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ARTÍCULO DE INVESTIGACIÓN

La pedagogía digital en el sistema de educación superior inclusiva

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Resumen

Una revisión de las publicaciones científicas sobre la calidad de la formación de especialistas en organizaciones educativas inclusivas ha demostrado que, junto con la creación de un entorno accesible en las universidades, es necesario organizar las condiciones que garanticen una alta cualificación profesional de los especialistas con tales cualidades personales y profesionales que garanticen su demanda en el mercado laboral. Partiendo de esta base, era necesario crear un entorno educativo electrónico de este tipo en una universidad inclusiva, que permitiera no sólo incluir a los estudiantes discapacitados en el espacio educativo, sino también proporcionar las condiciones óptimas para el desarrollo profesional pleno y la autorrealización del individuo. En la investigación realizada se utilizaron métodos tanto teóricos como empíricos. El entorno digital implementado en una organización educativa inclusiva proporciona un acceso sin obstáculos a la información, ayuda a construir la comunicación educativa y social, contribuye a la formación exitosa de la competencia profesional y comunicativa de los estudiantes con discapacidad.
Palabras clave: universidad inclusiva, entorno educativo, mercado laboral, jóvenes profesionales

Abstract

Digital pedagogy in the system of inclusive higher education

A review of scientific publications on the quality of training specialists in inclusive educational organizations has shown that, along with the creation of an accessible environment in universities, it is necessary to organize conditions that ensure high professional qualifications of specialists with such personal and professional qualities that guarantee their demand in the labor market. Based on this, there was a need to create such an electronic educational environment in an inclusive university, which would allow not only to include disabled students in the educational space, but also to provide optimal conditions for full-fledged professional development and self-realization of the individual. Both theoretical and empirical methods were used in the conducted research. The implemented digital environment in an inclusive educational organization provides unhindered access to information helps to build educational and social communications, contributes to the successful formation of professional and communicative competence of students with disabilities.
Keywords: inclusive university, educational environment, labor market, young professionals

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1.- Introduction

The current information stage of the development of civilization is characterized by a significant increase in the penetration of information and communication technologies into all spheres of human life, including education. This trend is typical for educational institutions of any level of education, including universities.

Due to the active introduction of information technologies, a new situation has developed in the field of education. While preserving the multifaceted pedagogical heritage, the model of practical pedagogical activity is modified, due to the use of new resources:

- placement of educational material in educational process management support systems (distance learning system, teacher's personal website; e-mail) –
- monitoring using special software (electronic testing, educational process support system);
- implementation of the teacher's feedback with the student via e-mail, educational process support systems, the teacher's personal website;
- introduction of our own online courses into the educational process in a mixed learning format, as well as foreign and Russian educational platforms into the education system;
- conducting webinars and video conferences (online lectures or online seminars as training sessions and additional consultations, recording them for repeated use by teachers working with students at a distance);
– the use of pedagogically adapted audio and video materials;
– the use of software when creating presentation materials for the taught course;
- providing network access to electronic libraries, databases, scientific journals;
- using electronic educational literature (Kalinina, 2018).

In the existing education system, new information and educational technologies are being introduced into the organization of the educational process at the university based on digital pedagogy. Digital pedagogy is a new phenomenon. In order to improve the effectiveness of graduate training, it is necessary to understand the situation in the field of education and the importance of introducing advanced information technologies in the learning process. The pedagogical theories, on which the modern education system is based, taking into account the new changed realities, are being rebuilt on the go. Scientific and technological progress in modern conditions is gaining momentum, penetrating into all areas of activity. There is no doubt that irreversible changes are also taking place in education. Information, computer and telecommunications technologies demonstrate a decisive impact on the development of interactive pedagogical technologies. The modernization of technologies in the field of education is dictated by

modern requirements that are presented to university graduates. Employers strive to find creative employees who are able to quickly find a non-standard approach to solving problems. Based on this, the education system is forced to quickly rebuild and improve, becoming competitive, giving out a huge effect. The Russian market has started offering alternative services for additional professional education for adults. Tutors were needed, virtual courses and online lectures were developed. The accessibility and scale of the implementation of the above-mentioned forms of obtaining additional professional education attracts (Sinelnikov, 2013).

It should be noted that the term "digital pedagogy" has been used in foreign scientific literature quite widely and for a long time. The essential significance of digital pedagogy should be understood as the expedient use of digital technologies in teaching disciplines from the position of critical pedagogy, i.e. from the position of individualization and personalization of the educational process using information technologies that contribute to maintaining the cognitive activity of students (Morris, 2014).

According to Sean Morris, not every teacher can become a real teacher. The scientist believes that the meaning of pedagogy is to exchange life experience and learn the truth. Modern pedagogy should be based on awareness, intuition, timeliness and improvisation (Morris, 2013). Pedagogy is not so much teaching as the integration of philosophy and practice (Stommel, 2013).

Digital pedagogy involves improvisation when new conditions arise during the experiment. For a teacher who implements digital technologies, research is important. It is not possible to reproduce the methods of traditional training in a digital network. The online learning system contains exactly the resource potential that allows using a research approach (Rorabaugh, 2012).

The digital pedagogy formation is not sufficiently clear. Therefore, it is necessary to experiment, searching for new successfully functioning models of pedagogical activity. Digital pedagogy expands the possibilities of learning and teaching: interactive teaching methods stimulate students ' creative manifestations, motivate them to model professional situations, involve them in creative practical training, establishing closer ties between students and employers.

It is necessary to search for balanced and reasonable approaches to informatization of education. The introduction of rapidly developing information technologies into the educational process creates an opportunity for the teacher to choose the optimal method that ensures the quality of modern education. The teacher decides for himself which method to choose, and this choice is due to the focus on a specific educational result (Grinshkun, 2018).

The basis of the electronic educational environment should be based on such socio-psychological phenomena as competition, cooperation, high inclusion. Within the

framework of interaction in the electronic educational environment, group cohesion occurs through maintaining communication and organizing a constructive discussion. As part of the digitalization of education, a group form of training is being implemented, which involves building a two-way communication, when students are given the opportunity to evaluate each other's work, help the underachievers and evaluate intellectual progress (Sinelnikov, 2013).

The main means of functioning of the digital environment is the dynamism of the student himself, since it involves not only the perception of information, but also constructive actions with it in the process of its extraction. It is important to encourage students ' desire to overcome difficulties by being active in organizing their own learning process. In the process of teaching, it is necessary to use techniques that increase the motivation for avoiding failures. The use of active methods in teaching determines the effectiveness of digitalization of education, among which the game is the most natural way to develop students ' purposefulness. The digital educational environment involves the manifestation of the initiative and creativity of the student. A striking example of group learning is mutual learning within the framework of performing collective creative work, designing and creating a new product. At the same time, it is necessary to offer such training tasks for students, which will be based on such teaching methods as: analysis and synthesis of acquired information, performing tasks based on the mastered solution method, applying knowledge integrated from different fields of science. For this purpose, it is recommended to use such training methods and tools as: interactive simulators, virtual laboratories, virtual models, etc. ("Manifesto on the digital educational environment", 2016).

In the near future, the educational environment of universities is expected to undergo serious changes related to digitalization. The e-learning system opens up new opportunities and problems. The main advantages include: accessibility of education, increased opportunities for choosing forms of education, a variety of ways to transfer and consolidate knowledge, skills and skills development. The disadvantages of e-learning include such problems as: imitation of full-time education, low quality control of educational results, reduced interactivity, digital immaturity and problems in the socialization of graduates. The digital transformation in educational activities leads to changes in the educational services market: fundamentally new educational products appear, the training of scientific personnel is being improved, new ideas are being produced; new electronic educational products are being created, global educational platforms with access for a wide range of consumers are being developed (Ustyuzhanina & Evsyukov, 2018).

Digitalization as a global trend of world development implies a digital transformation of incoming information, which must meet certain requirements: cover different spheres of life, but most importantly, it will be effective in its use not only by specialists, but also by ordinary citizens who do not have the skills to work with it (Khalin & Chernova, 2018).

All the above-mentioned requirements of digitalization ensure an increase in the efficiency and quality of the economy and the welfare of society.

In modern society, the increasing flow of information implies the need for students to develop the skills of searching and processing the information found, the ability to separate the necessary information from false or secondary. A modern teacher should not only have this ability, but also competently transfer these skills to students.

Within the framework of the Forum on Teacher Education (Kazan, May 26-28, 2021), the Deputy and Minister of Education and Science of Tatarstan A. I. Pominov noted that any education system cannot but change. He touched upon the topic of the use of new technologies, in particular, artificial intelligence, in modern schools. The problem of introducing artificial intelligence into education and such a personal quality as responsibility are not compatible. That is why the teaching profession will always be in demand.

The first vice-rector of the Herzen State Pedagogical University, Vice-President of the RAO V. V. Laptev, within the framework of the Forum on Teacher Education (Kazan, May 26-28, 2021), highlighted the problems of the future development of education: the factors affecting the transformation of higher education, the main trends in the development of higher education and modifications in the directions of pedagogical research in connection with changes in the world educational process. The main distinguishing characteristic of our time is the uncertainty of the modern world, the transition from a stable, predictable world to an uncertain, changeable and immeasurably more complex world. The second important problem is the dynamic development of digital technologies, entry into the digital world. The third problem, he considers the increasing competition of economies, and hence educational systems, as the most important factor in the development of human and social experience. Each university operates on two labor markets: the market for research activities and the market for education. Gradually, there is a transformation of the training of teachers and psychologists, which affects the formation of various education systems.

Within the framework of the outlined changes, new trends in the transformation of higher education are expected:

- focusing on the subjectivity of education;
- personalized learning in a digital educational environment;
- formation of advanced professional competencies among specialists;
- expanding the educational resources of the digital environment;
- increasing the degree of openness of education (selection of educational organizations, educational programs, etc.);
- activation of interaction with employers for the purpose of active participation of the employer in determining the content and evaluating the quality of training of qualified specialists;

- creation of new forms of training organization by integrating the university and industrial organizations;
- the emergence of new practice bases as the basis for interaction between universities and employers (resource centers for practical training, online laboratories as professional test sites, a single electronic practice platform);
- the restructuring of the information management system of universities based on the use of elements of hybrid computational intelligence contributes to the increase in the productivity of educational technologies, the intensification of the pedagogical process, and the improvement of the quality of graduate training.

Communication of all subjects of pedagogical research, automation of information support of students ' educational routes and the implementation of the idea of personification of education, actualization of the problem of professional education of competitive and responsible specialists becomes important (Smirnov, 2021).

In a speech at the plenary session of the Forum on Teacher Education in Kazan, the director of the Institute of Pedagogy of St. Petersburg State University, corresponding member of the RAO E. I. Kazakova focused on the idea associated with the world of hybrid education, where no one will feel inferior: whether it is in a network format (remote community) or a meeting in a small audience, and on the use of technologies in education. However, it is important to remember that the availability of information does not mean its quality. The world of the future will be connected with digital platforms that can be used as assistants. The main task of digital pedagogy is not to dehumanize a person. Digital intelligence makes it possible to act faster, respond instantly, and receive effective feedback. Therefore, it is important to preserve the digital experience as a sustainable step in the development of the economy, society and science (Ministry of Education and Science of the Russian Federation, 2021).

To use digital artificial intelligence, you need to develop natural intelligence. Equally important is the emergence of tutoring as a function of a teacher with high professionalism, ready to find the right solution when solving problems in the digital world, to separate the significant from the insignificant. The second important problem is the return from the civilization of the I to the civilization of the We. The society realized that it is possible to achieve a significant result only by uniting. The accumulated rich domestic experience of pedagogical research confirms the fact that only the formed skills to work in a team create teams, build relationships in a team need to be rethought and used. On its basis, it is possible to grow a creative and pedagogical civilization that knows how to interact with each other, where the best form of competition is cooperation. The third problem is the return to education, where the main trend is a collectivist orientation. In order to instill in the younger generation, the values that are important for our society, they must first be realized and comprehended by the teachers themselves. It is he who should demonstrate behavior based on the principles of mutual understanding and mutual assistance. The educational process in the modern Russian education system will help the generation to build their own life in accordance with

traditional values. "The country is such, what kind of education it has," the academician of education summed up. It is important to remember that teachers are responsible for the whole country (Ministry of Education and Science of the Russian Federation, 2021).

Director of the Video&Digital Multimedia Studio at the University of Southampton, J. Schultz noted that today such methods and forms of training organization as: mixed learning, inverted classes and online learning are the most popular and in demand in the educational process of the university. Many teachers record pre-defined elements of their lectures and, offering students to familiarize themselves with them in advance, devote more time during personal meetings to discussion and interaction, thereby shifting the focus of attention from mass professional online courses as an electronic educational resource to personalized learning. The popularity of electronic educational resources (video lectures, online forums, virtual laboratories, Internet simulators, information and telecommunications networks) is explained by the fact that this is the most accessible format, which is easier and cheaper to implement. However, such courses give way to those information resources that allow you to form individual educational trajectories and routes. They are implemented according to educational programs that either adapt to the educational needs of each student, or give the opportunity to independently choose an educational route, building a life strategy (Ministry of Education and Science of the Russian Federation, 2021).

M. Choshanov, Doctor of Pedagogical Sciences, Professor at the University of Texas (USA), revealed the method of didactic chess as a strategy for involving students in online discussions (Ministry of Education and Science of the Russian Federation, 2021).

Deputy General Director of the educational platform "Yurayt" T. V. Budaeva notes that digital pedagogy today requires new methods and tools. In her opinion, the main trends of online learning in 2021 include: 1) online games encourage participants to actively study and immerse themselves in educational materials; 2) personal online lessons involve more flexible, realistic and relevant material for individual educational needs of students; 3) smart gadgets provide access to learning at anytime and anywhere, and the development of 5G networks and the introduction of high Internet speeds promotes learning on a phone, tablet, smart watch or laptop; 4) mutual learning includes direct tutor meetings between teachers and students online; 5) since the average duration of concentration of attention in an adult student is 45 minutes, online classes can be shortened; 6) artificial intelligence will help improve the learning process (conducting language courses with a computerized native speaker); 7) virtual and augmented reality is becoming an advantage that allows students to immerse themselves in a new exciting educational environment (Sergeeva, 2016).

Professor of the University of Genoa, President of the Association for Teacher Education in Europe (ATEE) D. Parmigiani shared about inclusion in the network and the creation of a learning environment for the integration of students with special educational needs in an online format. He presented the results of a study of electronic

integration as the ability of teachers to expand the participation of students with special educational needs (learning difficulties and difficulties associated with social, cultural or economic disabilities) and children with disabilities in the educational process, the ability to improve learning processes using a variety of devices and applications, as well as developing strategies and practices for inclusive online learning, including during an emergency due to Covid-19 (Ministry of Education and Science of the Russian Federation, 2021).

The reformation of higher education involves the modification of the organization of the education system, the optimization of its content, the inclusion of interactive information and communication technologies in the educational process. The introduction of new federal state educational standards into the higher education system (the latest modification) will certainly lead to significant changes in the professional training of students with disabilities. Therefore, it is necessary to find and implement optimal ways to meet the special educational needs of students with disabilities. This determined the need for research and analysis of the potential of the information and educational environment in the conditions of inclusion (Fidarova et al., 2020).
Most of the research in the field of inclusion in the higher education system is focused on the variety of assistive technologies as means of supporting students with disabilities, but not on the specifics of their application depending on the type of impaired development. The role of digital technologies in the training of people with developmental problems, the purpose of which is to assist in learning; expanding the possibilities of learning itself, training and repetition cannot be overestimated (Abbott, 2007: 22).

Special linguistic programs of transformative processing (transformative dialogues) have been developed to assist in teaching writing to people with developmental disabilities. In addition, psychological and pedagogical measures are being developed for the formation of emotional competencies, which allow the formation of socio-emotional skills (recognition and management of emotions, successful resolution of conflict situations, solving interpersonal problems, establishing and maintaining positive relationships). As part of research in the field of digital technologies, tasks on composing event-based (narrative) statements that ensure the formation of communication and communication skills are used to teach students with intellectual disabilities (Pennington et al., 2014).

At the end of the last decade of the XX century, educational intellectual technologies were developed that ensure the formation of arithmetic skills in students experiencing learning difficulties against the background of developmental disorders (Bakker et al., 2016).
Integrated learning systems should include a speech synthesizer. Teaching with its help, led by a teacher, is aimed at developing multiplication and division skills through the use of mathematical computer mini-games in working with students with developmental disabilities, which help them better remember the material.

In the education of people with autism spectrum disorders, alternative communication tools and communication enhancers are used today, such as graphic symbols in communication, based on the correlation of a symbol and a word. Another effective technology in working with people with emotional and volitional disorders is eye tracking, the essence of which is to track the lines of sight, when the eyes do not move in the standard order when reading information, but "jump" and fix on some points, which allows you to use information for communication through designated switches (controlled by devices that track eye movements).

To improve the educational technologies used in the training of persons with developmental disabilities, it is important to understand the potential and limitations of digital technologies in inclusive education. The development and dissemination of original ideas and innovative technologies in the system of inclusive education entails the modernization of its didactic and educational system, the optimization of the use of pedagogical resources (methods and forms of organization of training and education), the variability of the introduction of information and technical means and equipment into the educational process.

In the context of inclusion, it is important to use innovative ways and methods of interaction between teachers and students that are able to ensure effective achievement of learning outcomes. We believe that an inclusive educational environment should implement a social and educational model of understanding the limited opportunities of disability, and not a physiological one. The social model of assistance to disabled people involves the creation of such conditions in society that will ensure their independent life and ability to work. Based on this, the effectiveness of the digital educational environment at the university is due to the use of such electronic resources that will provide the educational process with practice-oriented adaptive pedagogical technologies and the process of managing an educational organization in the conditions of inclusion by automated means.

Professional formation at the university allows the future disabled graduate to independently master the individual trajectory of professional development, manage personal growth in achieving success with the effective use of the digital educational environment. By the end of their studies, disabled graduates master the areas of professional activity laid down in the state educational standard, as do their conditionally healthy graduates-peers.

2. Materials and methods

In order to determine the indicators of psychological and pedagogical readiness of teachers to work with disabled students, and the level of mastery of ICT competencies by teachers and students, an empirical study was conducted. The experimental base of the research was the Moscow State University of Humanities and Economics. 90 people participated in the experiment: 45 teachers and 45 students.

The diagnostic material included a questionnaire consisting of three series of questions.

3. Results

The examination of the current state of the electronic educational environment of the university was carried out by the method of questioning teachers and students of the Moscow State University of Humanities and Economics.

To assess the readiness of the information and educational environment of the University for teaching disabled students, a survey was conducted by means of a questionnaire of the teaching staff and students of the Moscow State University of Humanities and Economics.

The purpose of the survey of university teachers was to identify the level of psychological and pedagogical readiness to work in an inclusive educational environment and their attitude to inclusive education in general.

To determine the compliance of the conditions ensuring the productive functioning of the educational environment with the quality and effectiveness of the professional development of students with disabilities, three series of questions were included in the questionnaire for teachers: the first series of questions was intended to determine the level of proficiency in information and communication technologies by the teaching staff, the second series of questions determined the degree of awareness of the teaching staff about the possibilities of working with students with disabilities, and the third series consisted of questions, identifying the readiness of teachers to work in an inclusive environment.

Series 1 aimed at determining the level of proficiency in the use of information technologies by teachers and included the following questions: What information technology techniques do you use in your professional activities? How often do you use the electronic information educational environment? What electronic resources do you use in teaching activities? What modern digital technologies do you use in your teaching activities? Do you use digital content in teaching activities in different formats? Can you independently design the educational process using digital resources?

Series 2 aimed at assessing the inclusive professional competence of teachers and included the following questions: Do you support the process of entering the educational process of students with disabilities? Are there the same requirements for working with students with disabilities and students without disabilities? Do you adapt the content of the disciplines to the educational needs of students with disabilities? What category of disabled students are you ready to work with without having trouble?

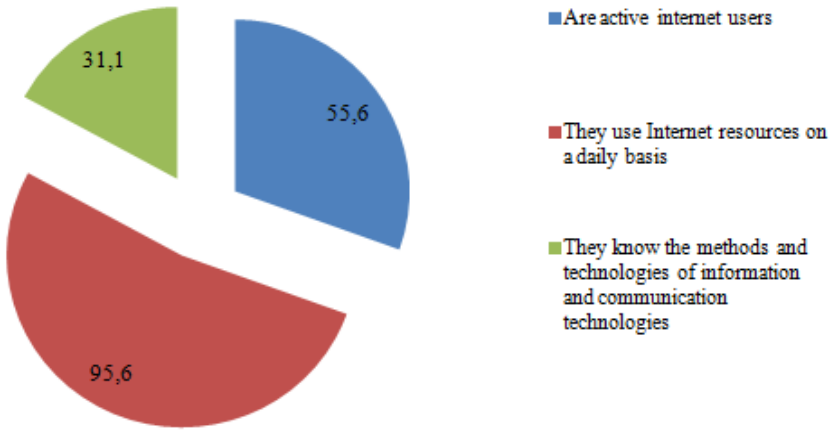
Series 3 aimed at determining the readiness of the teaching staff to work in an inclusive environment and included the following questions: Are you ready to develop special training programs of a correctional and developmental orientation? What

technologies and methods do you use in working with disabled students? What difficulties do you experience in the socialization and adaptation of students with disabilities?

The questionnaire for students was aimed at determining their readiness to integrate into an inclusive information environment. The questionnaire included the following questions: What means of information and communication technologies do you use in the educational process? How often do you use the electronic information educational environment? What digital resources do you use in the course of your training? What ICT software tools do you use in the educational process? How do you feel about the admission of disabled students to the educational space of the university? What is the degree of your psychological readiness and satisfaction with co-education with disabled students? Do you know about the availability of adapted educational programs to help students with disabilities? Do you have problems in tolerant interpersonal interaction and communication with students with disabilities? if so, which ones?

Figure 1

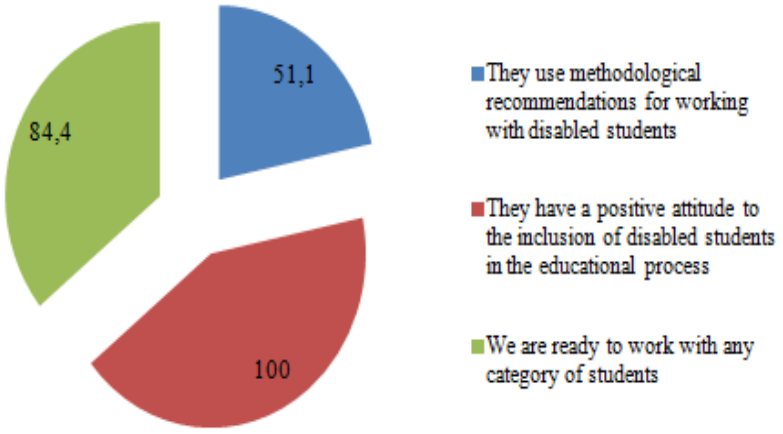
The level of knowledge of information and communication competencies of the teaching staff of the university



The answers of the university teachers indicate that 55.5 % (25 people) of respondents are operational users of digital resources in the pedagogical process, 95.5% (43 people) use Internet resources daily, and only 31.1% (14 people) of teachers possess methods and technologies for designing and implementing information educational resources that fully meet modern requirements of inclusion.

Figure 2

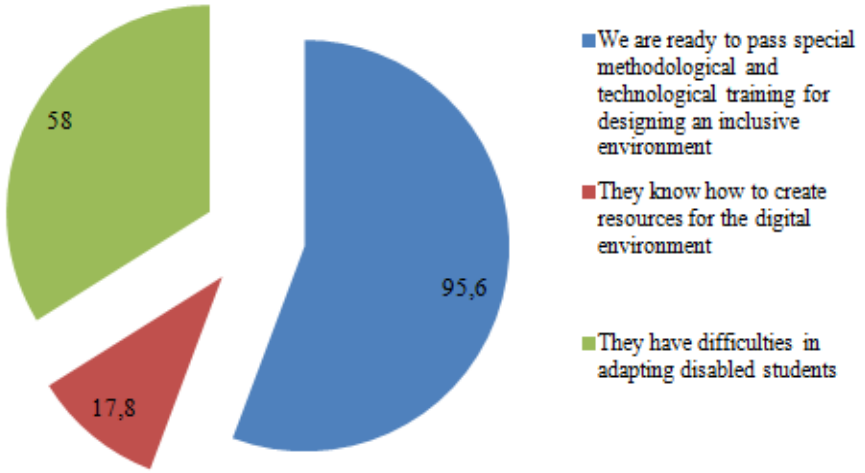
Answers of university teachers about the possibilities of working with disabled students



According to the data presented in Figure 2, 51.1% (23 people) of teachers use methodological recommendations and developments for working with disabled students, 100% of teachers have a positive attitude to entering the educational process of disabled students, 84.4% (38 people) of teachers are ready to work with any category of students, regardless of their educational needs.

Figure 3

The readiness of the university faculty to work in a digital educational environment and their attitude to inclusive education

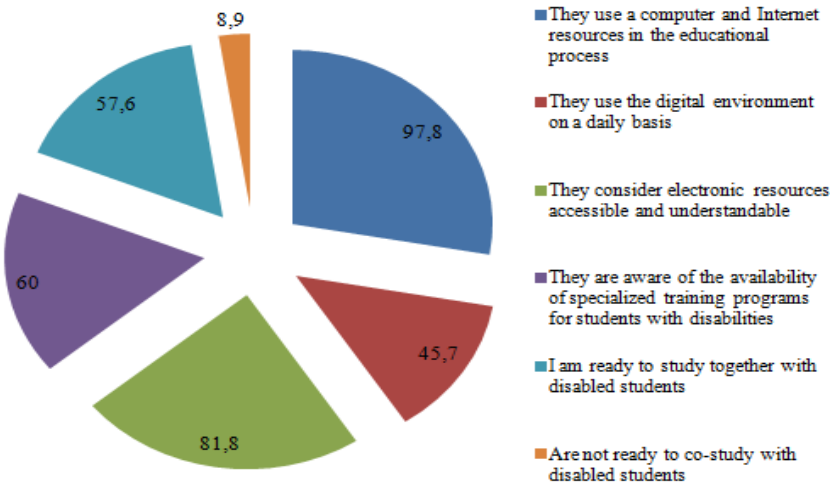


According to the data shown in Figure 3, 95.6% (43 people) of university teachers are ready to learn how to design a digital environment in an inclusive university, 17.8% (8 people) already know how to independently design methodological and technical resources for the functioning of the information educational environment, however, 58% (26 people) still experience minor difficulties in working with disabled students.

The analysis of the data obtained during the survey of students revealed that out of 45 people, 29 students have a disability.

Figure 4

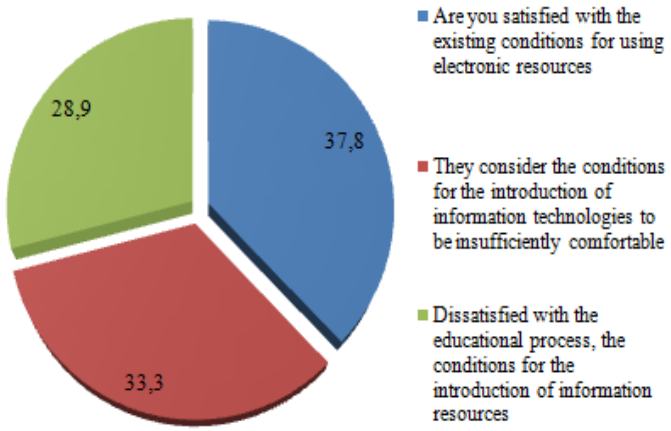
Students' answers about their readiness to study in an inclusive environment



The data presented in Figure 4 indicate that 97.8% (44 people) of students use Internet resources in the educational process, 45.7% (20 people) of respondents work almost daily with information resources of the educational environment, including applying for information in the electronic library system, 81.8% (36 people) of students consider the resources of the electronic information and educational environment of the university accessible and understandable, 60% (27 people) are aware of the existing correctional and developmental training programs designed for students with disabilities, 57.6% (26 people) are ready to study together with disabled students, 8.9% (4 people) are not ready to study together with disabled students.

Figure 5

Answers of students with disabilities about their readiness to study in an inclusive environment



The additional series of the questionnaire included questions concerning the motivation of students to achieve success in the educational process using digital resources. According to the survey results presented in Figure 5, 28.9% (13 people) of students showed a high level of motivational potential of the implemented information and educational environment, for 33.3% (15 people) of respondents, the conditions for implementing the information and educational environment were not comfortable enough, 37.8% (17 people) of students are generally dissatisfied with the conditions of the digital environment.

The analysis and generalization of the results obtained in the course of the study allowed us to conclude that disabled students have trouble in the learning process and in building relationships between the subjects of the educational process. More than 60 % of disabled students have a weak idea of professional functions, are insufficiently focused on practical training in the field of their chosen profession, and the remaining students (more than 37%) are not ready for independent academic work.

Students with disabilities expressed their wishes for the functional part of the digital environment, in particular, to organize access to all intra-university electronic resources intended for training.

4. Conclusions

The analysis of scientific and methodological literature on the studied problem has shown that the orientation of digital technologies is primarily aimed at the effectiveness of the professional training process, supporting student involvement in the educational process, and developing cooperation between all subjects of the university educational process. The central place in the research is devoted to the study of digital technologies

in the context of higher education. There are still open questions concerning the impact of digital technologies on the mental and psychological health of students, including those with disabilities and disabilities. In addition, there are developments that ensure the full inclusion of disabled students in the social space and the educational community through digitalization.

The implementation of inclusive education in the process of reforming the educational system also ensures the formation of adaptive skills and resources for students with disabilities. At the same time, teachers in the current situation are obliged to organize the educational process in a digital environment in such a way as to facilitate the process of assimilation of knowledge, skills and abilities by students.

As part of the introduction of digitalization into the inclusion system, the pedagogical community periodically faces difficulties in justifying both the content and technical support for the use of digital technologies in the educational process.

Disabled graduates who have received professional education are successfully integrated into modern society. There is a direct relationship between the quality of education of a disabled student and the degree of his participation in the life of society. Without a doubt, the creation of a digital environment will ensure high-quality professional education received by students with disabilities. This is a socially significant factor that affects the stability of life in the country, its systematic and progressive development.

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