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Directions of ICT use in Ukrainian educational institutions in the educational process with children with special educational needs: A literature review

Abstract. The organisation of the educational process with children with special educational needs requires the implementation of special approaches to their education. Therefore, it is important to consider the relevant foreign experience, explain the features of distance learning using information and communication technologies and develop recommendations for the use of such technologies in the educational process with children with special needs. The purpose of this study was to investigate the specific features of using information and communication technologies in preschool education institutions in teaching children with special educational needs and to cover the areas of their implementation. The methodological framework of this study included an interdisciplinary approach to the analysis of a scientific problem in combination with theoretical and empirical methods, among which the priority was given to induction, deduction, analysis, synthesis, generalisation, study of scientific literature and pedagogical observation. It was found that information and communication technologies are a set of methods, educational and methodological materials, technical means of teaching and software. It was found that they increase the effectiveness of the educational process and help to unite its participants. The study proved that the use of information and communication technologies involves the application of three approaches: technocentric, holistic, and combined. It was found that the combined approach creates a subject-object model of teaching children with special needs and demonstrates the greatest effectiveness. The study presented several classifications of information and communication technologies. The classification of information and communication technologies was presented. It was found that they are divided into main and auxiliary; standard and auxiliary; virtual. The advantages of using information and communication technologies in the educational process with children with special educational needs were considered in detail, which confirmed the need for their use in preschool education institutions in the context of distance learning. The practical significance of this study is that its results, specifically recommendations for the introduction of special approaches to the education and upbringing of preschool children with special educational needs, can be used in organising an effective educational process for such children

Keywords: preschool child; preschool education institution; digitalisation; barrier-free educational environment; distance learning; special educational needs

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INTRODUCTION

At the current stage of modernisation of preschool education in Ukraine, the priority areas are to improve its quality, meet the cognitive needs of all pupils according to their individual characteristics and engage children in diverse types of developmental activities. The organisation of the educational process with children with special educational needs requires the introduction of special approaches to their education and upbringing, as well as the creation of special psychological and pedagogical conditions for successful learning activities. The introduction of inclusive education allows preschool educational institutions (PEIs) to consolidate a new philosophy of special education and implement new aspects of teaching children with special educational needs or supporting them in the educational process. In this regard, inclusive education, and psychological and pedagogical support for students with special educational needs as fundamental conditions for the development of education are among the most pressing issues.

In the current context of global digital transformation, which researchers have unanimously recognised as the Fourth Industrial Revolution, or Industry 4.0, it is crucial to ensure the right to education for all participants in the educational process based on equal opportunities and to guarantee them safe learning (Mustafa *et al.*, 2022). Digitalisation, which means the introduction of modern information and communication technologies (ICT) into the educational process, focuses primarily on effective interaction in learning activities, helps children to unlock their potential and ensures their active involvement in various activities (cognitive, educational, creative, developmental), promotes the development of abilities and talents, helps to communicate and overcome social and psychological barriers to learning (Carrim & Bekker, 2022; Liza *et al.*, 2023).

The development of inclusive learning and digital education has been going on in parallel, and the restructuring of educational systems has intensified during the COVID-19 pandemic, which has led to a reassessment of the functions of social institutions, resulting in an urgent need to develop digital educational technologies that involve the widespread use of ICT and the introduction of distance learning for children with special needs (Narvekar, 2020; Mete Yesil *et al.*, 2022).

At the same time, the preschool education system of Ukraine has faced many challenges related to the armed aggression of the Russian Federation, the conduct of hostilities, and the introduction of martial law. Moreover, a considerable number of educational institutions have been destroyed or damaged by bombing and shelling (Ministry of Education and Science of Ukraine, 2022). The functioning of PEI under martial law and the use of distance and face-to-face (blended) forms of education is characterised by an intensive search for novel approaches to learning and innovative forms of organisation (Resolution of the Cabinet of Ministers of Ukraine No. 530..., 2019). In such circumstances, the problem of using ICT in teaching children with special educational needs is of particular importance, as the spread of digital transformations in education objectively leads to qualitative changes.

Notably, most scientific papers are investigate the problem of ICT use in inclusive classrooms of general secondary education institutions (Molina Roldan *et al.*, 2021, Triviño-Amigo *et al.*, 2022), as it is believed that it is here that children undergo intensive socialisation and develop into individuals, learning values, ideals, and standards of behaviour. However, the full inclusion of a child with special needs in society requires the development of preschool inclusion, which will enable children to interact positively with the external environment and ensure the active development of their cognitive capabilities (Iskrenovic-Momcilovic & Momcilovic, 2022; Gallud *et al.*, 2023). In this context, modern pedagogical science requires research that would provide a fundamental analysis of the use of ICT in Ukrainian PEIs in the educational process with children with special educational needs.

The purpose of this study was to consider the foreign practices of using ICT in the educational process with children with special educational needs and to analyse possible areas of its implementation in Ukraine. Its tasks include explaining the discourse of the issue, investigating the specific features of organising preschoolers' education in the conditions of distance learning, and developing recommendations on the use of ICT in Ukrainian PEIs in the educational process with children with special educational needs based on the results obtained.

The interdisciplinary approach to the analysis of the discourse of the scientific and pedagogical problem and its characteristics formed the methodological framework of the study of the problem. Specifically, a combination of many theoretical and empirical methods was used, among which induction, deduction, analysis, synthesis, generalisation, study of scientific literature and pedagogical observation were prioritised. The study is presented in a deductive manner: from a more general study of the use of ICT in the educational process with children with special educational needs to the analysis of particular solutions and responses to existing challenges, considering the implementation of foreign practices in improving inclusive education through ICT. The method of analysis was applied when studying the use of ICT in educational institutions of Ukraine in the educational process with children with special educational needs. The application of the synthesis involved the hypothesis that the correct use of ICT in educational institutions will help to increase the effectiveness of the educational process with children with special educational needs. Generalisation as a method of scientific and pedagogical research is used to obtain the sum of pedagogical knowledge about the problem of using ICT in educational institutions.

The study analysed a considerable number of Ukrainian and foreign literary sources related to the use of ICT in the educational process with children with special educational needs and identifies trends in the introduction of inclusive education in PEIs the context of distance learning.

For an objective analysis of current realities, the study was based on sources published over the past five years. The theoretical framework of this study was based on a range of foreign and Ukrainian scientific and pedagogical studies on the outlined problem. The results of scientific research make it possible to analyse in detail the areas of ICT use in the educational process with children with special educational needs and to develop recommendations for the use of ICT in distance learning.

THE USE OF ICT IN THE EDUCATIONAL PROCESS OF PRESCHOOL EDUCATION INSTITUTIONS AS A PEDAGOGICAL PROBLEM

ICTs in the context of distance learning in the PEI can become an effective means of uniting all participants in the educational process. Such technologies are especially relevant for teaching children with special educational needs. An analysis of certain provisions of the use of ICT in the educational process with children with special educational needs can be found in the studies of N.A. Mustafa *et al.* (2022) and L.O. Liza *et al.* (2023). N. Carrim and T. Bekker (2022) carried out a detailed analysis of the use of ICT in the educational process with children with special educational needs and described the requirements for their implementation for preschoolers. H.N. Narvekar (2020), A. Mete Yesil *et al.* (2022) analysed the specific features of using ICT in the educational process with children with special needs during the COVID-19 pandemic.

S. Molina Roldan *et al.* (2021), M. Medina-García *et al.* (2021), N. Carrim and T. Bekker (2022) outlined the functions of ICT in the online environment and found out the benefits of using ICT in the educational process with children with special needs. O. Iskrenovic-Momcilovic and A. Momcilovic (2022), C. Chairunnisa and R. Rismita (2022), and N. Kaur (2022) proved that ICT increases the effectiveness of inclusive education and helps to build an innovative learning process.

Scientific research I. Chaidi *et al.* (2021), V. Krasniqi *et al.* (2022), M.J. Lohmann *et al.* (2019) are devoted to the classification of types of ICT used in inclusive education and focused on improving its effectiveness. The results of these studies helped to develop a classification of ICTs used in Ukrainian PEIs and outline the specifics of each group.

When considering the use of ICT in PEIs of Ukraine in the educational process with children with special educational needs, it is necessary to note the research of H. Nazarenko and T. Andriushchenko (2019), which outlined the features of the implementation of digital tools and determined their advantages for inclusive education. The findings of Ukrainian scientists have contributed to a detailed comparative analysis of the use of ICT in the educational process with children with special educational needs.

A detailed analysis of the recommendations for the effective implementation of ICT in the educational process with children with special educational needs in PEIs was conducted by N. Kaur (2022), P. Lynch *et al.*,

Hantira (2022). R.J. Campado *et al.* (2023) focused on the development of an algorithm for creating a barrier-free educational environment, which is an urgent problem of modern pedagogical science. The above recommendations should be implemented in Ukrainian PEIs to increase the effectiveness of ICT use in the educational process with children with special educational needs in distance learning and to create a safe educational environment during martial law.

To describe in detail the ways in which ICTs can be used in the educational process of PEIs, it is first necessary to clarify the main scientific categories and concepts. The term ICT in special education refers to technologies for processing and transmitting information through various forms of presentation (visual image, sound, video, symbols), as they are the tools for communicating messages (Chaidi *et al.*, 2021). J.A. Gallud *et al.* (2023) provide an analogous definition, arguing that ICT is used to refer to the role of telecommunications equipment or computer software that helps users receive, transmit, or process information. Furthermore, ICTs are interpreted as an interactive multichannel tool for cognitive activity (Nazarenko & Andriushchenko, 2019).

According to other studies (Chairunnisa & Rismita, 2022), ICT is a set of educational and methodological materials, technical learning tools and software used in the educational process to improve the effectiveness of teachers in PEIs and provide students with quality education. To summarise the interpretation of the scientific and pedagogical category of ICT, it is special equipment or computer software that ensures effective interaction between participants in the educational process.

The introduction of ICTs into the educational process with children with special educational needs has its own specifics, which has become the subject of research by many scholars. Thus, some pedagogical studies by foreign researchers focus on the implementation of compensatory, communicative and didactic functions by means of ICT (Triviño-Amigo *et al.*, 2022). Ukrainian educators H. Nazarenko and T. Andriushchenko (2019) argue that ICTs perform educational and playful functions. For instance, the educational function concerns the acquisition of knowledge, skills, and abilities according to the set rules, while the gaming function is about the child's reward and the ability to use entertainment content for educational purposes.

ICT is a key factor when it comes to children with special needs due to a range of benefits (Chaidi *et al.*, 2021). The widespread use of ICTs in distance learning for children with special educational needs requires a revised understanding of this pedagogical phenomenon and awareness of its features by all participants in the educational process: students, educators, parents, and representatives of educational authorities – as a tool that turns conventional learning into an interesting process and the classroom into an open learning space where children can maximise their potential (Carrim & Bekker, 2022). It is worth agreeing with the conclusions of some scientific

studies that have shown that ICT is also an effective means of individualised learning (Iskrenovic-Momcilovic & Momcilovic, 2022). This objectively implies personally oriented assistance to children during learning and entertainment, creating favourable conditions for the free realisation of the creative potential of students, supporting the abilities and capabilities of students, as well as increasing motivation for learning activities (Mete Yesil *et al.*, 2022), which makes it possible to create a barrier-free educational environment for children with special needs, to unlock their intellectual and emotional potential.

According to M. Medina-García *et al.* (2021), ICTs serve as an effective tool for the social inclusion of children with special educational needs, and the introduction of these technologies into the educational process means incorporating a "culture of accessibility" and helps students achieve the planned learning outcomes and thus positively affects learning, improving its quality.

The use of ICTs in the educational process of PEIs involves the introduction of three approaches: technocentric, holistic, and combined (Chaidi *et al.*, 2021). These approaches are also relevant for Ukrainian PEIs, which are focused on improving the efficiency of the educational process and creating a barrier-free educational environment for all students. It is especially advisable to implement approaches to the use of ICT in distance learning. Figure 1 shows approaches to using ICT in the educational process with children with special needs.
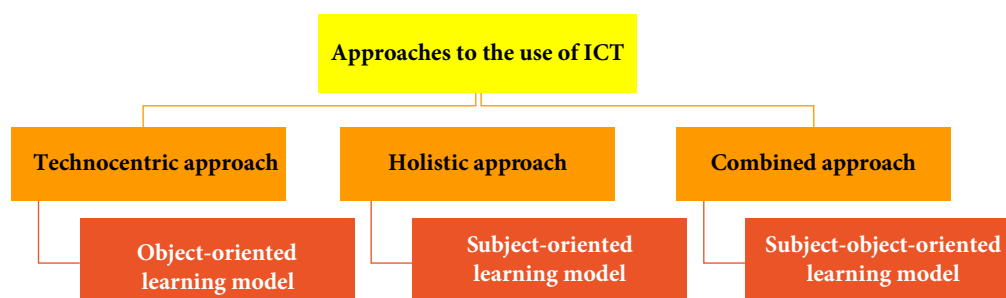

Figure 1. Approaches to the use of ICT in the educational process in PEIs
Source: developed by the author based on research by I. Chaidi *et al.* (2021)

A technocentric approach means focusing the learning process on technology and software that involves collecting, storing, and processing data. Based on them, the educator can adjust the learning activities of the students and help them overcome difficulties that have arisen during the training. The technocentric approach involves the introduction of an object-oriented model of teaching children with special educational needs. A holistic approach means creating an educational process that focuses on the integrity of a child's perception of information through a combination of different sources of perception (physical, aesthetic, emotional, audio-visual, etc.). The holistic approach contributes to the implementation of a subject-oriented model of education in PEIs. The combined approach involves combining the capabilities of technology with the specifics of children's perception of information. This approach creates a subject-object model of teaching children with special needs and demonstrates the greatest effectiveness in organising the educational process.

TYPES OF ICT AND ADVANTAGES OF THEIR USE IN THE EDUCATIONAL PROCESS WITH CHILDREN WITH SPECIAL EDUCATIONAL NEEDS

Various ICTs are used to tutor children with special educational needs. The scientific and pedagogical literature presents several approaches to their classification. Thus, according to the analysis of sources (Lohmann *et al.*, 2019; Krasniqi *et al.*, 2022), they are primary and secondary. The main ones are technologies that operate based on a personal computer or tablet in the form of special settings according to the personal needs of the learners. One can zoom in on the picture, change its brightness, adjust the volume, etc. Assistive technologies are those that function as specialised devices for working with information (e.g., a built-in Braille notebook, voice assistant, alternative keyboard, etc.).

Other researchers divide ICTs into educational and auxiliary (Chaidi *et al.*, 2021; Kaur, 2022). Educational ICTs are integrated digital tools that provide knowledge transfer to children with special educational needs and create conditions for transforming the conventional learning process into a cognitive online environment where students can actively interact with each other and their educator. Educational ICTs are divided into software (games, multimedia programmes), analytical programmes to explain certain phenomena, information retrieval programmes (web games), and information exchange tools (portal, function screen).

Depending on their functionality, assistive ICTs are divided into cognitive devices (alternative browsers, a switch to control gaming activities, text-to-speech software, digital audio books); mobility aids (such as a wheelchair or functional chair); and alternative communication aids (communication boards, electronic communication boards, hearing aids); means of monitoring the educational environment (monitor for displaying student engagement, motion detectors, eye tracking technology, hand or foot switches for transmitting information, special devices for entering information, including a keyless and programmable keyboard, voice and mood recognition tools).

Furthermore, ICTs are divided into standard and assistive (Chairunnisa & Rismita, 2022). Standard ICT is used to format information and process it for further use in the learning process. And assistive ICT creates a favourable learning environment and enables children with special educational needs to improve their functional performance. Researchers separately highlight virtual ICTs, the use of which helps in conducting individual lessons for each child separately (Kaur, 2022).

Classification of ICT, determination of the type of technology to be used in the classroom with children with special educational needs, will help the teacher to develop the correct algorithm for its implementation in the educa-

tional process and maximise its pedagogical effect. Several pedagogical studies have analysed the benefits of using ICT in educational institutions in the educational process with children with special educational needs and in organising an effective environment for distance education. Thus, it was found that ICT helps to improve the learning outcomes of children with special needs and creates favourable conditions for their active involvement in the educational process. Table 1 presents a detailed analysis of the benefits of using ICT in the educational process with children with special educational needs, which can be divided into four groups, namely: pedagogical, psychological and pedagogical, social, and cognitive.

Table 1. Advantages of using ICT in the educational process with children with special educational needs

Group of advantages	Benefits of using ICT
Pedagogical	Possibility of providing quality education for children with special educational needs (Nazarenko & Andriushchenko, 2019; Chairunnisa & Rismita, 2022; Kaur, 2022; Campado *et al.*, 2023)
	Implementation of individualised learning (Chaidi *et al.*, 2021; Chairunnisa & Rismita, 2022; Kaur, 2022; Rajan & Balaji, 2022)
	Development of communication skills (Chao, 2019; Kaur, 2022; Rajan & Balaji, 2022; Rizk & Hillier, 2022)
	Creating a barrier-free educational environment (Ládiné Szabó & Lengyelné Molnár, 2020; Chairunnisa & Rismita, 2022; Kaur, 2022; Singh & Hanspal, 2023)
	Qualitative monitoring of children's learning activities (Chairunnisa & Rismita, 2022; Rajan & Balaji, 2022)
	Building digital competence (Chao, 2019; Chairunnisa & Rismita, 2022; Kaur, 2022)
	Ability to combine individual and group forms of work (Nazarenko & Andriushchenko, 2019; Campado *et al.*, 2023; Singh & Hanspal, 2023)
	The ability to build individual educational trajectories (Nazarenko & Andriushchenko, 2019)
	Ensuring equal participation of children in learning activities (Anagnostopoulou *et al.*, 2021)
Psychological and pedagogical	Inclusion of an entertainment component (Nazarenko & Andriushchenko, 2019; Chaidi *et al.*, 2021)
	Providing psychological and social support during the educational process (Kaur, 2022; Campado *et al.*, 2023)
	Increasing children's motivation for learning (Kaur, 2022; Singh & Hanspal, 2023)
	Development of psychomotor functions (Chairunnisa, & Rismita, 2022)
	Development of imagination, attention, and self-control (Ládiné Szabó & Lengyelné Molnár, 2020; Anagnostopoulou *et al.*, 2021; Rizk & Hillier, 2022)
Social	Creating positive interactions (Kramarenko *et al.*, 2020; Chaidi *et al.*, 2021; Rajan & Balaji, 2022; Singh & Hanspal, 2023)
	Social integration of pupils (Nazarenko & Andriushchenko, 2019; Chairunnisa & Rismita, 2022; Kaur, 2022; Jayousi *et al.*, 2023)
	Providing students with opportunities to demonstrate learning achievements (Kaur, 2022; Campado *et al.*, 2023)
	Ensuring personal development of students (Chairunnisa & Rismita, 2022; Rajan & Balaji, 2022; Jayousi *et al.*, 2023)
	Providing opportunities for creativity (Chairunnisa & Rismita, 2022)
	Ensuring effective interaction with parents of students (Denysiuk *et al.*, 2021)
Cognitive	Ensuring access to and understanding of information (Nazarenko & Andriushchenko, 2019; Chaidi *et al.*, 2021; Chairunnisa & Rismita, 2022; Kaur, 2022; Campado *et al.*, 2023)
	Monitoring and control of children's cognitive functions (Chaidi *et al.*, 2021)
	Developing skills to implement self-education in the future (Campado *et al.*, 2023)
	Increasing the cognitive activity of students (Liang *et al.*, 2023).

Source: development by the authors of this study based on the analysis of scientific literature (Anagnostopoulou *et al.,* 2021; Nazarenko & Andriushchenko, 2019; Chaidi *et al.*, 2021; Chairunnisa & Rismita, 2022; Kaur, 2022; Liang *et al.*, 2023; Campado *et al.*, 2023)

Thus, ICTs contribute to improving the efficiency of the educational process in PEIs, positively influencing its intensity and creating conditions for children with special needs to fully learn, specifically in the context of distance education. However, the use of ICT requires certain guidelines to be followed to achieve maximum results.

The analysis of scientific and pedagogical sources strongly suggests that the use of ICT in Ukrainian educational institutions in the educational process with children with special educational needs requires compliance with certain recommendations. Table 2 presents a list of such recommendations.

Table 2. Recommendations on the use of ICT in the educational process with children with special educational needs

Researchers	Recommendations
Carrim & Bekker, 2022; Peruzzo & Allan, 2022	Create access to technology and consider the sources of information for children; Ensure effective communication with the community and the management of PEIs to address current issues.
Narvekar, 2020; Peruzzo & Allan, 2022	Consider the specific features of the educational environment.
Peruzzo & Allan, 2022	Create favourable conditions for children to interact with each other, engage them in cooperation and horizontal learning.
Carrim & Bekker, 2022	Improve the regulatory framework for the use of ICTs in PEIs and bring it closer to international standards.
Lynch *et al.*, 2022	Increase the level of professional competence of educators in the use of ICT in the context of distance learning for children with special educational needs, organise in-service training for teachers of PEIs; Monitor the development of modern ICTs and the introduction of innovative approaches based on foreign practices; Consider children's preferences regarding the form of information they receive; Establish effective cooperation with parents or guardians of students, ensure that the environment understands the importance of using ICT and involving parents in the learning process (through chats or educational platforms).
Narvekar, 2020; Lynch *et al.*, 2022	Change activities during the learning process to increase children's motivation to complete tasks
Khalil & Hantira, 2022	Increasing the motivation of teachers to effectively use various types of ICT in distance learning; Developing standards of ethical behaviour for participants in the educational process in the online environment.
Das, 2020; Khalil & Hantira, 2022	Carefully plan the educational process, considering the characteristics of children and their preferences; Provide regular technical support for the equipment.
Nazarenko & Andriushchenko, 2019	To create creative groups of teachers in the main areas of ICT use to improve the quality of teaching, upbringing, and development of preschoolers.
Chaidi *et al.*, 2021	Outline the role of the companion caregiver, animator, and helper; Define educational goals for students before performing tasks using ICT, inform them about the rules for using the equipment; If children have difficulties, change the algorithm or use a different technology; To promote the development of learning autonomy skills in children with special educational needs; Use high-quality didactic material.
Anagnostopoulou *et al.*, 2021	Develop a flexible class schedule; Use game methods; Pay attention to the emotions of the pupils; Use ICT to monitor children's learning activities.
Ahmad *et al.*, 2019	To develop an algorithm for using games in the educational process of PEIs.
Chao, 2019; Sujarwanto *et al.,* 2019; Atanga *et al.,* 2020; Garzon Artacho *et al.,* 2020; Katsarou, 2020; Boychuk & Kazachiner, 2021	To promote the development of inclusive competence among educators of PEIs.
O'Kane *et al.*, 2019	Organise the study of foreign practices in the use of ICT in the educational process with children with special needs; Conducting theoretical and empirical research on the issue.

Source: developed by the authors of this study based on the analysis of scientific literature (Chao, 2019; Nazarenko & Andriushchenko, 2019; Sujarwanto *et al ,* 2020; Das, 2020; Garzon Artacho *et al.*, 2020; Katsarou, 2020; Narvekar, 2020; Boychuk & Kazachiner, 2021; Chaidi *et al.*, 2021; Carrim & Bekker, 2022; Khalil & Hantira, 2022; Lynch *et al.,* 2022; Peruzzo & Allan, 2022)

Thus, the use of ICT in the educational process with children with special educational needs is an important condition for creating a barrier-free educational environment in PEIs. The introduction of foreign pedagogical practices in the use of ICTs will increase the effectiveness of the educational process, namely: it will help to avoid negative stereotypes and attitudes about inclusive education, build individual educational trajectories for pupils of PEIs and achieve the maximum level of development of skills of children with special needs.

CONCLUSIONS

The study noted that at the current stage of modernisation of preschool education in Ukraine, the priority areas are to improve its quality and meet the cognitive needs of all pupils according to their individual characteristics. In this context, the organisation of the educational process with children with special educational needs requires the introduction of special approaches to their education and upbringing, including the use of ICTs aimed at improving the efficiency of the educational process, creating a barrier-free educational environment and ensuring safe learning conditions during martial law.

According to the purpose and objectives of the study, the paper examined the foreign practices of using ICT in the educational process with children with special educational needs and analysed possible areas for its implementation in Ukraine. Furthermore, the discourse of the scientific problem was explained, and based on the findings, recommendations were made on the use of ICT in Ukrainian PEIs in the educational process with children with special educational needs.

The study examined in detail the approaches to the interpretation of the term ICT and found that in special pedagogy it is, first of all, technologies for processing and transmitting information through various forms of presentation, since they are the tools for transmitting messages, as well as a set of educational and methodological materials, technical teaching aids and software used in the educational process to increase the effectiveness of the work of teachers of PEIs and provide students with quality education. The study found that in the context of distance learning in PEIs, ICTs can be an effective means of uniting all participants in the educational process and ensuring its continuity. The introduction of ICT in the educational process with children with special educational needs focuses on the implementation of compensatory, communicative, and didactic functions. At the same time, it was found that ICTs perform educational and gaming functions, where the educational function concerns the acquisition of knowledge, skills, and abilities according to the given rules, while the gaming function involves the use of entertainment content for educational purposes.

It was proved that the use of ICT in the educational process of PEIs involves the introduction of three approaches: technocentric, holistic, and combined. It was experimentally found that the combined approach creates a subject-object model of teaching children with special needs and demonstrates the greatest effectiveness in organising the educational process. The study presented several approaches to the classification of ICTs. Thus, there is a distinction between: main and auxiliary; standard and auxiliary; and virtual ICT. Furthermore, based on the analysis of scientific literature, the advantages of using ICT in the educational process with children with special educational needs were considered in detail, which strongly suggests the need to use ICT in PEIs in the context of distance learning.

Prospects for further research in the field of inclusive education include outlining the achievements and problems of teaching children with special educational needs using ICT, as well as a detailed development and justification of a general model of organising an educational environment for students with special needs using ICT.

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CONFLICT OF INTEREST

None.

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Напрями використання ІКТ у закладах освіти України в навчальному процесі з дітьми з особливими освітніми потребами: огляд літератури

Анотація. Організація освітнього процесу з дітьми з особливими освітніми потребами потребує реалізації особливих підходів до їх навчання, тому актуально розглянути відповідний зарубіжний досвід, пояснити особливості дистанційного навчання з використанням засобів інформаційно-комунікаційних технологій та розробити рекомендацій щодо застосування таких технологій в навчальному процесі з дітьми з особливими потребами. Метою статті є вивчення особливостей використання інформаційно-комунікаційних технологій в закладі дошкільної освіти під час навчання дітей з особливими освітніми потребами та розкриття напрямів їх імплементації. Методологічну основу дослідження склав інтердисциплінарний підхід щодо аналізу наукової проблеми в поєднанні з теоретичними та емпіричними методами, серед яких пріоритетними стали індукція, дедукція, аналіз, синтез, узагальнення, вивчення наукової літератури та педагогічне спостереження. З'ясовано, що інформаційно-комунікаційні технології – це сукупністю методів, навчальних і методичних матеріалів, технічних засобів навчання та програмного забезпечення. З'ясовано, що вони підвищують ефективність освітнього процесу та сприяють об'єднанню його учасників. Доведено, що використання інформаційно-комунікаційних технологій передбачає застосування трьох підходів: техноцентричного, холістичного та комбінованого. З'ясовано, що комбінований підхід створює суб'єкт-об'єктну модель навчання дітей з особливими потребами і демонструє найбільшу ефективність. У статті представлено кілька класифікацій інформаційно-комунікаційних технологій. Представлено класифікацію інформаційно-комунікаційних технологій. Виявлено, що вони поділяються на основні та допоміжні; стандартні та допоміжні; віртуальні. Детально розглянуто переваги використання інформаційно-комунікаційних технологій у навчальному процесі з дітьми з особливими освітніми потребами, що підтверджує необхідність їх використання в закладах дошкільної освіти в умовах дистанційного навчання. Практичне значення дослідження полягає в тому, що його результати, зокрема рекомендації щодо запровадження спеціальних підходів до навчання та виховання дошкільників з особливими освітніми потребами, можна використати в організації ефективного навчального процесу для таких дітей

Ключові слова: дитина дошкільного віку; заклад дошкільної освіти; цифровізація; безбар'єрне освітнє середовище; дистанційне навчання; особливі освітні потреби

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