, as well as the methods of training and education, educational technologies, including assessments of their children's performance (clause 4)". Thus, for parents capable of actually providing only the accessibility of ICT outside the educational organization, the formation requires competence in terms of creating part of a safe and protected information educational space of the student outside the educational organization, competence in monitoring learning outcomes using ICT. Without the effectiveness and competence of this component to talk about the quality of education is currently not possible. Training has long gone beyond the traditional educational organization and is implemented in the student's DEE. And it is also the place of his stay or residence. And it's not possible to talk about the responsibility of the educational organization only in terms of the quality of training and parameters of the student's health in these conditions [8].

In addition, with the active use of distance learning programs and online learning, the educational program is implemented outside the educational organization. Modern parents are aware of the importance of digital technologies in the modern world and are ready to provide access to these technologies for their children, primarily in terms of education. Almost 77% of parents have access to ICT and 97.5% of them are aware of their importance for the quality education and successful employment of their children (89%). But 41% think they can do without ICT [9]. Understanding comes that the means of computerization of education, namely computers, tablets, smart phones, do not completely solve the problem of digitalization of education. Modern communication technologies do not lead to an increase in the quality of education. These are exclusively learning tools. The issue is the quality of resources used and the ability of subjects of training in the coordinated use of funds and resources within the unified DEE of a specific student. This is of particular relevance in the light of implementing the Priority project in the field of education "Modern Digital Educational Environment

in the Russian Federation” as part of the implementation of the state program “Development of Education for 2013-2020”. It is about bringing “the existing educational programs in line with the needs of the digital economy by introducing digital tools of educational activities and introducing individual education for citizens according to an individual curriculum over the whole life, at any time and in any place”. The project implementation is supported “by the widespread introduction of online training, including, mass open online courses – training courses with interactive participation and open access via the Internet”. According to the Minister of Education and Science of the Russian Federation, O. Vasilyeva, who spoke at the XVII Congress of “Edinaya Russia”, only 16% of the trainers know how to use ICT, this can complicate the project implementation.

The problem of teaching both students and their parents with the skills of a special kind of educational activity (self-education) becomes dominant. Indeed, according to the Project, by the end of 2025, more than 11 million students should receive education using online courses. The assessment of the value of self-education for a particular person is extremely individual [10]. And in the modern world, it is to be implemented through digital education outside of the traditional educational organization. In addition, it will occur throughout a person’s life. And the formation of self-education skills becomes a priority.

Speaking of traditional education in the framework of the educational organization and new types of digital and distance education, it should be noted that monitoring the learning process outside the educational organization is the most difficult in the latter case. This is explained not only by the different levels of primary training of trainees within the same level of training, but also by the differences in psychophysiological nature, different learning rates, different learning conditions outside the standardized educational organization, different nature of means of access to educational information outside the educational organization, different levels of external control by the parents. And the level of parental possession of digital competence is usually minimal with respect to the education of their children. And it is more correct to speak about the ownership of the common DC. The need arises to inculcate the specific pedagogical competence in students’ parents in the form of digital educational competence — knowledge, skills, abilities, and ways of performing pedagogical activity [11] in the digital educational environment. The current practice of participation of students’ parents in the analysis of electronic diaries; class network communities or educational organizations; participation in popular seminars and chats of an educational organization on ICT conducted by the educational organization itself seems to be a passive form of the parents’ activity, partly integrated into the activities of the DEE by the educational organization itself, rather than a specific student. When learning goes beyond the educational organization, parents will need not just knowledge of the existence of DEE, but also the skills and abilities to work in it, the implementation of current control of education in coordination with the teacher and later the student. And, quite naturally, the parents themselves, in the form of self-education, did not achieve this level of pedagogical DC. It is necessary to take into account the fact that transferring information into digital format (text, multimedia) imposes increasing requirements on the speed of information processing. In the conditions of information redundancy, the slow speed of information processing affects the effectiveness of training, which, in turn, requires individualization of training. The educational organization should not only lead the education of children, but, obviously, conduct advanced training of their parents. In fact, it will be a question of additional education of parents in a form that ensures their effective use by the DC outside the educational organization.

Considering the existing situation and the level of ICT possession by the students’ parents, they are extremely heterogeneous [12] and in most cases overestimated and inadequate; thus, two levels of parenting become priority. The first level (general DC) is aimed at ensuring parents mastering the level that allows them to adequately implement interaction with the educational organization and specific students through ICT. The second level is more specific and focused on informing parents about the digital educational technologies used, specific teaching methods, methods of monitoring the state of DEE outside the educational organization, as well as the place of residence of the student and taking into account the peculiarities of their own child’s health. Undoubtedly, joint training activities for children and parents of this or that ICT will be a priority for developing joint skills. Taking into account the different health conditions of the student and the impossibility of the educational organization to control it outside its borders at the place of residence or stay of the student, the issues of forming such health-saving information competence become a priority. Taking into account the fact that social Internet communications today are actually becoming a priority form of child socialization,

then the formation of parents' competence in terms of social networks, information security, information protection become an additional priority.

#### 4. Discussion

Earlier studies on the DEE examined them during the transition from computerization of education to its digitalization, focused on the possibilities of information and communication technologies (ICT) in terms of knowledge representation and analysis of learning outcomes [2].

The ability to use ICT in social communications does not speak yet about the digital competence of modern students. This is clearly seen in the studies of a number of authors [3], who clearly demonstrate that the ability to use a computer and the implementation of Internet access has nothing to do with the DC being formed in an educational organization (EO). In addition, students who do not have a computer at home, to a lesser extent possess the competencies indicated above. Therefore, even in the group of learners of the same age, the level of DC can be different. In this regard, the data on the meaning, type and level of an educational organization that has a direct impact on the level of development of the technical, cognitive and ethical components of the DC are also of interest. The study also shows the effect on the digital competence of the student's age (inversely proportional). The presence of a "spontaneous" DC of students does not mean that they systematize their skills in using ICT both in everyday life and for educational purposes. The question of the DC of the students' parents is even more complicated.

#### 5. Conclusion

It is necessary to recognize that at present, in the period of transition to the digitalization of education, attention is practically not paid to one of the priority subjects of education, namely the parents of the students. A significant intergenerational gap is caused not only by the difference in the age of generations, but also by the difference in the technologies of knowledge of the world. Unlimited access to unlimited information inevitably leads to the transformation of higher mental functions. It is to decrease in the level of concentration in the conditions of unlimited sources of information. Mnemonic functions are changing. If parents needed knowledge, then only the idea of the location of the specific knowledge is sufficient for a modern child. The mechanisms of memorization are changing. There is no need to remember the phone number if it is recorded in the device's memory and repeatedly duplicated in external resources. Narrowing the perception of the surrounding world, represented in a digital form changes its traditional view and minimizes it to the level of something limited, in time clip. Moreover, it does not require specific knowledge, but it is self-sufficient as a resource located in a certain place.

When implementing educational programs for parents of students, attention should be focused on their recognition of the importance of modern forms of knowledge of the world as given, and their development as a way of positive communication and maintaining communication with their children. Only this will allow to use the experience of generations in assessing the quality of the content of one or another significant resource for a student. It allows to assess its importance for the child and his place in the hierarchy of content within a specific subject area. Sharing technologies, databases, forms of search, analysis and presentation of information will allow to harmonize the intergenerational gap and form digital intelligence. It is a collection of social, emotional, and cognitive abilities that allow one to solve problems and adapt to the requirements of digital life.

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