INCLUSIVE EDUCATION IN UKRAINE: THE USE OF MODERN INNOVATIVE TECHNOLOGIES IN TIMES OF CRISIS (LITERATURE REVIEW)

EDUCAÇÃO INCLUSIVA NA UCRÂNIA: A UTILIZAÇÃO DE TECNOLOGIAS MODERNAS E INOVADORAS EM TEMPOS DE CRISE (ANÁLISE DA LITERATURA)

LA EDUCACIÓN INCLUSIVA EN UCRANIA: EL USO DE TECNOLOGÍAS MODERNAS E INNOVADORAS EN TIEMPOS DE CRISIS (RESEÑA BIBLIOGRÁFICA)

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ABSTRACT: The purpose of the article is to analyze the use of modern innovative technologies in the inclusive education of Ukraine and the world in the conditions of modern challenges based on a review of modern scientific literature. The method of content analysis was used, with the help of which the content of scientific pedagogical literature was traced. The results determined the importance of distance learning and its development in the conditions of a military challenge in Ukraine, the problems and prospects of this innovative technology. Assessments of the innovative technical environment in inclusive education in crisis conditions were studied. Emphasis is placed on research into STEM education in inclusion project methods, and the use of simple and complex technologies. The conclusions emphasize that the possibilities of introducing synchronous and asynchronous learning will ensure the acquisition of the necessary knowledge and skills, but also allow children to be socialized.

KEYWORDS: Inclusive education. Ukraine. Innovative technologies. Distance education. STEM education.

RESUMO*: O objetivo do artigo é analisar o uso de tecnologias inovadoras modernas na educação inclusiva da Ucrânia e do mundo nas condições dos desafios modernos com base em uma revisão da literatura científica moderna. Utilizou-se o método de análise de conteúdo, com o auxílio do qual foi traçado o conteúdo da literatura científica pedagógica. Os resultados determinaram a importância do ensino a distância e seu desenvolvimento nas condições de um desafio militar na Ucrânia, os problemas e as perspectivas desta tecnologia inovadora. Foram estudadas avaliações do ambiente técnico inovador na educação inclusiva em condições de crise. A ênfase é colocada na pesquisa sobre educação STEM em métodos de projetos de inclusão e no uso de tecnologias simples e complexas. As conclusões enfatizam que as possibilidades de introdução da aprendizagem síncrona e assíncrona garantirão a aquisição dos conhecimentos e habilidades necessários, mas também permitirão que as crianças socializem.*

PALAVRAS-CHAVE*: Educação inclusiva. Ucrânia. Tecnologias inovadoras. Ensino a distância. Ensino STEM.*

RESUMEN*: El objetivo del artículo es analizar el uso de las modernas tecnologías innovadoras en la educación inclusiva en Ucrania y en el mundo en las condiciones de los desafíos modernos sobre la base de una revisión de la literatura científica moderna. Se utilizó el método de análisis de contenido, con cuya ayuda se rastreó el contenido de la literatura científica pedagógica. Los resultados determinaron la importancia del aprendizaje a distancia y su desarrollo en las condiciones de un desafío militar en Ucrania, los problemas y las perspectivas de esta tecnología innovadora. Se estudiaron las evaluaciones del entorno técnico innovador en la educación inclusiva en condiciones de crisis. Se hace hincapié en la investigación de la educación STEM en los métodos de proyectos de inclusión y el uso de tecnologías simples y complejas. Las conclusiones subrayan que las posibilidades de introducir el aprendizaje síncrono y asíncrono garantizarán la adquisición de los conocimientos y habilidades necesarios, pero también permitirán a los niños socializar.*

PALABRAS CLAVE*: Educación inclusiva. Ucrania. Tecnologías innovadoras. Educación a distancia. Educación STEM.*

Introduction

The modern information society dictates new vectors for the development of many areas of social development. Taking into account the requirements of globalization and digitalization (which has saturated all aspects of life in the current conditions of software and computer technology penetration) is also related to the field of education, including inclusive education. New manifestations of the human-centered approach point to the formation of updated paradigms of perception of inclusion in society, legislative, organizational, cultural and state dimensions. By focusing on these ideals, the use of the latest methods and innovative teaching technologies is becoming fashionable. The fashion gradually turns into a standard that is fixed at the level of relevant ministries and other administrative institutions. The formation of such requirements has been described in some detail in scientific research, but new circumstances, the emergence of fresh vectors of pedagogical development and the use of the latest technological ideas require constant reassessment and further elaboration. In particular, the development of the COVID-19 pandemic can be considered a milestone in the use of digital learning. Relevant quarantine restrictions have demonstrated that distance learning is not inferior in quality to traditional forms of organizing the educational process. This has opened up new perspectives for the use of digitalization in pedagogical life.

Research problem

The promising application of scientific, technological and social progress has a dramatic impact on the development of the education system. In today's globalized environment, traditional pedagogical means of teaching and upbringing, as well as the non-innovative organization of the educational process, are increasingly proving to be ineffective (compared to innovative methods). In addition, due to the contradictions in the nature of pedagogical influence and the mismatch in the pace of knowledge acquisition and skills development of people with special learning needs, the use of innovative technologies has become an important component of the acquisition of basic competencies of students with special needs.

Research focus

Studying the peculiarities of introducing innovative technologies into the education system is not a new topic. Since the beginning of the COVID-19 pandemic, due to the transition to distance education, contemporary authors have begun to increasingly explore key aspects of the use of innovative technologies in the education sector (WILLIAMS *et al.,* 2023). At the same time, the development of the political situation also has a significant impact on the main manifestations of the development of inclusive education. The Russian aggression in Ukraine since 2014 (and its new outbreak in 2022) has opened up new realities of pedagogical practice. The use of distance education in the context of hostilities has become the only possible and adequate response that has made significant adjustments to curricula and processes. Thanks to the timely response, the training was not interrupted, and the organizational experience gained allowed us to continue it at the proper level in 2023.

Research aim and research questions

Therefore, the purpose of the article is to analyze the use of modern innovative technologies in inclusive education in Ukraine in the context of the challenges and crises of our time based on a review of the current scientific literature. To achieve this goal, the following research questions will require special attention:

1. Analysis of Distance Inclusive Learning in the Context of Military Challenge (Ukrainian Experience);
2. Research of innovative technical environment in inclusive education in the conditions of war (technologies and forms);
3. Characterization of key aspects of using STEM education in inclusion.

Theoretical Framework

Theoretical understanding of innovation and innovative learning in pedagogical science

The problem of theoretical explanation of the phenomenon of innovation is not new in modern studies.

At the same time, due to the interdisciplinary nature of this term, it is interpreted by contemporary authors in different ways. In Anggraini and Handayani (2022), innovation is interpreted on the basis of materialized transformations in technology that result from

scientific progress. In Pisanu (2014), innovations are considered as the use of new techniques, methods, approaches, forms of work, techniques in the educational system in order to improve the quality of the educational process. According to Kapur (2015), innovations are those technologies that involve a complete renewal of old methods and approaches and the creation of new ones. Innovations in education may include the use of new technologies such as computer hardware, software, virtual reality, interactive whiteboards, etc. The issue of using innovative technologies, however, will require further development, as the modern digital society dictates new requirements and trends in the use of these elements for educational purposes. In particular, the latest software makes it possible to integrate virtual technologies and augmented reality capabilities into the modern pedagogical process. The possibilities of these technologies in terms of inclusive education are poorly understood in the scientific literature and will require further evaluation and development of practical recommendations for their use.

They may also include new teaching methods based on research, such as problem-based learning, project-based learning, reverse classroom, collaborative learning, etc. According to Stukalenko *et al.* (2016), the goal of educational innovation is to improve the overall quality of education and provide students with a more effective and interesting learning experience.

Innovations in the structure of inclusive education are new techniques, methods, approaches, forms in education to improve the quality of learning and corrective, developmental processes based on the provision of educational services that are determined by market and social demand (GOODLEY *et al.,* 2020; MÉNDEZ *et al.,* 2022).

According to Stukalenko *et al.* (2016), innovation-based learning is learning that stimulates the development of innovative changes in the relevant culture and social environment and acts “as an active response to the problematic situations faced by each individual and society as a whole” (p. 7299).

Thus, innovative learning can be interpreted as:

A specific type of learning that differs from traditional classroom learning; (STUKALENKO *et al*., 2016).

A special approach to teaching, including the use of the latest modern technologies and methods, forms and approaches that generally help to increase the effectiveness of teaching and improve student performance (PISANU, 2014).

A process that ensures the development of the personality of the teacher and students through the introduction of democratization processes on the part of the teacher and promotes the involvement of each student in joint creative and productive work (STUKALENKO *et al*., 2016).

The process of transforming the nature of educational cooperation, which forms a high level of important competencies and generally increases the level of intellectual and communicative work of students: creativity, creative approach to solving typical problems; (GOODLEY *et al.*, 2020).

A special type of knowledge acquisition that involves the development of teamwork skills, the ability to use creative and critical thinking in new, complex situations (GOODLEY *et al.*, 2020).

In scientific studies, researchers distinguish several classifications of educational technologies. In general, they can be systematized and presented as follows:

By the level of use: general pedagogical, methodological, local technologies;

According to philosophical understanding: materialistic, dialectical, humanistic, metaphysical, anti-humanistic, theosophical, scientific and religious, pragmatic, existential, etc.;

By experience: behavioral, developmental, associative, reflective, Gestalt technologies;

Based on the main factor of psychological development: sociogenic, biogenic, idealistic, psychogenic (STUKALENKO *et al*., 2016, p. 7305).

It is now believed that the development of an individual is comprehensively influenced by sociogenic, biogenic, and psychogenic factors. In modern pedagogy, there are no mono-technologies based on only one factor, principle, or method, so educational technology, especially innovative technology, is always integrative.

The term “technology” is a form that has a certain structure (a system of ways and methods of using them) and comes from a scientific theory. In order to reveal the content of a particular technology, it is necessary, first of all, to make a conceptual analysis, to single out and characterize those parts of the educational process that make it technologized, that is, used according to a certain technology.

Based on the analysis of modern literature, we can describe the key functions of innovative technologies in the inclusive education system:

Compensatory: Provides technical support to facilitate reading or writing;

Didactic: Promotes professional pedagogical support in the process of applying modern technologies to form a special educational sphere and educational resources;

Communication: It is about communication support for participation in networking systems.

Methodology

General background

The scientific literature base was selected taking into account the criteria of novelty, scientificity, and systematicity. In order to conduct this systematic literature review, several databases were used to search for relevant characteristics of innovative technologies for students with disabilities. The study included Web of Science, Scopus, IndexCopernicus, ERIC, and other databases. The key reasons for choosing these databases were their scientific impact and recognized quality in the academic community of the humanities.

Data analysis

Using the method of analysis and comparison, we managed to process the scientific literature on the subject. In total, 40 items of regulatory documents and the most recent, relevant scientific literature were studied. Under these circumstances, the findings of the study summarize current ideas about the development of inclusive education in Ukraine and other countries, which is extremely important for an adequate and comprehensive consideration of the research objective.

The work is also based on the use of some legislative documents: The Salamanca Declaration and the Framework for Action on Special Needs Education. These documents promote the principle of creating “schools for all,” i.e., institutions that bring together all participants in the educational process, take into account certain differences, promote person-centered learning, and meet the individual needs of everyone (UNESCO, 1994).

Results

Distance inclusive education in the context of military challenge: Ukrainian experience

According to the Ukrainian National Doctrine of Education Development in the 21st Century, improving the education and upbringing system is becoming a permanent process that takes into account compliance with the principles of humanization and individualization and is focused on the personal and psychophysical characteristics of children, creating educational conditions that will promote the timely and full development of all aspects of a child's personality through successful education and upbringing. Regardless of the situation, a child needs comprehensive development, and children with special educational needs are among the most vulnerable social groups. The education of such students has its own distinctive features. The events that have taken place in Ukraine and the world since 2020 and global quarantine restrictions have led to radical changes in society that have significantly affected the educational process. At that time, distance learning became the only way to ensure the normal course of the educational process, even in conditions that are unreliable. The Russian aggression and large-scale hostilities in certain territories of Ukraine have further actualized the possibilities of using distance learning in inclusive education.

Distance learning is one of the modern forms of education and, according to researchers, its proper organization can be highly effective for children with special needs, especially in the case of organizing the process of independent individual learning (STUKALENKO *et al.,* 2016). Distance learning is based on the use of modern IT technologies and allows for distance learning without direct contact between teacher and student, teacher and student (CRANMER, 2020; KUMARI, 2022).

The organization of the educational process for people with special needs can take different forms, in particular, scholars distinguish differentiated education in special correctional institutions, integrated education in special classes in general education institutions, and inclusive education, when people with special needs study together with other students in general education schools (KRASNIQI; ZDRAVKOVA; DALIPI, 2022). According to LORD (2020), inclusive education is a part of social policy, as the main idea of inclusive education is that children are integrated into an educational institution and then integrated into society in the same way. The organization of the educational process in inclusive classes during distance learning involves the conduct of correctional and developmental classes in accordance with the Regulations on Distance Education of General

Secondary Education Institutions, approved by the order of the Ministry of Education and Science of Ukraine.

In the context of martial law, the benefits of using innovative distance learning aimed at using information and communication technologies have become clear. However, as noted by Méndez *et al.* (2022), in the realities of inclusive education, the main challenges in improving the effectiveness of learning have become the need to adapt any teaching methods to the abilities of each student with special educational needs, including people with disabilities. According to Armour, Goodyear and Sandford (2020), virtual interaction allows to reduce the degree of psychological stress, bypass psychological discomfort that would contribute to the growth of students' activity in communication. The research has shown that the implementation of the educational process will continue to depend on the use of some traditional forms of lectures and independent work. They have undergone some transformations, especially in terms of practical implementation. For example, in distance learning, lectures can be delivered in the form of real-time video conferencing or recording (WILLIAMS *et al.,* 2023). Students' independent work can be carried out using electronic versions of textbooks, manuals, audio and video recordings. In addition, there is the possibility of using paper media. Jena, Gupta and Mishra (2021) note that there is now an alternative to paper media - electronic devices for storing and viewing information. As demonstrated in the empirical study by Mahanta (2022), opinions among teachers, parents, and students differ and depend on the individual characteristics of each person. Modern adaptive technologies allow students with physical disabilities to fully use any digital means of communication, which greatly facilitates learning. In order to meet the needs of children with different disabilities, a variety of methodological support is needed. For example, students with special needs can use special programs and devices to translate text into an alternative format, such as screen readers, keyboards, displays, and Braille printers.

Martial law has led to new challenges in distance learning. First of all, we are talking about the dispersion of students and teachers as a result of mass evacuation and flight from hostilities. Some students remained in the occupied territory and were probably taken to Russian territory. It became impossible to conduct classes under such conditions, and the established system of inclusion and integration of people with special educational needs into society became much more difficult. Another challenge in similar circumstances was the lack of material resources (NAMESTIUK, 2022). Military needs make up the largest part of the

current Ukrainian budget. Funding for the education sector is generally reduced and is partially funded by donor countries.

The benefits and challenges of using digital technologies in inclusive education can be summarized in Table 1.

Table 1 – Advantages and difficulties of using digital technologies in inclusive education in Ukraine

	Advantages	**Difficulties**
1	High efficiency in practical implementation	Martial law and threats to the physical life and health of teachers and students
2	Access to the latest IT developments that facilitate familiarization with educational material in inclusive education	Lack of financial resources for continuous improvement
3	Reducing psychological stress during the education of children with special educational needs	Dispersal of students and teachers as a result of hostilities
4	Flexibility in integrating different tools and creating individual learning paths	

Source: compiled by the authors of the article on the basis of research papers of Jena, Gupta and Mishra (2021), Mahanta (2022), Namestiuk (2022), and Williams *et al.* (2023)

In scientific studies, researchers distinguish several classifications of learning technologies (ALJAD, 2023). In general, they can be systematized and presented as follows (See Table 2).

Table 2 – Classifications of educational technologies

	Criterion	**Main types**
1	By the level of use	General pedagogical, methodological, and local technologies;
2	By philosophical understanding	Materialistic, dialectical, humanistic, metaphysical, anti-humanistic, theosophical, scientific and religious, pragmatic, existential, etc.;
3	By the criterion of gaining experience	Behavioral, developmental, associative, reflective, gestalt technologies;
4	Based on the main factor of psychological development	Sociogenic, biogenic, idealistic, psychogenic.

Source: Adapted from Studying innovation technologies in modern education by N. Stukalenko *et al.* (2016, p. 7305)

For this reason, further analysis of the educational technologies used in inclusive education is extremely important. Discussions among researchers allow us to choose the best way to integrate technology into inclusive education.

Innovative technical environment in inclusive education in times of crisis: technologies, forms

Innovative technical environment involves the use of new methods, techniques, methods, forms of work, non-traditional approaches of techniques in educational work in order to improve the quality of educational, collection and development processes. In Kapur's (2015) study, innovative technologies influence the formation of new ways and methods of interaction between teachers and students that ensure the effective achievement of the result of pedagogical activity. At the same time, according to Joseph and Nisker *(*2020), the use and development of innovative technologies, including telecommunication systems and computer technology through the prism of inclusive education, are associated with the active, dynamic nature of modern society. Modern researchers emphasize that such modern technologies affect the faster rapprochement of a person with society, the formation and development of a certain level of education, worldview, and culture of mental abilities (CRANMER, 2020). At the same time, it has been proven that the widespread use of innovative technologies in the process of teaching children with special learning needs opens up opportunities for the development of their mental and communication skills, support and communication with teachers and other students, which generally contributes to better integration of students with special needs into society (GOODLEY *et al.,* 2020, KONNERUP, 2017). These opportunities are realized through the use of certain technical means in the educational process. The selection of material and technical equipment in inclusive education is characterized by the ratio of invariance and variability of all its elements (CZYŻ, 2018).

An innovative area of inclusive education is the introduction of an approach to learning that uses Science, Technology, Engineering and Mathematics (STEM). American researchers working with academic staff and students with special needs have shown that about 35% of young people with autism spectrum disorders choose STEM careers. Among students with other intellectual disabilities, about 5-12% show interest in the sciences. In addition, STEM education contributes to the further employment of graduates with special educational needs. At the same time, Ukrainian researchers estimate that a third of Ukrainians did not have access to education during the war at all (BUKLIV; KUCHAK; VASYLYUK-

ZAITSEVA, 2023). The use of STEM education in the inclusive educational process will help to neutralize any negative impact in the future (KHARITONENKO, 2022). In particular, research has shown that the loss of some skills can contribute to the active development of others, so children can achieve high results by learning with STEM technologies and create real competition in the labor market for qualified specialists in the future. Since STEM education is based on the use of an innovative project-based method, researchers view it through the lens of inclusiveness (SHELTON, 2020). In such circumstances, the teacher should act as a facilitator, guide activities, and encourage students to use different research methods. It is important to remember that the teacher is no longer the main leader, but becomes a mentor and advisor (SOWIYAH; PERDANA, 2022). Ways to defend projects should be determined together with students, and performance assessment should be individualized and carried out using different systems.

When implementing STEM education, it is important to focus on the strengths of students and to be able to organize learning in such a way as to achieve a state of "flow" (RAK-MŁYNARSKA, 2022). The concept of "flow" has been studied by scientists, in particular, it refers to complete focus on the process of work, accompanied by a sense of calm, satisfaction and ease. The study showed that students in the main and control groups are ready for the integrated implementation of augmented reality technologies in STEM education. However, the problem of achieving a similar state during distance learning or learning in combat conditions remains poorly understood, when opportunities for communication between academic staff and students.

A positive element of using such an innovative element as STEM education is the establishment of teamwork, which contributes to the development of empathy, interest, communication skills, and other soft skills. In addition, the personal implementation of projects with technical and engineering tools, with an emphasis on safety, helps to foster confidence in one's abilities, belief in them, and independent work skills (WEDARI; FATIHAH; RUSMANTO, 2023).

STEM education also involves creating an inclusive atmosphere in which students learn to plan and organize their activities, analyze and synthesize information (KHARITONENKO, 2022), check the accuracy of their results, and develop research and information retrieval skills.

Discussion

According to Connor (2020), sound amplification, multimedia technologies, and wireless sound transmission are important for students with hearing impairments, as they facilitate the effective exchange of information in accessible forms. At the same time, the organization of the educational process for children with visual impairments also requires the availability of special equipment, such as video magnifiers, Braille equipment, electronic magnifiers, speech synthesizers, etc. Barnová *et al.* (2022) determined that the main characteristic of these tools is the transformation of computer information into forms accessible to students with visual impairments. The educational process for persons with musculoskeletal disorders also requires the use of special computer equipment and operating software adapted for use by persons with disabilities, which allow them to practice inputting or outputting information in accessible forms (KONNERUP, 2017; ABD-RABO; HASHAIKEH, 2021). For higher education students with special learning needs, including those caused by various physical disorders resulting from psychological disorders or trauma, it is sufficient to ensure that the educational institution complies with ergonomic requirements for educational materials (DANFORTH, 2020). This, in turn, will allow students to independently determine a more comfortable way of implementing a learning task, in particular, the choice of type, font size, color, brightness, spacing, etc. At the same time, these researchers did not note the importance of the lack of computer literacy, which is especially noticeable in the Ukrainian experience. Inclusive education involves the inclusion of all learners, including those who do not have sufficient computer literacy or access to technology. This can be particularly challenging for those with low levels of digital literacy or those living in war-affected areas of Ukraine. As demonstrated in the study, Ukraine's current challenges in implementing inclusive education do not allow for the full potential of digital innovation technologies to be realized.

A number of authors include some additional technologies that improve the organization of inclusive education as modern innovative technologies. They are seen as a kind of alternative (based on new digital devices) to create better communication and interaction with students with disabilities.

According to Fernández-Cerero, Montenegro-Rueda and Fernández-Batanero (2022), assistive technologies are those devices or services that are used to compensate for functional limitations, facilitate personal life, and enable people with disabilities to fully realize their activity and potential (p. 1912). At the same time, certain aids that are not specifically

designed for people with disabilities can be customized to specifically provide auxiliary assistance to them (DANFORTH, 2020). The discussion of European and American scholars, however, should take into account the sufficient training of teachers for inclusive education. The use of innovative technologies in inclusive education requires additional training and skills from teachers, which may require additional time and resources that may be limited (ABD-RABO; HASHAIKEH, 2021). Obviously, taking into account the Ukrainian experience of inclusive education in the context of Russian aggression may lead to a revision of certain aspects of financing the sector. First of all, it is about involving more patrons and volunteers in the purchase, transportation and training of appropriate equipment, etc. The term "assistive technology" means any equipment or service that can fit this term. Contemporary authors include communicators, prostheses, telecommunication services, devices for reading, writing, communication, etc. However, in the scientific literature, they are divided into low-tech (not used for programming) and high-tech that are used for programming, including computers (BAGLIERI, 2020). Other researchers also divide them into simple (low) and complex (high) technologies. Simple technologies are usually low-cost (LÓPEZ, 2010; MÉNDEZ *et al.,* 2022). They include communication boards. However, sophisticated technology is equipment that is based on electronic systems (electronic boards, communication boards, etc.) (FERNÁNDEZ-CERERO; MONTENEGRO-RUEDA; FERNÁNDEZ-BATANERO, 2023). The use of technology can be fraught with technical problems, such as software crashes, lack of internet access, or problems with computer hardware, which are extremely significant challenges in a time of war. This can create obstacles to learning and teaching and hinder the functioning of inclusive education.

According to Sowiyah and Perdana (2022), and Queirós *et al.* (2018), modern continuous technologies play an important role in the system of inclusive education - technologies that replace established methods and forms, create new results and products. The works of Pandey (2020), Safonov, Usyk and Bazhenkov (2022), Pisanu (2014) highlight the most common technologies that modern authors consider to be effective breakthrough technologies for inclusive education. These researchers include artificial intelligence, robotics, virtual reality, blockchain technologies, 3D printing, augmented reality, etc. Unfortunately, the reality of modern Ukraine in 2023 is still far from being able to use the full range of innovative technologies in inclusive education. The greatest hopes for improving financial support for inclusion should be expected from government programs and volunteer work.

Conclusions

Therefore, highlighting the possibilities of modern inclusive education under martial law is an urgent task given the importance of implementing such experience in extreme conditions. As it has been established, modern authors note the importance of distance learning, the organization of the use of information and communication technologies, and additional technologies that facilitate the inclusive educational process. Among the possibilities of distance learning, there are high performance indicators in teaching children with special needs, especially when it comes to independent individual learning. It is also worth paying attention to the possibility of introducing synchronous and asynchronous learning, and other important elements that will not only ensure the acquisition of the necessary knowledge and skills, but also allow children to socialize. The technological process allows for the use of simple technologies, which means using low-cost equipment, while complex technologies involve the use of expensive electronic systems. The innovative technological environment, issues of robotics and other innovative technologies in education, the formation of which is crucial in modern inclusive education, should also be properly assessed. The use of STEM education is important. Through a combination of innovative exact sciences, project-based learning, etc., not only learning but also socialization of children takes place. The prognostic elements remain problematic - in the context of the ongoing military operations in Ukraine, the issues of financial stability, ensuring the physical safety of students, and purchasing the necessary equipment are becoming sensitive. Solving these problems using the most optimal ways to improve modern Ukrainian inclusive education will require further research.

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