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APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN INCLUSIVE EDUCATION

Abstract
The article presents a description of the advantages and disadvantages of using information and communication technologies (hereinafter referred to as ICT) in the field of inclusive education. The main areas of ICT application in education, as well as the pedagogical goals of their application are considered. The tasks and arguments in favor of using ICT in inclusive education are defined. Possible negative consequences of using ICT in the educational process are described.
Keywords: inclusive education, information and communication technologies, disabilities.

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ПРИМЕНЕНИЕ ИНФОРМАЦИОННО-КОММУНИКАЦИОННЫХ ТЕХНОЛОГИЙ В ИНКЛЮЗИВНОМ ОБРАЗОВАНИИ

Аннотация
В статье представлено описание преимуществ и недостатков применения информационно-коммуникационных технологий (далее – ИКТ) в сфере инклюзивного образования. Рассмотрены основные направления применения ИКТ в образовании, а также педагогические цели их применения. Определены задачи и аргументы в пользу применения ИКТ в инклюзивном образовании. Описаны возможные негативные последствия применения ИКТ в образовательном процессе.
Ключевые слова: инклюзивное образование, информационно-коммуникационные технологии, ОВЗ.

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ИНКЛЮЗИВТІ БІЛІМ БЕРУДЕ АҚПАРАТТЫҚ-КОММУНИКАЦИЯЛЫҚ ТЕХНОЛОГИЯЛАРДЫ ҚОЛДАНУ

Аннотация
Мақалада инклюзивті білім беру саласында ақпараттық-коммуникациялық технологияларды (бұдан әрі – АКТ) пайдаланудың артықшылықтары мен кемшіліктері сипатталған. Білім беруде АКТ қолданудың негізгі бағыттары, сонымен қатар оларды қолданудың педагогикалық мақсаттары қарастырылады. Инклюзивті білім беруде АКТ-ны қолданудың мақсаттары мен дәлелдері анықталды. Оқу процесінде АКТ қолданудың мүмкін болатын жағымсыз салдары сипатталған.
Кілт сөздер: инклюзивті білім беру, ақпараттық-коммуникациялық технологиялар, МШЖ.

Introduction. Currently, the number of people with disabilities, students with disabilities (hereinafter referred to as PWD) is increasing all over the world. Previously, it was accepted that people with disabilities received education in specialized educational institutions or at home, which provided conditions that corresponded to their medical and educational needs. However, such a learning process created an obstacle to the full social adaptation of the child, which led to the isolation of such children from their peers and society as a whole.

Creating an accessible educational environment for children with disabilities is a priority task of modern society. The solution to this problem was the introduction of inclusive education, which implies the inclusion of children with disabilities in the educational process in general secondary education institutions.

It is worth considering that each group of children with disabilities has its own special educational needs that must be met by the teacher, which implies the search for suitable methods and techniques [1].

The use of ICT can help in creating a comfortable program for teaching children in inclusive classes and groups. Based on this, it is important to consider the problematic issues of using ICT in inclusive education.

Currently, one of the most priority areas of the education system in the Republic of Kazakhstan is the creation of conditions for obtaining high-quality education for people with disabilities.

Research methods. Inclusive education is a form of educational process in which each student is given the opportunity to study in educational institutions, despite the existing developmental features. According to the Concept of Inclusive Policy in the Republic of Kazakhstan for 2025-2030, inclusive education is training and education that ensures the fullest inclusion in the joint educational process of students with different educational needs, including individuals with disabilities, by creating conditions that take into account the individual needs, abilities, and cognitive capabilities of students. Inclusive education has a number of differences compared to integration in educational systems. Integration involves the adaptation of people with disabilities to the education system, which remains unchanged. Inclusion, on the contrary, adapts the conditions and environment to the characteristics of students [2].

This is achieved through the redevelopment of premises, the development of new teaching methods, the creation of adapted curricula, etc. Inclusive education and training of children with disabilities is included in the social policy of the Republic of Kazakhstan. All ideas for the implementation of the principles of inclusive education are supported by a regulatory framework that complies with international standards. The Republic of Kazakhstan has ratified the UN Convention on the Rights of the Child (in 1990) and the Convention on the Rights of Persons with Disabilities (in 2016).

Within the framework of the current legislation, any educational institution becomes inclusive and must be ready to teach children with disabilities. The readiness of an educational institution consists of creating a barrier-free environment, adapting the educational environment and professional training of personnel [3].

The results of the study. ICT is a general concept that includes various mechanisms, devices and methods of information processing. One of the important modern ICT devices is a computer with the necessary software installed. Today, the most widely used ICT tools in the educational environment are text editors, spreadsheets, presentation programs, database management systems, organizers, graphic packages, etc [4].

Computerization of the educational process is one of the innovations in the modern education system. There are several main areas of ICT application in education:

– Improving the teaching process, increasing its quality and efficiency;

- use of computer technologies for self-knowledge and knowledge of reality;

- use of computer technology for automation of control, correction, testing and psychodiagnostics processes;

- organization of communications for the purpose of transferring and acquiring pedagogical experience, methodological and educational literature;

- organization of intellectual leisure and creative development of students;

- improvement of management and leadership processes of the educational institution.

The use of ICT pursues a number of basic pedagogical goals:

- improving all levels of the educational process;

- increasing the efficiency and quality of the learning process;

- increasing the activity of cognitive activity;

- deepening interdisciplinary connections;
- increasing the volume and optimizing the search for the necessary information;
- preparing and developing the personality of students;
- developing thinking and communication skills;
- developing the ability to propose and make decisions in complex situations;
- aesthetic education through the use of multimedia technology;
- developing information processing skills;,
- developing the ability to model a task or situation;
- carrying out experimental research activities;
- training a user of computer tools.

Currently, the use of ICT has become an integral part of the educational process in any educational institution. ICT allows to improve the level of communication and information skills of students, ensures high quality of presentation of educational material due to the use of various communication channels (graphic, text, sensory, sound, etc.).

Основные положения. Inclusive education is an attempt to motivate children with disabilities to study without fears and inconveniences, to give them confidence in their own abilities. Children with disabilities need to fully develop their potential, and inclusion helps to bring these ideas to life. To implement these tasks, it is very important to develop tools that can be both universal for all children and individual, since it is important to take into account the various characteristics of each of them. Modern ICT has exactly these capabilities.

There are a number of compelling reasons to use ICT in inclusive education:

– social aspect – the importance of teaching people with disabilities key ICT skills to prepare them to understand their role in society;

– professional aspect – the need for ICT in education to teach students the skills of future professional activities;

– pedagogical aspect – improving the quality of teaching people with disabilities with the help of ICT.

The use of ICT in education increases the level and quality of knowledge gained. This opportunity allows for a more decent standard of living for people with disabilities and makes them more competitive in the labor market. Of course, ICT is not a solution to all the problems of inclusive education, but it significantly accelerates the process of access to information. It also allows people with disabilities to become full and equal participants in all spheres of society.

The use of ICT solves the following problems of inclusive education:

– activates attention;

– improves the perception of educational material;

– increases the degree of individualization and differentiation in learning;

– increases the effectiveness of learning;

- facilitates the integration of students into the information society;
- develops students' thinking and memory.

It is also worth noting that the use of ICT in classrooms makes them more interesting and memorable for children, which, in turn, improves the perception of even more complex educational material.

It becomes possible to create an open education system that will provide each child with disabilities with their own learning path, and organize an effective system for managing information and methodological support for education.

The use of ICT in inclusive education allows for new forms of interaction in the learning process, increases the accessibility of perception of educational material, expands the scope of independent activities of children with disabilities, reduces the costs of organizing and conducting the educational process by transferring some functions from the teacher to electronic learning tools, and increases the level of individualization and differentiation of learning.

The use of ICT helps to solve an important problem of inclusive education: the creation of new "workarounds" for learning based on the use of information resources. For example, for children with visual impairments, educational material is presented in auditory or tactile form. This is possible through the use of

screen reading programs, tactile displays with Braille lines, speech synthesizers and screen magnification technology. Various technologies are being created to correct the pronunciation side of speech [5].

ICT in inclusive education plays three main roles:

– compensatory (technical assistance to facilitate traditional educational activities - reading and writing);

– didactic (use of information technologies for more effective delivery of educational material);

– communication (expansion of the area of interaction of the student with the world and people).

There are several main forms of ICT used in inclusive education:

– standard technologies. These include: web browsers, computers, word processors, mobile phones with built-in settings for people with disabilities;

– assistive technologies (devices aimed at enhancing, supporting or improving the functional capabilities of people with disabilities): keyboards with special capabilities, hearing aids, screen readers;

– accessible (alternative) data formats: video materials with subtitles and an accessible digital information system.

The high efficiency of using ICT in inclusive education is explained by the fact that ICT expands the boundaries of capabilities of participants in the educational process - students and teachers. With the help of ICT, children with disabilities can gain access to a large amount of information in the most convenient way for them, establish active communication with other children or teachers, which leads to an increase in the level of motivation for learning and development.

Problems of practical implementation of ICT in inclusive education.

The use of modern ICT in all forms of education can lead to undesirable consequences, including a number of negative factors of a psychological and pedagogical nature and a range of factors of negative influence of ICT on the physiological state and health of the student.

ICT cannot fully satisfy the special educational needs of children with disabilities, many important functions still remain with teachers. As a result, the requirements for teachers are also greatly increasing. They must have some special competencies, namely:

- basic knowledge of the technical capabilities of a computer, as well as skills in working with it;

- compliance with sanitary standards and rules for the use of computers in classrooms with children with disabilities;

- be able to develop and adapt methodological recommendations to electronic teaching aids, assignments in accordance with the capabilities of children;

- be able to create computer products[.

The introduction of ICT into education is complicated by the fact that when using ICT in working with children with disabilities, it is necessary to take into account and monitor the fulfillment of certain special requirements:

– the requirement of pedagogical functionality. It is based on the completeness of coverage of the areas of the educational process in accordance with the curriculum, as well as the possibility of individualization of work;

– the requirement of adaptability. It consists in adapting the electronic learning tool to the capabilities and needs of children by changing the depth and complexity of the material presented;

– the requirement to ensure a correctional focus. The presence of exercises and tasks that will allow the teacher to solve educational problems in accordance with the special needs of children;

– the requirement to use rhythmic modular screensavers and alternation of types of tasks with different visual load. This maintains the performance of children, increases the level of productivity of their work throughout the entire lesson.

The use of ICT can also lead to a number of negative consequences, for example:

– deterioration of the physiological state of students, addiction to the computer;

– a decrease in the speech activity of students. A prolonged absence of active speech in children can lead to a deterioration in the thinking process;

– a curtailment of social contacts, a lack of dialogic communication and social interaction.

Students face difficulties in perceiving a large amount of information provided by ICT. The use of complex methods of presenting information can distract students from the content of the educational material

itself. It is also necessary to remember that information of different types should not be demonstrated at the same time. In an attempt to keep track of different types of information, students are distracted and miss important material.

The following points can also be attributed to the disadvantages:

– an increase in the time spent on preparing the teacher for classes, associated with the creation of their own resources;

– an excess of various demonstrations during the lesson, which leads to the transformation of the lesson into listening or viewing prepared material, reducing the developmental function of assignments;

– the risk of using unreliable information from Internet resources [6].

Conclusions. Currently, the use of ICT has become an integral part of the educational process in any educational institution. ICT allows to improve the level of communication and information skills of students, provides high quality of presentation of educational material due to the use of various communication channels (graphic, text, sensory, audio, etc.). Organization of educational activities using ICT makes them more interesting and memorable for children, which, in turn, improves the perception of even more complex educational material. The use of ICT in inclusive education allows to organize new forms of interaction in the learning process, increase the accessibility of perception of educational material, expand the scope of independent activities of children with disabilities, reduce the costs of organizing and conducting the educational process by transferring some functions from the teacher to electronic learning tools, and also increase the level of individualization and differentiation of learning. With the help of ICT, children with disabilities can access a large amount of information in the most convenient way for them, establish active communication with other children or teachers, which leads to an increase in the level of motivation for learning and development.

Literature used

1. Concepts of inclusive policy in the Republic of Kazakhstan for 2025-2030 dated December 30, 2024 [1]

2. Alyokhina, S.V. Inclusive education: history and modernity /S.V. Alyokhina. Moscow : Pedagogical University "The First of September", 2021. 33 p. [2]

3. Akhmetova, D.Z. Pedagogy and psychology of inclusive education: a textbook / D.Z. Akhmetova, Z.G. Nigmatov, T.A. Chelnokova. Kazan : Po- znanie, 2021. 204 p. [3]

4. Troshina, E.P. The use of digital technologies in inclusive education / E.P. Troshina, E.A. Baraboshkina, V.V. Mantulenko // Science and school. 2021. No. 1. pp. 133-141. [4]

5. Vygotsky L. S. (2022). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press. [5]

6. Ainscow, M., & Miles, S. (2023). Making Education for All: The Inclusive Education Agenda. International Journal of Inclusive Education, 6(6), 267-283. [6]

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