The Use of Information and Communication Technologies in Formation of an Inclusive Education System

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Abstract

The present article discusses the role of information and communication technologies in inclusive education in accordance with government policies and the need to obtain equal access to quality education. Also, the possibilities and advantages of ICT and their aids in optimizing learning environment are described. Particular attention is focused on the role of new information technologies in this kind of training, and their advantages and disadvantages are listed

Keywords: inclusive education, access to quality education, information and communication technologies, optimization of the learning environment, distance learning, inclusion, information technologies, educational process, learning models.

1. Introduction

Currently, there is a very large interest in the scientific and pedagogical community and educational authorities to improve the quality of education in Russia based on informatization. Thus, the concept of informatization of education notes that "State of the Russian educational sphere and the development trends of society require an urgent solution to the problem of advancing education on the basis of information technologies, and creation of a unified educational information environment in the country. Informatization implies an essential change in the content, methods and organizational forms of education."

ICT (Information and Communication Technologies) are the processes and methods of interaction with information, which are carried out using computers and telecommunications facilities.

2. Research Method

Theoretical framework: analysis of the literature on the studied problem; logical and pedagogical analysis of educational standards; methods of statistical analysis of experimental data; theoretical generalization of the results of experimental work. Empirical: pedagogical observation; questioning; testing; pedagogical experiment; analysis of the products of students.

3. Results and Analysis

At first glance, the transition to special educational standards is a logical stage in the development of special education. Our country has come a long way from the complete exclusion of children with disabilities and health from the general education system to a situation where this training has become compulsory, enshrined in law, having a sufficiently large variety of forms and types.

At the same time, it should be noted that the education system of students with disabilities in Russia always differed significantly from similar educational systems that exist in most foreign countries. While the majority of economically developed countries have already implemented the training of such children in the format of inclusion, our state made only the first attempts to integrate people with developmental disabilities, as they were then called official languages, into the educational space. But since the integration process was not supported by the corresponding material and technical conditions or personnel conditions, it was quickly collapsed and did not reach the indicators intended for the implementation of the Integrated Education Concept for Persons with Disabilities.

A modernized learning environment can be created without the use of technology, but it is clear that information and communication technologies provide students with powerful tools to gain access to extensive information resources, as well as to present their knowledge in the form of multimedia objects (combination of text, images, graphics, sound and video) [1].

The sociocultural theory of human learning, developed by Vygotsky, is that social interaction plays a fundamental role in the development of cognitive processes. A teacher or a more experienced peer can provide the student with support (learning environment, playing the role of "scaffolding"), which will facilitate his understanding of academic disciplines or help him develop complex skills [2]. Information and communication technologies can provide effective support for such learning environments, providing tools for organizing discussions, writing co-writing and problem solving, as well as facilitating systems (within the framework of the "scaffolding" model) that work online.

3.1. Learning models that define the basis for implementation information and communication technology in education

Problem-oriented learning (VET) whose goals are to develop thinking skills of a higher order by providing students with challenging tasks and learning situations. This approach is often used in the study of engineering disciplines. Education based on

the independence of the student stimulates the process of forming a system of continuing education.

"Anchored" learning process provides such an approach to its design, in which "real points" are defined in real-world conditions for a specific situation or problem. In order to create situations borrowed from the "real world," videos were used, in particular. The set of video fragments forms the required content of the educational process [3].

The theory of cognitive flexibility, whose authors argue that in poorly structured academic disciplines, people acquire knowledge by creating multiple representations for the elements of the knowledge system and forming links between these elements [4].

The "distributed consciousness" model is based on the assumption that a student's cognitive growth can be effectively stimulated by supporting his interaction with other people. To support these processes with the help of information and communication technologies, special tools have been created [5].

The master-apprentice model of the learning process describes the learning process in which teachers (or more experienced peers with broader horizons) support students in their cognitive growth and development.

And in this case, the means of information and communication technologies are effectively used in the educational process; Groups of students communicating online can jointly develop various objects (including intellectual property). Distant learning systems are especially productive here - experts get the opportunity to interact with students who are thousands of kilometers away.

Situational training - a synthesis of models of "master-apprentice", cooperation, mentoring and working with cognitive tools [6,7]. Training is seen here as a function of the type of activity, setting and cultural environment in which it takes place.

Reflexive learning is the training of those who have an adequate understanding of their knowledge and material learned, that is, that they know what they don't know and what they need to learn. Such an approach involves relying on the student's ability to self-observe, self-assess, and select the right reactions to events [8]. Information and communication technology tools can help students identify and use in communication the real level of their own knowledge, as well as assist them in the formation of metacognitive skills [9].

These theories are based on new views on the learning process and allow us to develop new pedagogical approaches. Ultimately, the level of realization of the potential of ICT in education will be determined by the ability of teachers to use these new tools to create new, stimulating knowledge processes, learning environments [10, 11].

Developed and tested guidelines showed the following possibilities for using ICT as a means of enhancing students' cognitive activity: the formation of cognitive motivation, the initiation of interest in the study of the subject; the development of visual-figurative thinking; the formation of the ability to create, apply and transform models and schemes for solving educational and cognitive tasks; the organization of self-cognitive research and research activities of students, their activities on the independent use of ICT for searching and assimilating educational information.

Information and communication technologies play a special role in the process of introducing inclusive education in the educational process of educational institutions of modern Russia of various levels. According to clause 27 of Article 2 of Federal Law No. 273-FZ "On Education in the Russian Federation" dated December 29, 2012, inclusive education is "ensuring equal access to education for all students, taking into account a variety of special educational needs and individual capabilities". To implement such equal access to education, each educational institution, regardless of its organizational and legal form, is obliged to develop special adapted educational programs (hereinafter referred to as AOP), that is, "educational programs adapted for teaching people with disabilities to take into account

the characteristics of their psychophysical development, individual opportunities and, if necessary, providing for the correction of developmental disorders and social adaptation of these individuals "(paragraph 28 and 2 of the Federal Law "On Education in the Russian Federation"). Currently in Russia there are two specialized standards for the organization of inclusive education. These are the federal state educational standard of primary general education of students with disabilities (approved by order of the Ministry of Education and Science of the Russian Federation No. 1598 of December 19, 2014) and the federal state educational standard of education of students with mental retardation (intellectual disabilities) (approved by order of the Ministry of Education and Science of the Russian Federation No. 1599 of December 19, 2014). In the first standard, the requirements for the material and technical conditions for the education of students (clause 3.6.1. Of the standard) expressly state that the educational organization "must be provided with conditions for the functioning of a modern information and educational environment, including electronic information resources and electronic educational resources , a set of information technologies, telecommunication technologies, relevant technical means (including flash simulators, wiki tools, digital video materials and others) to ensure that each student achieves the maximum possible results for him to master the AOOP NOO ". The appendix to the last standard, which describes the requirements for the implementation of AOP, and in particular the requirements for the organization of the student's learning space, also clearly indicates the use of special information and communication technologies in the educational process: "In addition to the support functions that allow the child to get adapted access to education, technical training tools (including specialized computer-based learning tools) must meet the special educational needs of students, to emphasize motivation for learning activities. "

Such attention to information and communication technologies in the process of implementing inclusive education is not accidental due to their enormous opportunities for all participants in the educational process (students; teachers; tutors (assistants, assistants); various specialists (teachers-psychologists, speech therapists, defectologists, medical workers etc.); parents (legal representatives) of students; administration of an educational institution).

The key figure of the information educational environment is the teacher. It is he who decides in what capacity, in what volume and for what purposes ICT tools can be used in the educational process.

Today it is obvious that the teacher, acting within the framework of the familiar "chalk technology," is significantly inferior to his colleagues, leading classes using a multimedia projector, an electronic board and a computer providing Internet access.

In a broad sense, any information technology and resources organized to achieve the goals of education can be classified as computer educational technologies and resources.

For example, the urgent task is to transfer some distance learning tasks to a mobile platform. There is a study that suggests the technology for developing and implementing a distance learning mobile application for smartphones with the Android operating system. An approach and a method for implementing an individual distance learning system based on standard application modules [12] are proposed.

However, in order for these technologies and resources to become available and demanded by teachers, they must be trained in the skills of working with them and motivated to use these technologies in the educational process.

4. Conclusion

For students, the use of such technologies allows:

• to meet the most diverse needs and demands, especially in the field of socio-cultural activities;

• to make learning practically barrier-free (due to distance learning technologies, it is possible to ensure the presence of a student in any training lesson, for example, in laboratory work in physics or chemistry);

• to ensure the organization of the educational process in the most comfortable pace of mastering educational material, including by prolonging the period of study at the level of a specific course or stage of study;

• to organize the student's access to any educational and information resources available on the Internet, not only at the national but also at the international level;

• to intensify the communication of students with disabilities with the most diverse subjects of social relations surrounding them (from teachers, such as children, to specialized specialists and future employers);

• the most effective and successful socialization;

• to realize their abilities and available rights and freedoms of a person and a citizen through the forms of professional and additional education that are available for themselves, work and various forms of hobbies (for example, using the Inclusive Higher Education in Russia portal - https://xn--80aabdcpejeebhqo2afglbd3b9w.xn--p1ai/).

For teachers and the most different specialists involved in the educational process of students with special needs, information and communication technologies are:

one of the most important means of organizing the educational process with the greatest possible degree of personal orientation (modern computer and information technologies allow us to provide information in a form accessible to students with various sensory impairments (for example, electronic loops for the visually impaired and voice programs for the blind; sound-amplifying equipment and multimedia for violations of the hearing aid, computer simulators allow students with movement disorders in imitation mode, perform inaccessible experimental manipulations) [13];

The most important means of preserving and enhancing students' cognitive interest in studying a specific subject, the ability to introduce the necessary diversity into the learning process, become a guide for students in mastering the Internet and train them in the effective use of information resources for their education.

one of the most accessible and relevant means of obtaining information and training in the field of inclusive education from the most general issues of an organizational nature to the subject specificity (familiarity with relevant regulatory documents, scientific and methodological publications, training courses or retraining);

the possibility of sharing experience in organizing inclusive education with colleagues, narrow specialists and other interested social actors (for example, the Inclusive Practices Portal - http://inclusiveclub.info/innews; Informational and methodological support for inclusive secondary vocational education - http://spo.wil.ru/apex/f? p=140:1 Dist G_PORTAL_ID:1; an initiative educational project "Inclusive Higher School: Creating a Comfortable Educational Environment for Students with Disabilities" a national researcher Institute of Higher School of Economics (https://www.hse.ru/inclusive и т.д.);

- possession of the basics of computer work, as well as access to the information educational space and the ability to use it;

- the ability to organize your personal information space for the purpose of professional improvement;

-possession of such information resources as multimedia programs;

- the most relevant and fast way to communicate with students and their parents (legal representatives).

For the administration of educational institutions Information and communication technologies are:

- the possibility of creating your own local informational and educational environment for purposeful work with a contingent of students with special educational needs;

- a means of monitoring the effectiveness of the educational efforts made by the whole organization and individual teachers (for example, used teaching technologies, textbooks and teaching aids, electronic educational resources);

- a method of obtaining relevant information on the educational process by parents (legal representatives) of students with disabilities.

Finally, information and communication technologies are indispensable today in the process of changing all social institutions and public consciousness with regard to inclusive education as an integral phenomenon in modern society. It is this socio-cultural aspect of the use of these technologies that is reflected in the state program "Accessible Environment for 2011-2020" and the state program of the Russian Federation "Development of Education for 2018-2025" [14].

However, in the process of using information and communication technologies in the educational process of students with disabilities, we should not forget about the possible negative consequences. First of all, a significant part of modern informational content is not always distinguished by scientific validity and correctness, and therefore can form incorrect educational and ideological attitudes among students. We must not forget that these technologies should not be a way of entertaining students, but a means of their training and education, and therefore in their use it is necessary to adhere to certain techniques. Based on the last statement, only specially trained personnel should be involved in the use of these technologies in the educational process. Finally, for each group of students with certain disabilities, adequate information and communication technologies should be applied to these limitations, otherwise, instead of positive results, negative consequences can be obtained in the field of training and education, and in the field of health of specific students.

Only compliance with all the above conditions will make the use of information and communication technologies in the inclusive education system that is being formed in modern Russia as efficient as possible.

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