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Abdulgalimov Ramazan Medzhidovich [1]

Abdulgalimova Guriyat Nurakhmedovna[1]

Kasimov Arif Kamalutdinovich [1,3]

Vezirov Katib Talibovich [2,3]

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Abdulgalimov Ramazan Medzhidovich [1],Abdulgalimova Guriyat Nurakhmedovna[1],Kasimov Arif Kamalutdinovich [1,3],Vezirov Katib Talibovich [2,3](2021). Digital Technology In Professionaltraining Of Students *Journal for Educators, Teachers and Trainers,* Vol. 12(4). 191 – 197.

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[1] 367000, Russia, Makhachkala, Dagestan State Medical University
[2] 367000, Russia, Makhachkala, North Caucasus Institute (Branch), the All-Russian State University of Justice (RLA of the Ministry of Justice of Russia)
[3] 367000, Russia, Makhachkala, Dagestan State Pedagogical University

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Abdulgalimov Ramazan Medzhidovich [1],Abdulgalimova Guriyat Nurakhmedovna[1],Kasimov Arif Kamalutdinovich [1,3],Vezirov Katib Talibovich [2,3]

[1] 367000, Russia, Makhachkala, Dagestan State Medical University

[2] 367000, Russia, Makhachkala, North Caucasus Institute (Branch), the All-Russian State University of Justice (RLA of the Ministry of Justice of Russia)

[3] 367000, Russia, Makhachkala, Dagestan State Pedagogical University

Email :ramazan.abdulgalimov@mail.ru,guriat.abdulgalimova@mail.ru,arifkas@mail.ru,vezirov.katib@mail.ru

ABSTRACT

The article considers the use of digital technologies in the educational process and their impact on increasing digital literacy among future specialists. The results of the study of students' readiness for the use of digital technologies in the educational process has been presented. The measures to improve the digital educational environment (DEE) of the university has been proposed.

Keywords: digital technologies; digital literacy; preparation; future specialist, education; digital environment.

1. INTRODUCTION

In the modern period of social development, digital technologies determine the level of development of the state, personality, specialist and becomes the main resource in the life of every person. In these conditions in the new consciousness of people there is a need for the development of information (information technology) competence, digital culture, the readiness of future specialists to use digital technologies in professional activities, the most important feature of which is the value attitude to information, technology means and digital technologies.

In this regard, according to the order of the Government of the Russian Federation dated 28 July 2017 No. 1632-p, the program "Digital Economy of the Russian Federation" was developed and approved for the period 2018-2024, where one of the basic directions of transforming the economy into a digital one are personnel and education [14].

On the other hand, the leading purpose of the National Project "Education" and "Modern digital educational environment in the Russian Federation" is the creation of a modern and safe digital educational environment, representing high quality and accessibility of education of all types and levels [11]. The potential of digital technologies in educational process increases from year to year due to the constant use of modern electronic resources in the educational process.

We present digital technology as a communicative tool for the effective development of the digital educational space, which promotes cooperation and creativity, the development of professional competencies that are essential for existence in the modern digital world.

It is inconceivable to imagine the modern world, especially the educational process, without digital technologies, because they have penetrated so deeply into the everyday life of every person.

Their use in the digital educational environment of the educational process is the most reliable mechanism for monitoring the quality of student training, which makes it possible to fulfill the requirements for the quality of education not only on the principles of studying specific indicators, but also on the basis of a systematic analysis of their interaction.

2. PURPOSE AND OBJECTIVES OF RESEARCH

The purpose of research. Collection of objective indicators of the readiness of future specialists to use digital technologies in their professional activities.

Research objectives:

1. Study of approaches to assessing the level of digital readiness of future specialists;
2. Calculation of students' digital readiness indices;

3. Assessment of students' readiness to use digital technologies in the educational process (index of ICT-competencies);
4. Development of recommendations for increasing the digital readiness of future specialists in the educational process.

3. LITERATURE ANALYSIS

A major contribution to the development of readiness for the use of digital technologies in the educational process was made by scientists T. A. Aimaletdinov, L. R. Baymuratova, N. D. Berman, S. G. Davydov, O. A. Zaitseva, G. R. Imaeva, O. S. Logunova, L. V. Spiridonova [19], Evans K., McGrae B., Varga-Atkins T [25]
The issues of understanding digital literacy were discussed by modern Russian and foreign scientists A.M. Kondakov, P.O. Luksha, M.S. Dobryakova, I.V. Kuzor, N. Asadov, S.V. Gysina, Gilster P. [27], White G. [29]
The use of digital technologies in the educational process became the subject of study by R.M. Abdulgalimova [1,21,22], T.G. Vezirova [3,4,5], K.T. Vezirova [2], S.G. Davydova, O.S. Logunova, EA Shefer [20], A.Yu. Uvarov [17, 18], Belshaw D. [23].
The digital literacy index was considered by scientists O.V. Kuchmaeva, T.K. Rostovskaya, S.V. Ryazantsev and others [9].
The role of DEE in the management of an educational organization is reflected in the works of N.R. Kurkina, Chirkunova E.K. [7,8], B.S. Sadulaeva, P.R. Muradov [15] and others.
A major contribution to the development, implementation, management of the modern information and educational environment was made by B.S. Akhmetova, E.Y. Bidaibekova [7] S.V. Zenkina, O.A. Ilchenko, S.N. Panyukov [13] and others.
Analysis of scientific literature shows that the degree of readiness of future specialists to use digital technologies in professional activities has not been sufficiently studied, at the same time this aspect is one of the priority directions of the state policy of the Russian Federation, which accentuates the relevance and requires deep reflection.

4. METHODOLOGY

Russian vocational education focuses on the problems associated with the implementation of a strict state order with limited flexibility of general education and professional programs, with a weak focus on satisfying the educational interests of the student's personality, the solution of which is key to the development of digital learning technologies.
In this regard, modern educational institutions are required to create the necessary conditions for the training of a specialist adapted to self-development and self-realization, possessing a set of competencies and meeting the requirements of the modern labor market, as well as to build modern mechanisms and methods for improving the quality of educational services taking into account professional requirements [10].
In modern society in a constantly changing environment each person, especially the future specialist, is faced the challenge of raising their own level of digital culture, which offers continuous improvement and self-improvement of professional knowledge and skills and allows to organize independent project and research activities, as well as free access to collections of educational and teaching materials.
In this regard, it is necessary for future specialists to develop the ability to navigate independently in the digital information flow, use and process it, and integrate it into new technologies. The use of digital tools and services expands the boundaries of the educational space and allows future specialists in the region to feel that education remains of high quality throughout the territory.
The acquaintance of future specialists with an educational institution begins with a website, where digital technologies allow to demonstrate the transparency of the selection committee, track statistics and analyze educational programs offered by universities. Further, students are faced with the DEE of the educational institution, where the websites of the university, departments, teachers and each student are located. Students get access to electronic resources (assignments) through an individual electronic key.
It should be noted that there is some passivity of students at the beginning of work in the electronic educational environment. Then as they acquire the operating skills with digital technologies, the interest and desire to work independently with new technologies increase and the growth of digital literacy of future specialists is traced.
The introduction of digital innovations in the educational process is connected with the rapid adaptation of online learning, which gives a boost to the development of hybrid forms of education and online courses that provide the future specialist with spatial and temporal freedom. COVID-19 is a striking example.
First of all, digital transformation in education is the digitalization of educational content. At the present stage, the process of developing electronic textbooks is actively developing. Their implementation in the educational process becomes the main element of DEE as well as a tool for implementing the conditions of the new generation Federal State Educational Standard. In this regard, we have prepared a variety of electronic resources, including educational publications and programs for students at different levels.
One of the technologies of the e-learning system which was developed on the Moodle platform [12] was

actively used by us during the spread of the pandemic. This system includes more than one hundred online advanced training courses in disciplines, interdisciplinary courses and professional modules in accordance with the requirements of the Federal State Educational Standard. The developed environment on the Moodle platform provides many tools for learning programs, for self-study and mentoring, for prompt and friendly feedback, for monitoring progress, etc.

We tested this system during the COVID-19 pandemic in the educational process in a number of Dagestan secondary professional (medical, law colleges) and higher (medical, law, classical university) educational institutions in the city of Makhachkala in Russia.

In order to determine the assessment of students' readiness to use digital technologies in the educational process (index of ICT-competencies), we conducted an online survey (questionnaire) of students of the above-mentioned educational institutions. The survey involved 463 students, 127 of them from secondary vocational educational institutions. The results of the survey indicate that a high degree of readiness for the use of digital technologies in the educational process was shown by those students who passed the special course “Digital technologies for vocational education” created and tested by us at the Dagestan State Medical University and those students who created by their own a portfolio of academic disciplines in within the DEE of their educational institution.

When developing a special course, we were guided by the requirements of the Federal State Educational Standard of Higher Education 3 + according to which a modern university should provide the appliance of innovative teaching technologies that develop the skills of interpersonal communication, teamwork, decision-making, reading interactive lectures, conducting group discussions and projects, analyzing business situations based on case method and simulation models, conducting role-playing games, trainings. The developed course involves the constant development and improvement of professional (information technology) training of students based on the results of scientific research and permanent "feedback" with educational institutions [1].

The digital readiness index was calculated using the formula **I = (n-m) / z**, where **I** is the digital literacy index, **n** is the total number of positive answers, **m** is the total number of negative answers, **z** is the total number of all answers.

The digital readiness index of future specialists was considered as an integral indicator of the level of digital education readiness based on the assessment of information, computer, communication and media literacy indicators.

The indicators of the analysis of digital readiness level indicate that 2/3 of the students do not have sufficient knowledge, but have certain operating skills in digital technologies and follow the correct recommendations. Work experience shows that students have a need for:

• obtaining knowledge in the field of modern computer technologies and the principles of their work;
• mastering the skills of using modern technologies (gadgets and applications);
• training in the approach to search and check information from the Internet and the mass media.

The collection of data on assessing the level of digital literacy was carried out by an online survey of students of professional educational institutions and higher educational institutions of the Republic of Dagestan using a structured questionnaire that includes closed and open questions. In order to get a true picture, the respondents were offered test questions to reveal the proportion of students who do not use digital technologies in the educational process.

The research was based on the theoretical and methodological foundations and practical experience of our work with students. In the course of the research, we used the following methods: the study of scientific and methodological literature in the studied area, methods of logical analysis of concepts to clarify the concept of the digital educational environment and find the most suitable conditions for its effective use in the educational process.

Analyzing the readiness of students to use the possibilities of digital technologies in their future professional activities, we have highlighted the following advantages:

1. Comprehensibility of thinking and the interface of digital technologies in the educational process.
2. The ability to construct informal interaction in the communicative space of the DEE of the teacher and students.
3. The ability to independently or jointly create online educational material (glossaries, text, articles, discussions, pictures, videos, multimedia libraries, etc.) in virtual study groups using forum and Wiki technologies.
4. A high level of cooperation between teacher and student, which guarantees the continuity of the educational process.
5. Opportunity to go beyond the classroom when discussing theoretical issues of project work with students, contributing to increasing the effectiveness of training.
6. Simplicity of multimedia communication space for downloading and viewing video and audio materials, interactive applications in a virtual study group.

The ability to combine individual and group forms of work helps to understand and assimilate in better way the

material being studied and to form individual educational trajectories. In addition, a single communicative space for all participants in the educational process makes it possible to evaluate the processes and results of work collectively, monitor the development of each participant and evaluate their contribution to collective creativity.
The analysis of creative activities and the experimental work carried out to identify the readiness of future specialists of secondary and higher educational institutions to use digital technologies in training showed the dynamics of the readiness of future specialists.
A high level of preparation for the use of digital technologies according to all criteria was shown by students who completed a special course. So, for example, students have improved:

- the ability to self-orientate in the digital information flow from 16% to 28%;
- the level of professional knowledge and skills in using digital technologies from 13% to 28%;
- creativity (that means to achieve a goal, find a way out of a seemingly hopeless situation using digital technologies) from 13% to 25%;
- reflective (overcoming learning difficulties by providing consulting assistence using digital technologies) from 15% to 21%.

In 2021 according to the results of the digital dictation "Russian national educational action to determine the level of digital literacy", we evaluated indicators of digital literacy: computer, information, communication and media literacy.
The results of the dictation showed that students who studied a special course and were engaged in self-education showed a high level of readiness. In percentage terms, the results of our digital dictation are presented in Table 1.

Table 1

Readiness levels	Information		Computer		Communication		Media literacy	
	Before (%)	After (%)	Before (%)	After (%)	Before (%)	After (%)	Before (%)	After (%)
	Experiment		Experiment		Experiment		Experiment	
1-high	12	27	19	37	13	32	11	23
2-medium	17	37	25	44	21	43	19	37
3-low	71	46	56	19	66	25	70	40

5. INTERPRETATION

The research results were discussed at departments and scientific and methodological seminars in each of these educational organizations as well as at International, Russian national and Regional scientific and practical conferences. The electronic publications for educational purposes developed by us are posted on the distance learning portal http://spec.skif.donstu.ru, on the website of master students of the Dagestan State Pedagogical University (http://www.magistr-fmf.ru) and on the electronic resource “Portal Technology in teacher education” on the website https://kulibekovan.wixsite.com/1234 [21].

6. CONCLUSION

In conclusion, we would like to note that the successful use of digital technologies in the educational process expands new opportunities for the formation of a high-quality digital educational environment that provides the potential for each participant in the educational process to receive the necessary information, to build a segment of knowledge along an individual educational trajectory that will organically interact with all participants in the educational process. The created digital educational environment brings to life the personal tasks for the student, teacher, parents and educational organizations.
The quality of student readiness in professional educational institutions will increase if:

- design and implement a digital training model for students based on modern teaching aids;
- create and test electronic educational and methodological complexes in the learning process in the specialties of vocational education and higher education;
- introduce a special course at the initial stage of training in all educational institutions.

The potential of the digital educational environment should become the basis for improving the quality of education, the basis for the full-fledged formation of the personality of a modern student.
The potential resources of higher education make it possible to orient future specialists towards the development of personal qualities, which will become the basis of their professional training.
The development of the digital educational environment makes it possible to modernize the educational process, develop the required level of digital readiness of students, deploy digital methods and models of teaching, as well as automate and improve the efficiency of education management processes.

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