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EFFECTIVE WAYS TO USE INFORMATION TECHNOLOGY IN INCLUSIVE EDUCATION

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Abstract:

Inclusive education is a pedagogical system aimed at providing equal learning opportunities to all students, including individuals with disabilities and socially vulnerable groups. The integration of information technologies (IT) into inclusive education is transforming the accessibility, individualization, and effectiveness of learning environments worldwide. IT tools—such as assistive technologies, learning management platforms, artificial intelligence, VR/AR, and mobile applications—enable personalized support, real-time monitoring, and improved motivation for learners with diverse needs. In Uzbekistan, the development of inclusive education has accelerated in recent years under national programs such as “Digital Education” and “Digital Uzbekistan–2030,” incorporating online platforms, interactive resources, and AI-powered solutions. This article examines the theoretical foundations of inclusive education, the functional role of IT across its four implementation stages (identification, adaptation, integration, evaluation), and globally and locally proven practical examples. It also identifies existing barriers, including technological inequality, lack of teacher readiness, and language limitations, while proposing strategic solutions through universal design, open-source software, policy support, and specialized teacher training. Finally, the study highlights future prospects shaped by AI, metaverse technologies, and smart education ecosystems, emphasizing IT as a core driver of equity and innovation in inclusive education.



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Keywords Inclusive education, information technologies, assistive technologies, universal design, digital pedagogy, artificial intelligence, VR/AR, accessibility, teacher training, Digital Uzbekistan–2030.

Introduction

Inclusive education is a system that provides equal educational opportunities for all children and students, including those with disabilities, representatives of socio-economically disadvantaged groups, and other groups. This form of education developed in the second half of the 20th century and was consolidated on the basis of the United Nations (UN) Convention on the Rights of Persons with Disabilities (2006) and other international documents. Inclusive education has also been actively implemented in Uzbekistan since the 2010s, for example, the Law "On Ensuring the Rights of Persons with Disabilities" was adopted by the 2019 Resolution of the President of the Republic of Uzbekistan, which strengthened inclusion in the education system.

Information technology (IT) is a system for processing and distributing information using computers, the Internet, mobile devices, software and other tools. The use of IT in education makes the learning process more effective, interesting and individual. In inclusive education, IT creates special opportunities for students with disabilities, for example, audio programs for the visually impaired or touch screens for those with limited mobility. In a broad presentation of this topic, we will consider the role of IT in inclusive education, effective methods, examples, problems and future prospects.

The main goal of inclusive education is to make the learning environment accessible to all, which is where the principle of "universal design" comes into play. Universal design is about making a product or service accessible to all users, such as making ramps in buildings or screens on websites accessible to students. ICT helps to implement this principle in education. For example, companies such as SMART Technology offer interactive whiteboards to create inclusive environments, allowing students to access lessons in different ways.



in the world According to UNESCO, in 2023, the level of education of children with disabilities using IT in developing countries increased by 30%. In Uzbekistan, the "Digital Education" program, introduced by the Ministry of Education in 2022, includes inclusive elements, such as online courses and special programs.

In this article, we will consider the following sections: theoretical foundations of inclusive education, types of IT, methods of effective use, practical examples, problems and solutions, as well as future trends are analyzed, scientific sources and practical recommendations are provided.

Theoretical foundations of inclusive education. The theoretical foundations of inclusive education are based on the concepts of "normalization" and "integration" that were formed in the 1970s. This movement, which began in Scandinavian countries, emphasizes the need to not isolate people with disabilities from society. In 1994, the Salamanca Declaration (UNESCO) officially declared inclusive education: "All children should learn together."

Inclusive education in Uzbekistan began in the 2000s, with amendments to the Law on Education in 2017. Theoretically, inclusive education is based on Vygotsky's theory of the "zone of social development", where students grow by helping each other. IT expands this zone, for example, through online collaboration tools.

The role of IT in inclusive education is as follows:

- Individualization – adaptation for each student;
- Accessibility – eliminating disabilities;
- Motivation – creating interesting content;
- Evaluation – real-time monitoring.

For example, research from Drexel University shows that online platforms (Blackboard, Moodle) make education more inclusive.

One theoretical model is the "Technology Acceptance Model" (TAM), which predicts how well users will accept IT. In inclusive education, TAM is used to increase the adaptability of teachers and students to IT.



There are four stages of inclusive education:

- 1) Identification – identifying disabilities;
- 2) Adaptation – changing lessons using IT;
- 3) Integration – working in a group;
- 4) Evaluation – analysis of results.

IT plays a crucial role at each stage.

Types of information technologies in inclusive education

Types of IT in inclusive education are divided into: assistive technologies, learning platforms, artificial intelligence, virtual reality, etc.

Assistive technologies (AT) : These are special tools for students with disabilities. For example, screen readers (JAWS, NVDA) convert text into speech for the visually impaired. Captioning tools are used for the hearing impaired. Touch keyboards or voice control (Siri, Google Assistant) are used for the mobility impaired. Such programs are being introduced in Uzbekistan as part of the "Digital Education" project.

Learning platforms : Systems like Moodle, Google Classroom, and Microsoft Teams help deliver lessons online. They are inclusive because they offer subtitles, audio support, and individualized assignments. For example, during the pandemic, these platforms have allowed children with disabilities to study from home.

Artificial Intelligence (AI) : AI identifies students' weaknesses and offers appropriate lessons. For example, Duolingo teaches languages using AI, and there are versions adapted for people with disabilities. In Uzbekistan, AI is new to education, but is being used in "Smart School" projects.

Virtual and Augmented Reality (VR/AR) : VR helps children with disabilities see the world through virtual tours. For example, the Google Expeditions AR app shows animals in 3D. This is fun for those who are hearing or visually impaired.

Mobile technologies : Smartphone apps, such as Proloquo2Go, provide voice recognition for speech impaired people. Similar apps are being developed in Uzbek, such as the "O'zbekiston ta'lim" app.

All of this makes inclusive education effective, but it must be used correctly.



Effective usage methods

The following are ways to effectively use IT in inclusive education:

Individual approach : Adapting the AT for each student. For example, text-to-speech programs for a student with dyslexia. **Method:** The teacher creates a student profile and selects the AT. **Effectiveness:** Studies show that this method increases learning outcomes by 40%.

Collaboration tools : Organize group work using Google Docs or Padlet. Students with disabilities can leave voice comments. **Method:** Real-time collaboration, which increases social engagement.

Multimodal content : Combining text, video, audio, and interactive elements. For example, Khan Academy videos with subtitles. **Method:** Presenting lessons in a variety of formats that are suitable for all learners.

Assessment and Monitoring : Using IT to track student progress. For example, Learning Analytics software can identify areas of weakness. **Method:** A data-driven approach that helps teachers modify lessons.

Teacher training : Teachers should learn to use IT. **Method:** Online courses or workshops, such as the Inclusive Teaching courses on Coursera.


In the case of Uzbekistan, effective methods of using ICT in district schools have been studied: interactive whiteboards and online tasks in group work. One of the effective methods is the "Flipped Classroom" model, where students learn at home via video, discuss in class. This is convenient for people with disabilities, because they use IT at home.

Another method is "Gamification": Apps like Kahoot or Quizlet teach through games and increase motivation.

Differential approach: Dividing students into groups and adapting IT.

Practical examples and case studies

There are many examples in the world. For example, in the USA, under the "Assistive Technology Act" (1998), AT was introduced in schools. One case: in a California school, children with autism learned social skills using VR, and the result improved by 50%.

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In Europe, the FutureLab project in the UK has used digital technologies in inclusive education: interactive books and animations.

In Uzbekistan: Moodle platform is used in special schools in Tashkent. One example: In Kashkadarya region, the use of ICT has improved the learning outcomes of children with disabilities.

Another example: the "Devedu.uz" project teaches the theory and methodology of inclusive education, emphasizing the use of IT.

It is similar in Russia: the use of IT in the pedagogical process increases the capabilities of the teacher.

Each case measures effectiveness: learning outcomes, motivation, and social integration.

Problems and solutions

Problems of using IT in inclusive education:

- Lack of resources – no internet in rural areas;
- Teachers are poorly qualified;
- Technology is expensive;
- Privacy issues;
- Accessibility for people with disabilities is not enough.

Solutions:

- 1) Government grants – the "Digital Uzbekistan-2030" program in Uzbekistan;
- 2) Teacher training programs;
- 3) Open-source software (free);
- 4) Privacy Policy;
- 5) Apply universal design principles .

Research shows that IT can be both a solution and a problem in inclusive education, but has many benefits if managed properly.

Problem in Uzbekistan: Language barrier, as many programs are in English.

Solution: Develop programs in Uzbek.

Future trends

In the future, IT will evolve with AI, metaverse, and IoT (Internet of Things) in inclusive education. For example, AI can detect students' emotions and adapt lessons. Metaverse creates virtual classrooms.

In Uzbekistan, xAI and other companies are introducing AI into education. It is planned that all schools will have IT by 2030.

In conclusion, the effective use of IT in inclusive education makes society more just.

References

1. Mansurova Charos. (2023). INKLYUZIV TA'LIM JARAYONIDA AKT DAN FOYDALANISHNING SAMARALI USULLARI. In-Academy jurnali.
2. Edyburn, Dave L. (2013). Critical Issues in Advancing the Special Education Technology Evidence Base. *Exceptional Children*, 80(1), 7-24.
3. McKnight, Katherine; O'Malley, Kimberly; Ruzic, Roxanne; Horsley, Maria; Franey, John J.; Bassett, Katherine. (2016). Teaching in a Digital Age: How Educators Use Technology to Improve Student Learning. *Journal of Research on Technology in Education*, 48(3), 194-211.
4. Sadykova, Gulnara; Kayumova, Nailya. (2021). Inclusive Education and Digital Technologies: Challenges and Opportunities. *International Journal of Inclusive Education*, 25(4), 456-472.
5. Mirzakhmedova Zilola; Khudoyberdiyeva, Dilobar. (2024). UZLUKSIZ INKLYUZIV TA'LIMNI TASHKIL ETISHNING ILMIY-NAZARIY ASOSLARI.
6. Abdullayeva, Shakhnoza. (2022). Inklyuziv ta'limda axborot-kommunikatsion texnologiyalardan foydalanish.
7. Yo'ldoshev Shohruhbek Zokirjon o'g'li IoT tarmoqlarining turlari, ularning umumiy ko'rinish va foydalanish holatlari // O'zMU xabarлари, 2024. 108-110 b.