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MODERN TRENDS AND DEVELOPMENT FACTORS OF THE IMPLEMENTATION OF DIGITAL TECHNOLOGIES IN THE EDUCATION SYSTEM

Feruz Sanakulovich Aktamov
Lecturer, Department of Algebra and Mathematical Analysis
Chirchiq State Pedagogical University

Abstract
This article discusses digital technologies, cloud technologies, the use of digital technologies in education, digital technologies in the education system, advantages and disadvantages of using digital technologies.

Keywords: Digital technologies, digital technologies in education, cloud technologies.

Introduction

The socio-economic transformations being carried out in the Republic of Uzbekistan have led to significant changes in the education system. Under the conditions of digital transformation, these changes have affected both the organizational and content aspects of education. On January 9, 2018, during a meeting dedicated to the development of information and communication technologies, the President of the Republic of Uzbekistan, Shavkat Mirziyoyev, emphasized: “The development of information technologies and communications serves the rapid progress of all sectors and creates convenience for people.”
It is also worth noting that while developing the “Digital Uzbekistan – 2030” program, special attention was given to the necessity of introducing information technologies that fully meet international standards at all levels of education.

- The modern trends and development factors in the implementation of digital technologies in the education system are highly important and relevant. This is because they help to improve the quality of education, make the learning

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process more efficient and flexible, expand educational resources, enrich the learning environment, foster collaboration among educational participants, and adapt education to the demands of the modern world.

- In studying the modern trends and development factors of implementing digital technologies in education, the use of the internet is considered highly beneficial. Through the internet, students can obtain information from various sources, familiarize themselves with new technologies, find courses and textbooks suited to their interests, test their knowledge and skills, communicate with other students or teachers, and exchange ideas.
- The implementation of modern trends and development factors of digital technologies in the education system requires support from the state policies and programs of the Republic of Uzbekistan. This is because Presidential Decree No. PQ-2909, dated April 20, 2017, approved a comprehensive program for the development of the higher education system for 2017–2021. This program set out goals such as fundamentally improving the higher education system; strengthening and modernizing the material and technical base of higher education institutions; and further integrating modern information and communication technologies.

Undoubtedly, technology plays a vital role in every sphere of life. Thanks to technology, many tasks that were once performed manually can now be automated. Moreover, modern technologies enable the execution of many complex and essential processes with ease and high efficiency. The application of technology has led to positive changes in life. The use of technology has made the teaching and learning process more engaging. The importance of technology in schools cannot be overlooked. Indeed, with the advent of computers in education, it has become easier for teachers to deliver knowledge and for students to comprehend it.

Visual representations have always had a stronger appeal than words. The use of projectors and visual tools to aid learning is another excellent application of technology. Leading institutions around the world now rely on impressive PowerPoint presentations and projections to make learning interactive and interesting. In schools and higher education institutions, the use of technologies such as projectors can increase interaction and engagement levels, as well as

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enhance motivation. Students prefer seeing attractive visuals that stimulate thinking, rather than just reading plain text.

Over the past decade, the importance of the Internet has increased many times over. Its significance in the field of education can no longer be denied. Despite fraud and cybercrime, the use of the Internet is extremely valuable and beneficial for students because it helps them improve their knowledge and skills, explore new information and resources, broaden their interests, and collaborate across various fields. Through the Internet, students can pursue education in any area they desire, such as learning languages, programming, art, history, science, and more.

There are also disadvantages to using the internet, but they can be eliminated or minimized. To prevent such problems, students must develop a culture of responsible internet use. This means:

- Accessing information only from reliable and high-quality sources.
- Never sharing personal information or passwords with anyone.
- Avoiding communication with strangers or ignoring their unsolicited offers.
- Not carelessly sharing personal or others' images or videos online.
- Not violating others' rights on the internet and reporting if such violations are noticed.
- Respecting the thoughts and opinions of oneself and others online.
- Avoiding excessive time spent on the internet or becoming addicted to it.
- Not reducing physical activity or harming one's health due to internet use.

A proper internet usage culture allows students to fully benefit from the internet's advantages while protecting them from its drawbacks. This improves their quality of life and helps them adapt to the modern world.

Today, the internet is present in nearly everything we use—from televisions to game consoles and our phones, the internet is everywhere. Online degrees have now become a widespread phenomenon. People increasingly prefer taking online courses for their education and certification. The best institutions offer excellent online programs using a variety of applications and internet tools. This is a concept that will continue to grow as awareness and support increase.

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The 21st century is often considered the age of technology. Today, technology plays a very important role in our lives. It is seen as the foundation for economic growth. An economy with poor technological infrastructure cannot develop in today's world. This is because technology makes our work much easier and saves time. The impact of technology can be felt in almost every field—one of the most prominent being education. With internet connectivity and round-the-clock access, online degrees offer tremendous convenience, allowing students to find various forms of support, study materials, and other learning resources to enhance their academic progress.

The word "technology" originates from the Greek words "techno" (skill, craft) and "logos" (science, learning). Digital technology refers to equipment, software, and systems used for storing, transmitting, processing, and displaying information in the form of digits or codes.

Speaking of digital technology in education, the penetration of digital media into the educational sphere has increased. This expansion has enabled round-the-clock connectivity with students and access to various forums for tasks and support. As the power of digital technologies grows, more applications are being developed to help students progress and learn. Knowledge transfer has become very easy, convenient, and efficient. This means that our minds tend to function faster when we use modern technologies—regardless of the area of life. Reliance on and integration with such innovations that make life easier and smoother has become inevitable even in schools, universities, and colleges today.

Nowadays, students can use technology in the following ways: According to the latest data on how modern students prefer to use technology and how it affects their learning, the use of modern equipment and tools is increasing student knowledge acquisition and interactivity.

Education is a field of teaching and upbringing. One of the primary tools in the field of education is didactic support. Didactic support includes transformed forms of educational materials such as slides, diagrams, tables, tests, virtual laboratories, and more. The use of computers in creating such materials offers wide opportunities, and these resources can be continuously improved and updated. Moreover, it enables possibilities for distance learning and self-study.

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The development of a digital education system is greatly supported by the expansion of Wi-Fi zones and the establishment of IT parks. This creates opportunities to improve educators' abilities to work with digital technologies and organize various open courses online. As a result, educators are encouraged to work more on self-development, and competition contributes to improving the quality of education.

In addition, digital technologies also support the introduction of artificial intelligence, which helps detect tax evasion, prevent fraud, analyze data, automate repetitive processes, and increase transparency. Furthermore, large volumes of data—so-called "Big Data"—allow tax authorities to store, process, and forecast revenues more accurately, and improve document exchange between taxpayers and tax agencies.

Digitizing the educational environment can be carried out in various ways:

- Converting existing educational materials—lectures, presentations, textbooks, assignments, and knowledge management tools—into electronic formats.
- Creating interactive electronic environments for communication between teachers and students, including virtual classrooms, webinars, discussion forums, and more.
- Developing new types of educational tools: electronic textbooks, problem-based e-books, video lectures, electronic assignment banks, educational computer games.
- Using digital environments to create fundamentally new forms of education—expanding the spectrum of imagined information delivery, modeling various situations through role-playing, simulating competitive games, etc.
- Integrating artificial intelligence capabilities into the educational process.

Today, students in different parts of the world can "meet" their classmates through video conferencing without leaving the classroom and discuss problems together in groups. This helps improve students' communication skills and global awareness. Researchers generally conclude that the use of ICT (Information and Communication Technology) leads to greater collaboration among students

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inside and outside of school, and fosters more interactive relationships between students and teachers.

As the volume of basic knowledge rapidly expands, teachers are speaking more about the major challenges faced by society. Modern technologies require teachers to learn how to use these technologies in their lessons. Consequently, these new technologies increase the demand for teacher professional development.

The advantages of e-learning include:

1. **Solving access issues in education**: removing geographical barriers to learning; eliminating time constraints—access at a convenient time; fractional access through modularized classes; benefiting from highly qualified educators' expertise.
2. **Expanding choices**: ability to choose instructors and delivery formats; focus on logic, visuals (associations), or practice (cases, tasks); choosing learning styles (auditory, visual, kinesthetic, or interactive); choosing learning depth (broad courses); selecting assessment methods (tests, assignments, essays, projects, interactive conversations with AI, etc.).
3. **Expanding forms and tools of knowledge delivery**: in addition to traditional lectures, plays, and seminars, the use of project work, group discussions, role-playing, and competitive games, including those with virtual participants.
4. **Socio-economic benefits**: possibility of forming social intellectual networks; relatively low cost (high initial investment, low operational costs).

Gressard and Lloyd (1985) emphasized that a teacher's attitude toward computers is a key factor in the successful integration of ICT into education. They pointed out that teachers do not always have a positive attitude toward computers, and such negativity can lead to the failure of computer-based educational projects.

The use of ICT in education provides a student-centered approach and valuable feedback through various interactive functions. ICT allows students to explore and learn using new methods supported by constructivist learning theories rather than relying solely on memorization. ICT has a significant impact on teaching

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and learning by helping both teachers and students assimilate knowledge more effectively.

ICT eliminates the synthetic gap between theory and practice and promotes an integrated approach to teaching and learning, where focused attention is given to specific components rather than following the traditional classroom model. In the educational context, ICT enhances the opportunities for learning, and increases its relevance and quality.

Today, **cloud technologies** are actively used in all developed countries. These technologies are also becoming increasingly integrated into the education system. Cloud technology refers to the delivery of computing resources as a service via the Internet. In this technology, users have access to their data through the Internet, but they do not manage or know the infrastructure, operating systems, or software used for storage. The term "cloud" refers to the complex infrastructure that hides all technical details.

There are several types of cloud services:

- **IaaS (Infrastructure as a Service)** – The cloud provider rents servers, storage, networks, and other infrastructure resources to users. Users can install and manage their own operating systems and software.
- **PaaS (Platform as a Service)** – The cloud provider delivers programming environments, libraries, tools, and other platform resources. Users can create and run their applications but do not manage the infrastructure.
- **SaaS (Software as a Service)** – The cloud provider offers applications over the Internet. Users can use the applications, but cannot install, update, or manage them.

Advantages of cloud technology include:

- The ability to scale resources up or down on demand
- Remote access to resources
- Shared use of resources
- Pay-as-you-go resource rental
- No need to spend on managing or securing infrastructure

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Disadvantages of cloud technology include:

- Dependence on the availability and quality of Internet connection
- Trust in the cloud provider for data security and confidentiality
- Inability to control the quality of service
- Dependence on the provider's service agreement

Education is important in both corporate and academic environments. In the former, training helps employees perform tasks differently and more efficiently. In the latter, education aims to spark interest in learners' minds. In both cases, the use of technology helps students understand and retain concepts better. Technological tools such as digital cameras, projectors, educational software, computers, PowerPoint presentations, and 3D visualization tools are excellent resources for teachers to explain concepts clearly. There are no geographical limits. Moreover, websites like www.zoom.com are used to connect student groups with teachers from other countries, enabling them to learn foreign languages online.

ICT tools help process and analyze exam data and generate computerized reports on student activity, which can be accessed conveniently. Unlike rote memorization, ICT increases student engagement by allowing them to choose their own learning pace and apply knowledge in real-life situations. ICT promotes collaboration between students and teachers regardless of distance. It also offers students the chance to work with people from different cultural backgrounds.

In education, technology serves four key roles:

1. As part of the curriculum
2. As a system of instruction
3. As a tool to support learning
4. As a means to improve the entire educational process

Thanks to technology, education has shifted from being passive and reactive to interactive and dynamic. While technology has a positive impact on education, it can also have negative effects if misused. Teachers and students must use it wisely and overcome the shortcomings that hinder excellence in many schools and learners. Therefore, it is time for every country to implement a more technologically advanced education system.

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In conclusion, to adapt the education system to the digital generation, it is necessary to widely and effectively apply innovative teaching technologies and didactic models based on information and communication technologies. At the same time, a research-based approach must be actively integrated into the educational process to develop students' research skills and cultivate creativity and critical thinking grounded in IT competencies.

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