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The Use of Digital Technologies in the Activities of Teachers in the Vocational Guidance of Students with Mental Retardation

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ABSTRACT

The article presents an analysis of the activities of teachers in the vocational guidance of students with mental retardation using digital technology. The urgency of the problem is justified by the need to prepare the named category of students for the maximum possible independent life for them in a modern digital society. The problems of digitalization formation in our country, as well as the content of training, the main directions, methods and tasks of vocational guidance of students with mental retardation are considered.

A classification of digital technologies with an analysis of their didactic potential is presented and the most effective ones for working with students with mental retardation are indicated. The research methodology is substantiated, the contents of the study and a discussion of its results are presented. The limitations of the use of digital technologies in relation to students with mental retardation are indicated and the prospects for their education are indicated.

Keywords: *digitalization, digital technologies, didactic potential of digital technologies, didactic principles*

of digital technologies, vocational guidance, students with mental retardation

1. INTRODUCTION

In the modern world, digital technologies (DTs) are an integral part of human life. Their application opens up a wide range of possibilities, since they allow you to solve many diverse problems in a short time. It is the speed and versatility that made the DT in demand in the educational space.

The process of digitalization of all forms of educational activity is closely connected with the digitalization process in society. In rapidly changing conditions, a new type of teacher is becoming in demand, owning knowledge in the field of information and communication technologies, able to apply them in their own professional activity, striving for constant self-education and self-improvement.

Mastering the DT allows the oligophrenic teacher to increase the effectiveness of the educational process, ensure the development of the personal potential of students with mental retardation, and reveal their creative abilities [19].

The goal of an educational organization (EO) that implements adapted basic general educational programs (hereinafter ABGEP) is to prepare students with mental retardation to live independently in modern society, including a digital society. To achieve this goal, an educational organization that implements ABGEP

prepares students for independent professional labor activity, rational employment, which is a necessary condition for their socialization [4]. An integral part of preparing students with mental retardation for independent professional labor activity is vocational guidance.

The main goal of vocational guidance for students with mental retardation is their preparation for conscious professional self-determination and vocational guidance in their chosen specialty. For this, students with mental retardation are introduced to the modern needs of society and production, the peculiarities of the development of their region, and they form the ability to correlate personal interests and abilities with the requirements for the profession.

2. RESEARCH METHODOLOGY

On March 1, 2018, President of the Russian Federation Vladimir Putin in his Address to the Federal Assembly called digitalization the "breakthrough resource" of our country. In his report, he outlined the strategic line for the modernization of the education system through the creation of a digital educational environment (DEE), which contributes to the formation of all students "readiness for life skills in the digital age" [14].

In accordance with the implementation of the national project "Education" and the federal project "Digital educational environment", starting from January 1, 2019

and until December 31, 2024, the target model of the DEE should be implemented in all constituent entities of the Russian Federation [11].

The need for digitalization of education is a widely discussed topic that has generated a lot of conflicting opinions and opinions in different sectors of the population of our country. Any contradictions indicate a problem. The solution to the problem is possible through a scientific analysis of the revealed contradictions. In this regard, at the end of the XXth, beginning of the XXIst century, the digitalization methodology is emerging and continues to develop, uniting today the efforts of scientists from different countries.

In our country, such scientists as P.N. Bilenko, V.I. Blinov, M.V. Dulinov, E. Yu. Yesenina, A.M. Kondakov, E.A. Kolganov, N.P. Petrova and others are engaged in the problem of digitalization of education.

Thanks to their scientific research, the conceptual and terminological apparatus of the phenomena of "digitalization" as a whole and "digitalization in education" is being developed, the DT in education are described and begin to be systematized (classified for various reasons), the risks of the introduction of DT in education, the impact of organizational, economic and social pedagogical conditions on the digital educational environment, problems of training teachers of the twenty-first century, etc.

To uncover the theme of our story, the work of a group of scientists led by V. I. Blinov, designated by them as the "Didactic Concept of Digital Professional Education and Training" (2019) [1], is of particular importance.

Although the Concept deals with vocational education at the level of student learning, many of its provisions and developments in the field of conceptual and terminological apparatus have common value for different levels of education, including for the education of children with disabilities, both in the special education system and in general education as part of inclusive practices.

These scientists offer the following definition of the concept of "digitalization" - it is "the transition from the analog form of information to digital" [1, p. 78]. Digital technologies are designated by them as "information and communication, telecommunicative, virtual, multimedia technologies that allow for the collection and presentation of information about various objects in order to ensure remote interaction between them and (or) manage them" [1, p. 77].

It is vital for us to have information on the classification of modern DTs with a description of their didactic potential. Additive technologies (3D printing) - creating a product (sample) on the basis of a given digital model - for the formation of general professional and professional competencies. Blockchain - a digital analogue of an independent notary - for fixing educational results in the cumulative mode. Virtual reality (virtual environment) is an imitation of a three-dimensional world transmitted to a person through his sensations (eyesight, hearing, touch) - to create a motivating game and realistic surroundings at the stages of development, consolidation and control of educational material. Augmented reality - the introduction

of visual or auditory data into the user's perception field in order to supplement information about the surrounding reality and improve the perception of information - to ensure practical orientation, interactivity, polymodality in the formation of professional skills during practical training. Industrial Internet (the Internet of things) is a technology that provides the creation and operation of a network of physical objects ("things") equipped with built-in technologies and equipment (sensors, detectors, switching devices) for interacting with each other and with the external environment - for designing an educational environment, for example, a smart workshop. Artificial intelligence (machine intelligence) is a technology that allows a computer to learn from its own experience, to adapt to the given parameters. It is used as the basis for face recognition technology, spoken language, text, etc. It can be used to design individual educational routes and organize training according to an individual curriculum, since adaptive learning systems are automatically tuned to the individual characteristics of a particular student. Convergence of communication networks - the unification of telecommunication networks into a single network - for the design and implementation of network training projects.

Professional social networks - networks that provide remote communication on issues of professional activity - to improve the qualifications of teachers. Next-generation communication networks - networks providing a higher quality of communication services and high-speed access of the mass population to the information resources of the entire world civilization - for the prompt receipt of information relevant to the educational process, providing communication and prompt feedback. Technologies of automated production and design - technologies that reduce the time needed to introduce new design and development into production, integrate and increase the efficiency of the main stages of the production process - to build an effective educational and production process of vocational education and training. A digital profile is a database of an individual or legal entity, including the most complete factual information about its history and current status, for personalized monitoring of student success and student development dynamics. Digital footprint - a collection of data that a user generates while in digital space. In a close context, the term "digital shadow" is used - information that a person leaves in the digital space, including without realizing it. The digital tracks category includes: emails, texts, blog posts, tweets, photos, video comments, likes; to the category of "digital shadow" - statistics of website visits, history of search queries, data on phone calls, etc. - to create a system for personalized monitoring of the processes of socialization, training, professional self-determination, the dynamics of the student as a whole. Digital double - a digital copy, a virtual prototype, an analogue of a physical object, product (group of products) or a process that models its structure, internal (hidden) processes and other characteristics important for production - for the formation of general professional and professional

competencies in teaching professions and specialties of a production profile .

Chatbot is a virtual interlocutor (answering machine) that uses the capabilities of artificial intelligence, provides an imitation of the communicative behavior of a person when communicating with one or more interlocutors - for quick meaningful feedback with students in the process of distance learning [1, pp. 87-92].

In the digitalization methodology, the proportion of studies on disabled students (DS), unfortunately, is not yet large. However, in recent years, the organization of a digital educational environment in schools for children with disabilities has become the subject of scientific research. So, for example, O. V. Davydova and T. N. Osinina describe the basic requirements for the digital educational environment of a modern school and the possibilities and prospects of working in this environment with students with disabilities and handicapped students. In their publications, they note that "the means necessary for a new educational environment have the means of information and communication technologies (ICT)" [14, p. 25]. These scientists give a detailed description of the use of various ICTs, which have already become traditional in working with students with disabilities. The category of students with mental retardation is not mentioned by them. But a large place is occupied by this category in the research of O. I. Kukushkina, which will be discussed in more detail in the third part of the article. The problem of vocational guidance of students with mental retardation is disclosed in the traditional classical methodology of teaching and educating these students. Labor training and education of students with mental retardation occupies a leading place in the overall system of work of an educational organization that implements ABGEP [2; 8].

Such scientists as A. A. Gnatyuk, V. V. Korkunov, E. M. Starobina, V. A. Shinkarenko and others dealt with issues of labor training and vocational guidance. The content of preparation for vocational guidance is aimed at solving the following problems: identification of educational and professional motives and interests of students with mental retardation; expansion of ideas about professional work; formation of successful practical experience; creating motivation to achieve, mastering the social and personal meaning of various areas of professional activity in accordance with the interests, inclinations and abilities of each student; the formation of the ability to correlate one's own claims and inclinations with public interests; development of one's own life position at the stage of professional choice [17]. E.M. Starobina identified the main areas of vocational guidance, which include [15]: professional information; professional advice; professional selection; professional selection; professional, industrial and labor adaptation.

The main methods of career guidance are: information (individual, group, mass, direct, indirect); psychological counseling; psychological and psychophysiological diagnostics; various pedagogical methods.

Professional information allows students to obtain the most complete information about the world of professions, their market in the region where they live, forming an idea of the contents of professions and specialties, the requirements that they impose on the employee, the ways and conditions of training, taking into account the real employment opportunities. The result of the foregoing is the creation of prerequisites for a conscious choice of the field of activity, profession, place of study and subsequent employment of the student.

This is achieved through direct individual and group informing of students, which takes the form of lectures, conversations, consultations, circles for creative development of abilities, meetings with representatives of various professions, field trips, video tours, and indirect informing by the media (television programs, video films, newspapers, magazines), informational design of the space (information stands, visual aids), print media (manuals, reference books, etc.).

Professional counseling consists in assisting in professional self-determination with the aim of making a conscious decision on the choice of a professional path for students, taking into account their psychological and physical characteristics and capabilities, as well as the needs of society. It includes the identification of a circle of inclinations and the sphere of professional interests of students with mental retardation, assistance is also provided in the development of professional plans and professional routes and their correction, if necessary.

Professional selection is to provide recommendations on possible areas of professional activity that are most consistent with the psychological, psychophysiological and physical characteristics of students. Professional selection is focused on the selection of a profession that most suits their interests, inclinations, abilities, capabilities and other criteria.

Professional selection is to determine the degree of professional suitability of a student for a particular profession in accordance with regulatory requirements.

Professional, industrial and labor adaptation contribute to the professional development of students, the formation of appropriate social and professional qualities, attitudes and needs for active creative work, achievement of the highest level of professionalism. To achieve the best results in the educational organization, the inclusion of students in socially useful work is used [15].

It is important to carry out all areas of vocational guidance, taking into account the existing health restrictions of students with mental retardation.

3. RESEARCH RESULTS

In the research of O. I. Kukushkina, it is pointed out that, in relation to each area of special (defectological) education, the need to "include information technologies for solving developmental and correctional problems of teaching children with certain developmental disabilities should be substantiated, their functions and place in the holistic system pedagogical work "[10].

The analysis of the research results showed that according to the didactic tasks and functions being solved, in the

organization of the educational process of students with mental retardation, traditional ICT tools are used: electronic textbooks, multimedia presentations, training systems, knowledge control systems, simulators, developing computer games, etc.

The most important modern ICT tool is a computer equipped with appropriate software and tools with the information posted on them.

The use of ICT in the educational space of students with mental retardation is focused on the use of traditional presentations: presentations, pictures; riddle presentations; presentations aimed at expanding ideas about the world [5].

To expand ideas about the world and about himself, O. I. Kukushkina proposes to use the program "My Life". The program consists of 3 parts. The first two parts ("Important and Unimportant Events", "Pleasant and Unpleasant Events") help students to understand the events of their life, teach them to express their attitudes to these events in speech, to compare their attitude to those of other people (through joint discussions with adults)

The third part of the "Events and Moods" program is aimed at forming students' ideas about the variability and fragility of the mood of others and the causes of this variability, the ability to determine mood by facial expression. The program is in the public domain, it is received through the computer, it can be used by both teachers and parents (legal representatives) of students [10].

The formation of ideas about the world around us and about ourselves will help students with mental retardation decide on the choice of a profession, so this work can be included in the activities of teachers on the vocational guidance of students.

With the help of ICT (computer technology, in particular), it is possible to carry out activities to familiarize students with future professions. For example, the Electronic Museum of Professions website contains a bank of films about professions, video tours of educational organizations and enterprises, and cartoons on vocational guidance. Also on the site are professiograms, radio programs, and articles on these topics [18].

The use of digital technologies in the education of students with mental retardation is based on the implementation of the following principles in the activities of teachers:

- principle of visibility. It allows you to use illustrative material, visibility increases the assimilation of material by students with mental retardation;

- principle of strength. The use of presentations and training programs allows you to repeatedly return to the previous material;

- principle of science. The use of digital technology lays a more fundamental foundation for learning;

- principle of accessibility. It reflects the technology of a differentiated approach and allows you to display multilevel tasks on the monitor.

- principle of system. Development of a system of lessons on one topic, as well as showing elements of previous classes.

- principle of consistency. The material is remembered in a larger volume and more firmly.

The implementation of the principles at all stages of vocational guidance should be carried out in conditions of a clear interaction of all persons who have an impact on the student with mental retardation [9].

Aspects of using educational tools using digital technologies in the educational process are as follows:

1. The motivational aspect. The use of digital technologies helps to increase the interest of students and the formation of their positive motivation for learning, because the following conditions are created: individual educational opportunities and needs of students are taken into account; a wide selection of content, forms, pace and levels of classes is offered; reveals the creative potential of students.

2. The substantive aspect. Digital technologies are used: when constructing interactive tables, tables and other digital educational resources on topics and sections of extracurricular activities; to create individual test mini-classes; to create interactive simulators for independent work of students with mental retardation.

3. Educational and methodological aspect. The teacher uses a variety of digital technologies in preparation for class. He can use various electronic and information resources when designing classes. The use of computer tests and test tasks reveals the level of the material comprehension.

4. Organizational aspect. Digital technologies are used in various options for the organization of training: in training according to a special individual development program; with frontal or subgroup forms of work.

5. The control and evaluation phase. At this stage, tests and test tasks are used that allow you to carry out various types of control: input, intermediate and final [17]. All these aspects are also applied in the implementation of the activities of teachers in the vocational guidance of students with mental retardation.

Let us analyze the advantages of using some DT. For example, multimedia presentations. This: a combination of a variety of audio and video visuals; activation of class attention; ensuring the effectiveness of perception and memorization of material (students include three types of memory: visual, auditory and motor) its systematization; emotional impact; reduced training time; the formation of computer competence of the teacher and students, the development of their creative abilities in the organization of work [4; 7].

Advantages of video tours: accessibility; Opportunities: viewing at any time, multiple viewing, expanding the horizons of students, using materials when passing through the relevant topic, diversifying classes, making them more lively and interesting; reducing the level of anxiety of students [13].

4. DISCUSSION OF RESULTS

Analysis of the results of the study of the use of DT in the activities of teachers on vocational guidance of students

with mental retardation allows us to comment and discuss the information presented from several points of view.

Firstly, it becomes clear that the methodology of the digitalization phenomenon is beginning to take shape in our country.

Secondly, the state determined a strategic line for the modernization of education through the introduction of digitalization elements into the practice of educating students and pupils by creating a digital educational environment (DEE) in all educational institutions, and it is planned to create it gradually in the coming years and complete it in 2024 on the territory of all subjects of the Russian Federation. Such a breakthrough should not be made for the very idea of digitalization, but for the sake of Russia joining the countries with the best education results for the younger generation. The goal is to enter the top ten countries in terms of the level of development of educational systems.

Thirdly, the creation of the educational center assumes the development by all participants of the educational relations of the central educational institutions, opening up new opportunities in the education and upbringing of children at all educational levels.

Fourth, there is a realization that the complete digitalization of education will not happen in a short time, and most importantly, that not all information that has been accumulated by educational methodologists and methodologists (pedagogical heritage) can be digitized. Therefore, in the process of digitalization in all spheres of human life in general and in education, in particular, the application of a mixed type of technology will be observed: traditional (digital) technologies will be supplemented by the so-called "digital-born" technologies [1, p. 48].

Fifth, the traditional (predigital) pedagogical technologies include not only "classical" methods and forms of activity, but also technologies that involve the use of ICT as an auxiliary pedagogical tool.

Sixth, DTs have didactic (training) potential, which we have indicated in the "Research Methodology" section. The possibilities of the DT are amazing, but it becomes absolutely clear that these are real achievements of the developers of these devices, and not empty fantasies. Naturally, the use of DT will open a new era in the education and upbringing of children.

All of the above applies to educational systems in general. The information we discussed and analyzed was necessary for us in order to determine the possibilities of using DT in the educational process of students with disabilities. As the analysis of information has shown, the use of DT in the education of these students requires further understanding of this problem. The available scientific information indicates that in educational institutions that implement ABGEP for students with disabilities, including students with mental retardation, traditional pedagogical technologies are used (a detailed analysis is given in the "Research Results" section on the example of the teacher's career guidance for students). When describing the implementation of the principles of digitalization, a detailed analysis of the possible use of universal ICTs, as well as some types of DT and their elements, which are already beginning to be perceived by participants in educational relations as traditional, is presented.

In our opinion, additive technologies, virtual and augmented reality, the Internet of things, and a digital double can become promising types of DT that can be applied in relation to the vocational guidance of students with mental retardation. These technologies will allow you to implement the main principle of teaching children with mental retardation - the principle of visualization, which allows to bring the incredible to the obvious!

However, we are firmly convinced that a complete digitalization of the education of this category of students will not be useful to them, moreover, it may harm their health and potential development opportunities. Due to the structure of their defect, these children need constant psychological and pedagogical support, which involves finding a real living person next to them. The main task of using DT is to teach all people to independently acquire knowledge and acquire abilities. Students with mental retardation will not have independence in cognitive activity because of the specifics of their pathology, even with mild mental retardation, not to mention moderate, severe, deep mental retardation and severe multiple developmental disorders (SMDD). Therefore, in our opinion, a mixed use of digital and traditional technologies is a promising area of education for these students.

5. CONCLUSION

The systematic conduct of work on vocational guidance has a positive effect on increasing the activity of students with mental retardation. Consequently, the forms and methods of career guidance impacts are a system of targeted actions by employees of an educational organization that implements ABGEP, family, institutions of primary vocational education and production.

The effectiveness of the work depends on three main conditions:

- observance of continuity in forms and methods throughout the entire period of training in an educational organization that implements ABGEP;
- taking into account the age and psychological characteristics of students;
- complex use of vocational guidance methods.

For the most effective work on vocational guidance, it is advisable for an oligophrenopedologist to use various DT in combination with traditional pedagogical technologies.

The main thing for the teacher is the ability to select those technologies that will help him solve the problems of a

particular lesson and help students with mental retardation realize their educational potential with the maximum benefit for them. It is important that the selected technologies nurture universal human qualities in these students: respect, kindness, responsiveness, humane attitude to people around and to oneself.

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