

The problem of preparing a person for life in the conditions of sustainable development of digital technologies and products

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Abstract. The article gives a brief description of the new conditions of human life in the world, characterized by the search for optimal and effective resources for sustainable development. The relevance of the topic is due to new requirements for society and for a person. New conditions create new problems in solving the problems of training specialists who are able to work productively in a digital society. The purpose of the study was to identify the degree of readiness of young people of the "digital generation" to adapt to the new educational environment, the perception of new formats for the digital transformation of the education system. The analysis of the results of this study can contribute to the development of new didactic principles in the field of the use of digital technologies. One of the ways to overcome the conflict in the implementation of new ideas for the sustainable development of the economy, society and the professional training system is the development of a new scientific direction - digital didactics. This direction provides tools that explain the specifics of such components as: constructivism, operationalism, technicalism, pragmatism, reductionism, utilitarianism. Using the method of large-scale monitoring and analysis of respondents' answers, we found out that today the "digital generation" is more ready for digital transformation than the carriers of professional and academic knowledge. Overcoming intergenerational contradictions is becoming one of the main problems of modern society and the education system.

1 Introduction

At the centre of the problem of preparing a person in the face of new challenges of the 21st century are fundamental philosophical and ideological issues, including the goals of human existence, the formation of ideas about oneself, one's place in the world, and the search for optimal ways of self-definition. The listed components became actual in the present-time complex needs of the society and, in our opinion, are central in studies aimed at studying the forced-choice situation of a person in the face of new challenges that require a response from him: reflection, deeds, actions. More relevant than ever is the search for answers to questions related to a human confrontation with global challenges, the destruction of the fundamental foundations of traditional cultures and religions, and basic worldviews.

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In this situation, it seems fit to turn to the resources of education, its capabilities and the variety of tools that provide, on the one hand, to change the quality and level of organization of meaningful life spheres of human activity (ideas, attitudes, values, meanings) and on the other hand, to enhance its technological preparedness (digital skills and competencies, use of digital tools and services). Obviously, the main characteristic of the education of the 21st century is digitalization, which in recent years has significantly changed the architectonics of foreign and Russian education. The profound transformation of the educational process and its elements is a response to the changes taking place in the world. There are several points of view on the problems of preparing a person for life in a digital society. Within the framework of one of them, it is noted that the “end of the natural, traditional person” has come, and instead of it, an “actor” has appeared - a special dominant type of a person in the modern technological era of a behavioural, cultural, and historical warehouse whose activity is based on value-semantic choice, pragmatism, and economic expediency [1-3]. At the same time, other researchers warn of the danger of going into a simplified version of solving the problems facing society and the education system, noting a rethinking of the essence and formats of education, as well as the need for a balanced existence of a humanitarian block in the training of specialists [4]. The new type of education is based on its value itself, the value of knowledge and experience - the basis of motivation building and goal-setting forming [5]. The importance of the humanitarian component and the axiological approach is also mentioned in the digital transformation strategy of modern universities. Some researchers note the general systemic digitalization and the rapid pace of structural and large-scale changes in the digital environment as the main trends that determine the future of the education system. Digitalization as a driver of innovative shifts that affect the quality of education in the higher education system determines the need for the formation of relevant and sought-after competencies in the student environment, which can become an effective mechanism for increasing the managerial and pedagogical potential of higher education, developing innovative educational technologies [6-8]. It opens up great opportunities for students and teachers, stimulating the emergence of innovative learning models and classroom formats. Thus, the large-scale implementation of the "numbers" is determined by the socio-economic and psychological-pedagogical factors of the modern era [9, 10].

Analyzing and considering various approaches, we believe that several significant technological discoveries and an ever-increasing amount of information require the "selection" of knowledge and its structuring, creating a large-scale challenge to the existing educational system. In modern conditions of the so-called "multi-knowledge" and "multi-tasking", as A. G. Asmolov notes, the model of preparing a "complex person" for life in a complex society is in demand [11]. Future generations will live in a world of great complexity and a high degree of uncertainty. Therefore, in the education system, the emphasis is on the formation of personal and professional competencies and qualities as universal actions that allow students to develop metacognitive strategies, form their own worldview and determine their personal educational trajectory in the face of new challenges.

This research goal is to identify the state of students' possession of digital competencies and skills at present and their requests for forms and methods of teaching in the educational environment, including in the context of the digital transformation of the university.

2 Research methods

To analyze the problem of research and the state of digitalization of educational activities, we used the study and analysis of Russian and foreign scientific publications, synthesis, systematization, and comparison. To gather information about the possession of digital

competencies and methods of distance learning by students and teachers, we used the questionnaire on a wide range of issues. The assessment was carried out within the quantitative and descriptive methodologies using statistical, factorial, and comparative data analysis. A total of 558 people participated in the survey, 24.3% of which were teachers, and 75.7% were students. Data collection was carried out using a virtual questionnaire on the Google Form platform. Respondents participated in the survey voluntarily and anonymously.

3 Research results

Compared with past generations of people who studied and developed in times of the absence of the Internet and therefore had the opportunity to communicate mainly through direct contact, the current generation, due to the specifics of the 21st century, basically communicates through social networks. The real-life space is to a far greater degree replaced by the virtual one, which, unlike the real one, is practically unlimited, has a vast amount of information, and is available anywhere and at any time. All of that makes communication operational, devoid of territorial boundaries, rich in information and providing instant feedback. On the other hand, these same advantages distance a person from “live” communication and make him more withdrawn, preferring to manifest himself mainly in social networks, Internet-dependent. The preference for online communication over live contact forms a new way of thinking. Gradually, takes place the reassessment of values, a career becomes preferable to a family, the desire for material well-being and self-interest gives rise to insincerity, and online communication leads to a decrease in friendships. This process began a long time ago but became noticeable only in the 21st century. In this regard, V. I. Filatov identifies three main problems of modern man: rapid changes complicate the choice and forecasting of the society's ways forward; the ability to understand and evaluate the main issues and tasks of their time, to see and find solutions determine the effectiveness of a person's participation in the social process; the habit of living within the existing tradition and the need for a moral choice between good and evil [12]. The driving age accelerates the pace of life, and it becomes more and more rapid. On the one hand, there are more and more opportunities, and on the other hand, there is less and less space for the manifestation of individuality.

In the “knowledge society”, a person needs, in addition to professional knowledge and professional/technical skills, the so-called “hard skills” to possess many other social and labour “soft skills” and universal social/volitional competencies. The target competency model 2025 [13] defines three main groups of competencies: cognitive, social-behavioural and digital skills (Table 1).

Table 1. The target competency model 2025.

COGNITIVE SKILLS		
<i>Self-evolution</i> Self-comprehension Trainability Openness to criticism and feedback Curiosity	<i>Self-discipline</i> Organization of your activities Resources management	<i>Management skills</i> Prioritization Goals setting Team building Development of others Motivating others Delegation
<i>Achieving a result</i> Responsibility, risk acceptance Persistence in achieving goals Initiativity	<i>Solving of non-routine problems</i> Creativity, including the ability to see possibilities Critical thinking	<i>Flexibility</i> Dealing with ambiguity
SOCIAL-BEHAVIOURAL SKILLS		
<i>Communication</i> Presentation Written Negotiation Openness	<i>Intersocial skills</i> Teamwork Ethics Empathy Customer centricity Stress management Adequate acceptance of criticism	<i>Intercultural exchange</i> Mindfulness Social responsibility Cross-functional and Cross-disciplinary interaction Foreign languages and cultures
DIGITAL SKILLS		
<i>Systems making</i> Programming Application Development Manufacturing systems design	<i>Information management</i> Data processing and analysis Visualization and interpretation, presentation and decision making	

For magistrands and bachelors, according to the results of a large-scale survey conducted by the National Research University Higher School of Economics [14], employers have identified the main set of necessary qualities that they believe are currently lacking in young professionals (Figure 1).

In addition, new generations of people who grew up on gadgets and the Internet set new standards of learning for the integrated and synergistic use of digital tools [15]. In their reality, real and digital worlds are strongly intertwined that perception of the world and its knowledge are already unthinkable without information and communication technologies. Therefore, educational technologies, readiness of students and role of teachers in the digital world must also change. The education values in the context of digital transformation lie in formation of not only general and professional, but also digital competencies, which are so necessary for the modern generation of specialists responsible for the future of our country. And it should be considered that online space as a self-regulating system is constantly evolving and becoming more complex. It enters into all spheres of life, education and work. Therefore, development of digital skills and digital literacy is becoming the “ABC book” of life in modern society.

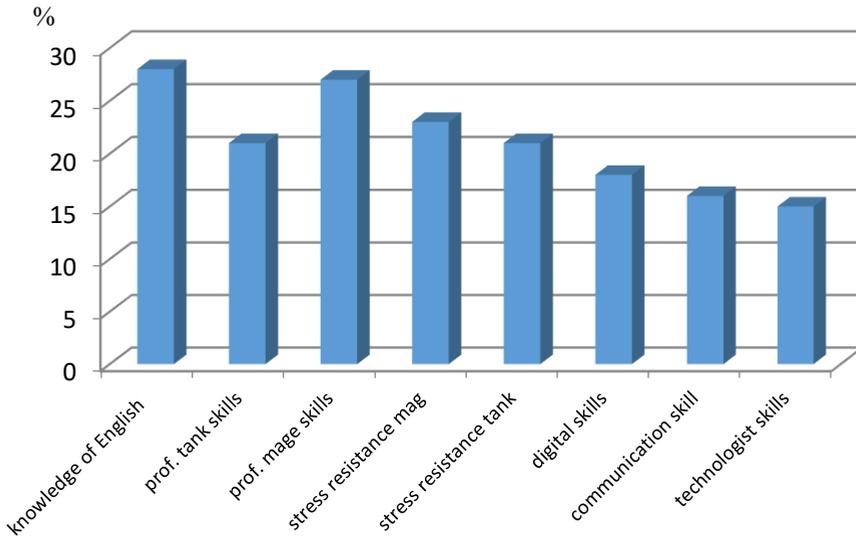


Fig. 1. Lack of qualities in young professionals.

Digital transformation leads to the expansion of number of digital tools in education and creation of the ecosystems, including neurotechnologies, online technologies, machine learning, artificial intelligence, Big Data, mobile technologies, VR and AR (augmented and mixed reality), gamification, etc. There is a constant change in professions. Activities become more difficult. Until 2025, as economists note, Russia will need from 5.8 to 9.2 million qualified specialists in the “Knowledge” category. It is assumed that from 9 to 50% of all currently existing professions will disappear in the next decade, releasing up to 10 million specialists of less qualified categories [13, p. 51]. Therefore, on the one hand, the current situation requires mobility, the ability to learn and retrain from a person. On the other hand, Internet addiction and the dominant value of consumption exacerbate life issues, requiring one to constantly be on the move, searching and improving oneself. However, according to the results of various analytical studies, there are insufficient digital competencies and skills among 64.1% of respondents, while the lack of qualified personnel is 60.9%. In general, there is a low level of digital development of human capital in our country. All this gives rise to problems, both for person themselves and education system. The system faces the following questions: how to prepare a person for a future about which nothing is known today, what to teach and how to teach, where and when to conduct educational process, what forms and methods use, while creating a comfortable learning environment?

According to the results of our survey, at the moment only 45.7% of respondents consider themselves fully prepared for digital transition, and 37.6% note certain problems.

More detailed information on the degree of readiness to work in a digital environment of teachers and students is presented in Table 2. It can be observed that communication and cooperation are mainly used in a digital environment.

Table 2. Degree of readiness to work in a digital environment.

<i>Indicator</i>	<i>Students</i>	<i>Teachers</i>	<i>Overall result</i>
Usage of digital technologies for teaching/learning	11,5	1,0	9,4
Communication and cooperation in digital environment	46,6	85,4	55,2
Critical thinking in digital environment (assessment of reliability of information, logical conclusions based on information and data)	2,4	1,9	2,3
Information management (to find, perceive, analyze, memorize and transmit information using digital means)	10,4	1,0	8,6
Creative thinking as the ability to generate new ideas	0,5	0,3	1,0
Self-development using digital tools	22,8	1,0	16,4

Students associate the main problems with insufficient digital educational environment, lack of necessary equipment, lack of certified digitized training courses, and expert assessment of the quality of digital educational products. All this, obviously, affects the quality of education, a decrease in which is noted by 22.4% of students against 16.5% of teachers. At the same time, both of them noted the improvement in quality almost equally.

At the same time, in order to ensure quality education in a digital environment, the functions and roles of teachers must change. Significant functional changes in the educational process and the interaction of its participants create learning conditions in accordance with the characteristics of each, including the choice of an educational trajectory, the method of mastering educational material and its complexity, the pace of work, the nature of receiving educational assistance. However, the organization and conduct of an effective educational process in a digital environment inevitably requires setting and solving new pedagogical tasks, changing the functions and roles of teachers. To achieve this, first of all, teachers are required to master digital literacy and digital competencies in three aspects: cognitive (knowledge), technical (skills) and ethical (attitudes) [16-19]. It is not translators of knowledge that become necessary, but a qualitatively different teaching staff. Facilitators are required: guides in a digital educational space, trainers of project activities, developers of educational environments, Internet navigation instructors, web psychologists, network educators-curators, specialists in examination of digital educational products, analysts-correctors of a digital educational footprint, etc.

According to the results of the survey, other difficulties and problems of learning in the digital environment should also be noted: psychological discomfort is considered by 20.7% of respondents; lack of "live" communication - 60.2%; decrease in motivation - 36%; communication problems - 44.3%; an increased volume of work - 32.3%, and complexity in organizing collective activities - 36%. At the same time, 19.8% of students prefer a fully contact form of education, and 15.8% are ready to study in a distance format. 27% believe that there should be different approaches for different academic disciplines.

The study shows that there are many problems in the process of preparing a person for life in the digital environment of the 21st century, despite some achievements. The following aspects remain unclear: in what ratio distance and traditional technologies should be used when mastering an educational program; how long a lesson should last in a digital environment; in what style lectures and practices should be held; what methods of assessing

achievements should be used; what students themselves can master in digital educational environment; what needs to be stated by a teacher; how to ensure understanding and independent assimilation of complex sections of the content of academic disciplines remotely. Answers to many of them should be given by a new area of pedagogy - digital didactics.

4 Discussion

The formation of digital didactics requires scientific research and experimental work. Traditional didactics has matured for hundreds of years since the time of J. A. Komensky. Some of its principles and provisions have been repeatedly revised and modified. Obviously, at present, there is not so much time for digital didactics, and it is not required, since the basic laws of traditional teaching are largely transferred to digital didactics. They are transforming to the conditions of the digital environment. Most notably, the thesaurus is greatly expanded. A lot of new concepts come into being. The new educational environment also requires new approaches, providing a link between leadership and flexibility [20]. Digital transformational leadership and organizational flexibility have a positive effect on the speed of digital transformation [21], making the tasks of digital didactics more and more complex. That way, willingness to learn in a digital environment and new didactic learning functions based on digital educational resources appear [22, 23].

Digital didactics, in its essence, ceases to be a purely humanitarian discipline. It borrows many positions from such areas as information technology, digital systems and platforms, cloud technologies, cross-cutting digital technologies, training simulators, exercisers, augmented reality tools, chat bots, infographics, multimedia, etc.

5 Conclusion

In the article, we tried to identify one of the important problems of a modern person - their presence in the digital environment, as well as the best ways to master it. Moreover, we consider the issue of preparing for life in a digital environment, based on the organic and actual needs of an individual - sense and value. In addition to stating the uneven development of digital tools and presence of clip-mixed perception of information, we consider the specifics of tasks facing education today, including higher professional education. The authors, updating the classical principles of digital didactics, propose to use them in modern processes of education modernization, since it is on this methodological basis that it is possible to build a balance between classics (tradition) and innovation (transformation). The analysis of the scientific literature on the research issue showed that a digital transformation of education in domestic and world practice is slow, mainly due to poor digital literacy of participants in the educational process. The results of the survey of students and teachers also show a weak readiness for the mastering and application of digital tools in educational practice. Furthermore, the issues of preparing a person for life in a digital environment of the 21st century are associated with unpreparedness of methodology for teaching in a digital environment. At the same time, the basic didactic principles and provisions in a slightly modified form repeat traditional didactics, and formation and development of digital didactics is at an early stage.

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