

Application of Information Technologies in Process of Social Rehabilitation of Students with Disabilities

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Abstract—This article describes the nature and content of information technologies as a means of social support for children with disabilities, identified opportunities and prospects for the use and implementation of information technology in educational activities. The use of adaptive information technologies makes it possible to “adjust” the process of education of persons with disabilities in an educational institution to their individual characteristics, to overcome cognitive and communication barriers, to master the planned competencies of the Federal state educational standard, building the basis for an effective individual information space not only in education, but also in social and personal activities.

Keywords—*information technologies; quality of the rehabilitation process; social rehabilitation; limited health opportunities; social support*

I. INTRODUCTION

Currently, information technologies play an important role in the formation and improvement of the role and quality of education and are actively introduced in all spheres of social and cultural life. The problem of using information and communication technologies by people with disabilities is associated with distance learning and inclusive education by the vast majority of researchers. This connection can be explained by the fact that the problem of inclusion of children with special needs in the educational environment has been solved in the Russian Federation for a long time. Within the framework of personality-oriented educational system the classical pedagogical problem of formation of creative abilities of pupils through the organization of their research activity acquires a new sound. The study of the organization of such activities for children with disabilities has not been studied by anyone. Children with disabilities are children whose health status prevents the development of educational programs outside the special conditions of education [9].

The task of training people with disabilities in the Russian Federation is enshrined in the relevant regulations. Thus, the law "on social protection of disabled people in the Russian Federation" states the need for unhindered access of people with disabilities to information resources, as well as establishes the responsibility of officials for evading these requirements. However, law enforcement practice shows that people with disabilities face a number of difficulties, expressed in the absence of a systematic and holistic policy in achieving the goals of the information society in the Russian Federation.

In Russia, the introduction of information technologies in the social sphere is proceeding very slowly, unevenly, spontaneously. Analyzing the state program of the Russian Federation "Information society (2011-2020)" we can say that in comparison with the previous program "Electronic Russia 2002-2010", which practically did not affect the social sphere, it reflects such activities as social support and development of creative abilities of persons with disabilities through the use of modern information technologies and distance education technologies, including the organization of distance learning for children with disabilities, in need of training in General education programs at home.

The main purpose of the introduction of information technologies in the rehabilitation process is to improve its quality and efficiency. The use of a variety of computer technologies contributes to the effective correction of violations and creates a special "therapeutic" environment that stimulates the development of the personality of each child, allows the use of new "workarounds" in learning [1].

II. DISCUSSION

Discussing the issues of rehabilitation of schoolchildren with disabilities, it is really necessary to declare the huge role of modern information technologies of education. Means of information technologies of social support of the disabled child can be divided into several categories [14]:

- training, control and training systems;
- information retrieval systems;
- simulation program;
- cognitive tools;
- tools of a universal nature;
- tools for communication.

It is necessary to pay attention to tools of the programs providing possibility of creation of new electronic resources: databases, program modules and program complexes. Such means can be subject-oriented. The main requirement that must be met by the software, focused on the use in the rehabilitation process, is the ease and naturalness with which a teenager with disabilities can interact by studying educational and information materials [4]. Communication with the computer is of great interest to them, first as a game, and then as a learning activity. This interest is the basis for the formation of such important internal structures of

consciousness as cognitive motivation, arbitrary memory and attention, namely these qualities provide psychological readiness of the child to learn. Underdevelopment of verbal memory and attention disorders make it necessary to carry out purposeful work to overcome these disorders. In this case, the use of computer technology becomes particularly appropriate, as it allows providing information in an attractive form, which not only accelerates the memorization of the content, but also makes it meaningful and long-term.

Modern computer systems of training put before the child a real, clear, quite achievable goal: «you will solve correctly examples - you will open the picture, you will insert correctly all letters - you will advance closer to the purpose of the fantastic hero». Thus, in the course of the game the child has a positive motivation for learning. Classes with the use of a computer are of great importance for the development of arbitrary motility of fingers, which is an important point in preparing children to master the letter. In the process of training, they learn to overcome difficulties, to control their activities, to evaluate the results. Solving a given computer program problem situation, the student seeks to achieve positive results, subordinates its actions to the goal. Thus, the use of computer-aided learning helps to develop in children such strong-willed qualities as independence, concentration, perseverance [6].

Currently, in many educational institutions where adolescents with disabilities are attached, automated training systems for various academic disciplines are developed and used. They are most common in the disciplines of the natural science cycle. These systems include a set of teaching materials (demonstration, theoretical, practical, and controlling) and computer programs that control the learning process.

Development of specialized programs usually involves the solution of well-defined tasks of computerization of the educational process. The role of multimedia technologies and virtual reality systems in the social rehabilitation of adolescents with disabilities is great. Modern education of adolescents with disabilities is difficult to imagine without multimedia technology, which allows the use of text, graphics, video and animation in a dialogue mode and thus expands the scope of the computer in the educational process. "The iconic series, including creative thinking, helps the learner holistically perceive the material. There is an opportunity to combine theoretical and demonstration materials. Test tasks are no longer limited to verbal formulation, but can be a video" [5].

Computer games are also aimed at the education and development of children with disabilities. For example, through training computer programs, students with visual impairment develop the skills necessary for further social rehabilitation. Game computer programs used in social support and rehabilitation are of great importance for the formation of motor coordination and coordination of joint activities of visual and motor analyzers. The development of these skills causes a variety of moving images on the computer screen, for which the child follows the eyes. The correctness of the solution of the game problem depends on how quickly the

child will be able to learn the movements of the desired key (click the right mouse button) to hold the image on the screen in the right direction. So, quite naturally, without additional special classes, the necessary visual-motor coordination develops. Games for the development of visual perception are recommended for young and middle-aged children. This is a fairly common computer program in which it is necessary to collect a picture of several parts or find a hidden figure. Also quite interesting is the computer coloring with the effective program in which the cursor can draw any shape or picture. These games develop not only the perception but also the imagination of children, as well as improve visual-motor coordination – eye – hand system.

In the educational system, the use of electronic means of educational purpose acts as one of the means of special educational and rehabilitation technologies, which are a special set of organizational structures and activities, system tools and methods that optimally ensure the implementation and assimilation of educational programs. Moreover, to the extent and quality provided by the state educational standards, the creation of a system of measures aimed at eliminating or more complete compensation for life restrictions caused by health disorders with persistent disorders of the body functions. Rehabilitation and educational activities are carried out taking into account the existing restrictions in the educational environment on the terms of training, the state of material and technical base, personnel qualification, intellectual, educational and rehabilitation potential of trained persons and their special educational needs [3].

The development of information technology allows us to introduce computer technology in various areas of our lives. The rehabilitation process did not stand aside. Technical means of computer information technologies are widely used. Thus, in order to improve the efficiency of rehabilitation, innovative methods and technologies are used: classes with the use of Internet resources (developing online games), which are aimed at the development of coordination of movements, imagination, expanding horizons, developing the ability to think logically, etc. For example, as in the direction of rehabilitation of children and adolescents used multi - method of rehabilitation and socialization of children and adolescents with disabilities by means of animation. Classes in multi-therapy are based on the age and individual characteristics of children, groups are formed by age composition [13].

The process of education of children with disabilities has the following features, which can be partially solved in the framework of the creation and use of electronic educational tools:

- possible irregularity of attendance of training sessions related to restriction of movement;
- reducing the number of hours of training load;
- sparing mode of training;
- limitation of the possibility of development of creative abilities;
- limitation of information and illustrative opportunities of teachers in the educational process [2].

Social support for children with disabilities by means of information technology is a dynamic system in which the consistent implementation of constantly emerging in the course of interaction with the teenager tactical tasks on the way to achieve the strategic goal – the formation of its decent social status, resistant to traumatic situations of the individual, able to successfully integrate into society through the use of software and hardware (audio and video, computers, telecommunications networks, etc.). All this allows specialists of social services and teachers to solve the problems of social adaptation and support for adolescents with disabilities by creating a formed information and educational environment [2].

It is necessary to note the main directions that most fully reveal the positive opportunities for the introduction of information technologies and their functions in the social support of children with disabilities:

- value-semantic;
- informational;
- functional-activity;
- organizational-methodical.

Value-semantic direction is connected with the possibilities of information technologies in the formation of needs, values and value orientations of adolescents with disabilities. The information direction is revealed through the possibilities of information technologies to significantly expand the "output" of adolescents with disabilities to any necessary information for him and his family.

The functional and activity direction of information technology opportunities in social adaptation correlates with the prospects of mastering not only educational, but also professional activities and other leisure activities for adolescents with disabilities [7].

Organizational and methodological direction of information technology opportunities in social rehabilitation due to the fact that adolescents, in the process of social adaptation and rehabilitation of which include the means of these technologies, with their help over time, they begin to create new information products that help to solve certain problems of social adaptation.

In the process of social support of adolescents by means of information technology, much attention is paid to the establishment and strengthening of educational activities in this category, which accumulated a variety of forms of classes using interactive learning tools (chats, forums, computer tests, etc.).

The use of the global computer network Internet in the education of adolescents plays a huge role, contributing to the expansion of their communication capabilities, creating a favorable emotional tone and contributing to the development of the level of motivation for learning. It is important that adolescents, when accessing the Internet, can use (though not fully) for educational purposes virtually any educational environment (except for the visually impaired, which requires the creation of a special information environment). For the

successful process of social support for adolescents with disabilities and their active integration into society, it is necessary that the means, methods, forms and other components of the information environment are as close as possible to the individual, taking into account his ability and ability to more fully integrate into a full life.

The study showed that among all categories of people with disabilities there is a steady interest in the use of information technology. This interest is associated with the possibility of obtaining various social services without having to leave the home and stand in line, as well as with the rich opportunities for communication provided by the Internet.

Monitoring people with disabilities has also shown a high level of interest in information and communication technologies. Of particular interest are the means of communication (e-mail, social networks, Skype). The level of assimilation of the material of students is different and depends on the characteristics of the cognitive sphere and the nature of health restrictions.

In accordance with the objectives of the study, it was found that currently much attention is paid to the rehabilitation, socialization and successful life of children with disabilities. The educational standards describe in detail the results of the so-called "level of life competence". Therefore, the main task of correctional institutions is to create conditions for socialization and integration of pupils in society, their preparation for independent life and work.

The use of new information technologies in rehabilitation allows making classes more visual and dynamic, more effective in terms of education and development of children, facilitates the work of the teacher in the classroom and contributes to the formation of key competencies of pupils. The use of information and communication technologies in various occupations with children with complex defects allows developing children's ability to be guided in information streams of the world around, to master practical ways of work with information, to develop skills allowing exchanging information by means of modern technical means.

The main purpose of using information technologies is to improve the quality of the rehabilitation process. Through their use, the following tasks are implemented:

- increasing the intensity of rehabilitation measures;
- increase children's motivation and level of development;
- monitoring of achievements;
- conducting diagnostic studies of the student.

Modern society is becoming a "society of Internet communications", in which the socio - cultural, information, educational space is United" around " its main element-the Internet, and is accompanied by the availability of modern information and cultural environment to a wide range of people, including children with disabilities, which determines qualitatively different living conditions. The need to improve access to electronic communications using modern information and communication technologies for persons with disabilities is increasingly being discussed by the United

Nations. For persons with disabilities, such technologies will not only make a tangible contribution to the well-being of society, but also adapt to difficult socio-economic conditions. The UN General Assembly adopted the Convention "on ensuring the rights of persons with disabilities", which raised the issue of the rights of persons with disabilities to access to electronic communication. During the discussion, three areas of activity were identified: the creation of a working group on ensuring access to information and communication technologies for persons with disabilities, the development of a training course on information and communication technologies, taking into account the various individual characteristics of the disabled environment, the creation of a thematic portal. An increasing interest in the use of information and computer technologies as a means of socio-cultural development of persons with disabilities has emerged in the modern system of continuous multi-level education of persons with disabilities. The learning process for children with disabilities has the following features, which can be partially addressed through the use of ICT:

- irregular attendance of training sessions related to movement restrictions;
- reducing the number of hours of training load;
- sparing mode of training;
- inclusion of children with disabilities in the cultural space, allowing them to realize their potential as a cultural individual, the development of creative abilities;
- lack of practical training, and first of all, educational experiments;
- limitation of information and illustrative materials of teachers in the educational process.

The technical capabilities of modern personal computers allow children with disabilities to work on them, almost with any physical pathology. Using the achievements of modern specialized hardware allows you to fully interact with the computer as visually impaired and blind. Such means primarily include tactile or Braille displays that allow displaying text information in the form of six-point Braille characters, representing a relief-point font intended for writing and reading by blind people. Mastering the skills of working on a computer gives disabled people the opportunity of independent existence and integration into society, can significantly expand the standard set of professions offered to them by including high-tech specialties related to the use of computer technology and modern computer technology.

The practical use of information technology in the education of children with disabilities has revealed the components and technologies recommended for inclusion in the composition of computer learning tools:

- technologies of differentiation of training content;
- technologies using deductive and systemic-structural methods of presentation and presentation of the material, increasing the ratio of formalized and non-formalized knowledge focused on the psycho physiological characteristics of children with disabilities;

- multimedia technologies implemented on the basis of specially structured databases, electronic manuals and textbooks, adapted hardware and software and peripherals;

- specialized multimedia technologies in live contact between teacher and student, as the voice, gesture, tactile communication, etc.

The greatest prospects for the spread of information technology in the education system are associated with the visualization of educational material, the use of interactive methods of text overlay on educational video material, the use of speech recognition programs, the development and implementation of text support of the teacher's speech in real time, interactive multimedia presentations and maximum voicing school educational process. Developers need to understand the universality of such tools in relation to students with disabilities, take into account the nature and degree of disability. Neglect of the special needs of this category of children can lead to their technological discrimination (and as a consequence, to a restriction in educational and professional capacity).

Information and communication technology tools designed for the education of persons with disabilities must meet the following requirements:

- to respond to the physical access of students with disabilities to computer and telecommunications technology as a tool for educational activities;
- to take into account the most important indicators that determine the individual psychophysical characteristics of students with disabilities;
- to be able to access and use intensive intellectual learning technologies;
- to comply with the concept of continuous multi-level integrated education;
- to ensure the unity of educational and rehabilitation processes within the system of General secondary education, possibly more complete correction and compensation of the limitations of life of schoolchildren [1].

Education of such students with the use of information tools is planned taking into account the individual schedule in accordance with the nature of the restrictions of the student's life, the elimination of its backlog in individual school subjects or topics.

Distance learning, based on the communication capabilities of technologies, allows removing the main restrictions that prevent children with disabilities in education: difficulty of moving to school, frequent absences from classes due to illness, the lack of specially trained teaching staff, combining pedagogical, psychological, medical, cultural, sociological knowledge and skills. Thus, in the process of teaching students with disabilities it is recommended to use human sensory systems, as they are associated with motor memory and help to bring the skills of the student to automatism, i.e. to transfer to the subconscious level. The emergence of such a device as an interactive whiteboard in the teacher's Arsenal, a harmonious combination of traditional

means with the use of interactive equipment solves many problems in teaching our students.

The above research and practical activities in communication with students confirm and prove the great role and assistance of information technologies in the process of modernization processes of social rehabilitation of schoolchildren with disabilities [12].

Passed a number of medical procedures and received the conclusion of medical and social examination of the assignment of disability, children are assigned the category of "disabled child". On the basis of this conclusion, the child (or rather his legal representative - parent or guardian) is issued with a certain set of documents, including an Individual rehabilitation program for disabled people. This program spelled out various aspects: the degree of self-service, the duration of the disability, the date of the next re-examination and so on, including the rehabilitation of persons with disabilities.

Along with the previously mentioned forms of social rehabilitation, it is necessary to identify an independent form of rehabilitation - socio-cultural rehabilitation. A mandatory aspect of rehabilitation of children less than 18 years is psychological and pedagogical rehabilitation.

In accordance with the objectives of the study, it was found that currently much attention is paid to the rehabilitation, socialization and successful life of students with disabilities. The educational standards describe in detail the results of the so-called "level of life competence". Therefore, the main task of educational institutions is to create conditions for socialization and integration into society, their preparation for independent life.

III. CONCLUSION

The use of new information technologies in rehabilitation allows making classes more visual and dynamic, more effective in terms of training and development of students, facilitates the work of the teacher in the classroom and contributes to the formation of key competencies of pupils. The use of information and communication technologies in various occupations with children with complex defects allows developing children's ability to be guided in information streams of the world around, to master practical ways of work with information, to develop skills allowing exchanging information by means of modern technical means. The main purpose of using information technologies is to improve the quality of the rehabilitation process. Through the use of these technologies, the following tasks are implemented:

- increasing the intensity of rehabilitation measures;
- increasing children's motivation and level of development;
- monitoring of achievements;
- conducting diagnostic studies of the student.

Thus, in the course of studying the issues of the study, the following conclusions can be drawn:

- firstly, children with disabilities are characterized by a rapid depletion of attention resources, reduced memory, emotional instability, lack of intellectual motives, reduced external motivation, and, consequently, the lack of cognitive interest. Therefore, in order to interest students, to make their learning conscious, we need non-standard approaches, new techniques and technologies that will be effectively used in the organization of creative and cognitive activity of children;

- secondly, the use of a computer in rehabilitation significantly increases the possibility of correction and development of children with disabilities;

- thirdly, the organization of the rehabilitation process with children with complex defects, first of all, contributes to the activation of the cognitive sphere of pupils, the successful assimilation of the material and mental development of the child, provided that classes using information technology are well thought out, dosed, and built taking into account the psychological characteristics of children with disabilities.

The global informatization of the modern society leads to the development of the quality of the education. The new resources enable to develop a new system of electronic education. All this makes a great breakthrough inside the possibilities of social rehabilitation and increases the level of the education of each individual [11].

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- increasing the intensity of rehabilitation measures;
- increasing children's motivation and level of development;
- achievements monitoring;
- conducting diagnostic studies of the student.

The use of a computer in rehabilitation greatly increases the possibilities of correction and development of children with disabilities. The use of information technology is necessary to dose and take into account the psychological characteristics of children with disabilities. The organization of the process of rehabilitation of children with complex defects contributes to the revitalization of the cognitive sphere of students, the successful learning of the material and the mental development of the child [10].

The depletion of resources of attention, the lack of intellectual motives, a decrease in external motivation and, as a consequence, the lack of cognitive interest are characterized by children with disabilities. In order to interest students, make their learning conscious, we need innovative approaches, new technologies that will be effectively used in organizing students' creative activities.

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