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MODERN DIGITAL EDUCATIONAL TECHNOLOGIES AND THEIR SIGNIFICANCE IN THE GLOBAL EDUCATIONAL SPACE

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Abstract: This article talks about digital technologies, their content, types, the use of digital technologies in education, the importance of digital technologies in improving students' knowledge.
Keywords: digital education, digital transformation, schools, students, teachers.

ZAMONAVIY RAQAMLI TA'LIM TEXNOLOGIYALARI VA ULARNING GLOBAL TA'LIM MAKONIDAGI AHAMIYATI

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Annotatsiya: Ushbu maqolada raqamli texnologiyalar, ularning mazmuni, turlari, raqamli texnologiyalarni ta'limda qo'llash, raqamli texnologiyalarni o'quvchilar bilimini oshirishdagi ahamiyati haqida so'z boradi.
Kalit so'zlar: raqamli ta'lim, raqamli transformatsiya, maktablar, o'quvchilar, o'qituvcjilar.

Comprehensive work is being carried out in our country, which is progressing along the path of the Third Renaissance, to reform the continuous education system, introduce digital technologies, and increase educational efficiency. Based on the "Digital Uzbekistan-2030" strategy, tasks have been defined for creating IT infrastructure, digitalizing general education schools, as well as introducing information systems and creating digital educational platforms and implementing them into the educational process. This, in turn, determines the necessity of analyzing the pedagogical-psychological possibilities of organizing education in the conditions of digital transformation and clarifying the factors influencing the integration of digital technologies into education.

The concept of digital transformation is broader than merely digitalizing existing processes. Digital transformation considers how institutions, processes, and organizations can be transformed using new digital technologies [1]. In a review provided by Gregory Vial in 2019, digital transformation is proposed as a process aimed at improving an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies [2].

Likewise, digital transformation (DT) is considered a process of implementing digital technologies by an institution along with optimizing the management system of core technological processes [3].

A rapid advancement of digital technologies is observed in the era stretching from computers based on John von Neumann's ideas, which have been used for decades, to industrial robots and "capable of learning," "smart" machines. Given the diversity of technologies, it is not surprising

that different studies present various definitions and categories of digital technologies. Below, we review the definitions given to digital technologies by various researchers:

The concept of digital technologies, and digitalization in general, was first introduced by the American computer scientist Nicholas Negroponte in 1995 and was described as a transition process from processing "atoms" to processing "bits". The author describes that "the digital world is by its nature vast in scale. It can grow and change more continuously and organically than previous, similar systems" [4].

The word "digital" is derived from the Latin word *digitus* (finger), which points to one of the oldest tools for counting. Digital technologies are computers, applications, video cameras, mobile devices, as well as other devices connected to the Internet such as phones and personal digital assistants (PDAs) [5].

Digital technologies imply the use of devices that grant access to cyberspace, and the utilization of digital audio/video and information communication technologies (ICT) [6].

According to Inès Gharbi, Yomna Daoud, and Aïda Kammoun, digital technologies encompass websites, smartphones, blockchain technology, cryptocurrency, artificial intelligence, cloud computing, 5G data, voice interfaces or chat-bots, robotics, drones, and rockets, as well as all electronic devices, gadgets, e-books, video streams, automated systems, and technological resources that generate, process, or store data [7].

Digital technologies are technologies based on the use of computer chips, including computers, software programs, and other technologies, which, when properly designed, applied, and utilized, help reduce the shortage of personnel in education [8].

Bradley Merrick and Emily Wilson defined digital technologies as digital tools, software, online or personal equipment (devices) that facilitate learning, communication, teaching, and resource creation [9].

According to Flair Karaki, digital technologies are devices or programs for recording, processing, receiving, transmitting, or displaying information in digital form [10].

Digital devices, computer programs, and systems are technologies designed to increase efficiency and create new opportunities to expand students' ability to learn anywhere and at any time [11].

"Digital technologies are electronic tools, devices, systems, and resources that generate, store, or process data. Digital tools include social networks, mobile phones, online games, and multimedia" [12].

"Digital technology, unlike analog technology, is a type of technology based on recording all signals (e.g., sounds, pictures, data) in the same 0-1 format. Digital technology includes computing, communication, and content" [13].

In 2016, at the World Economic Forum in Davos, Canada, K. Schwab announced the global transition to the stage of the fourth industrial revolution. As its main directions, he cited the expansion of digital technologies (new computing technologies, distributed ledger technologies, the Internet of Things), the reflection of the physical world (artificial intelligence and robots, advanced technologies, additive manufacturing, multi-dimensional printing (3D printing)), human transformation (biotechnology, neurotechnology, virtual and augmented reality), and environmental integration (energy harvesting and transmission, geoengineering, space technologies) [14].

Visions of the future of digital technologies can be linked to the paradigm of the fourth industrial revolution. The fourth industrial revolution implies a "smart" enterprise based on a cyber-physical system that applies the latest digital technologies to production and enables integration across sectoral data systems. In these enterprises, focus is placed on developing the integration of

technologies such as robots, data exchange in manufacturing technology, additive manufacturing, 3D printing, cloud computing, the Internet of Things (IoT), Big Data, and artificial intelligence.

Digital technologies were defined by Selwyn and others as follows: Digital technology may include, but is not limited to: computers, tablets, smartphones, Facebook, Moodle, online library services, Google, YouTube, Microsoft Word, and others. Digital technology allows people to access the internet via mobile devices not only from home but from anywhere [15].

According to Rabab Muhammed Mousa and Gilbert Kalonde, digital technologies involve providing and utilizing the electronic technologies necessary for setting up and integrating STEM and other technological systems. Digital technology also includes working principles, processes, and standards relevant to the technology industry [16].

Digital technologies are tools or platforms enabled or embodied by information and communication technologies, such as social media, mobile devices, big data, the Internet of Things, and others [17].

Digital technologies is a general term developed by scientists and engineers to define the computer-generated data exchange process that facilitates online communication between individuals through text messages, e-mails, and internet-based social media platforms [18].

The English word *Digital*, meaning "raqamli", is in turn derived from the Latin *Digitus*, meaning "finger". Since humanity used fingers for a long time in the process of counting small values, the Hindu-Arabic numerals, including the decimal numbering system, became the primary numerical system. Usually, only the values of integers can be counted using fingers. Therefore, the word "digital" is also used to refer to any object that works with discrete values.

Some researchers also propose specific approaches to this process. These proposals mostly cover the scope of application across more fields. The word digital represents the discrete representation of information and stores information in binary (0 or 1) code within the device map. This shows that digital technologies differ from other types of technologies due to their direct operation with binary codes of information.

In our view, digital technologies are technologies that encompass devices, tools, resources, and systems used in creating, processing, transmitting, and storing information. Examples of these include mobile technologies, cloud technologies, distributed technologies, SMART technologies, Internet of Things technologies, virtual reality technologies, augmented reality technologies, Web 2.0/Web 3.0 technologies, social media technologies, multimedia technologies, gaming technologies, blockchain technologies, learning management systems, content management systems, massive open online courses, 3D technologies, rapid prototyping technologies, big data and artificial intelligence, and infographics.

Just as digital transformation shapes every sector, it has also affected the field of education. At the same time, it brings about the challenges of understanding, adapting, and designing the educational system related to teaching quality in accordance with current technological trends. These issues accelerate the use of digital technologies in education. Particularly, during the pandemic period, a lack of experience and low digital capabilities manifested in many schools, resulting in an increase in gaps, inequalities, and learning losses during the educational process. This brought about the necessity to rely on research and experience to increase the digital capacity, readiness, and digitalization level of schools, and to achieve successful digital transformation.

Nowadays, modern digital technologies and solutions are widespread in the educational sector. Primarily, they can support and improve various fields and aspects of educational processes by allowing teachers and students to benefit from an excellent learning experience.

According to HolonIQ data, the global EdTech market will reach 404 billion dollars by 2025, which indicates that we will see many more exciting technological innovations that will take education to a new level [19].

The digital transformation of education consists of introducing modern digital technologies and solutions into educational processes in order to enhance the learning and teaching experience for all participants. This opens up a world of endless possibilities, while also providing simplified communication and collaboration between teachers and students. Furthermore, digital technologies have the capacity to improve internal administrative processes, ensure better working conditions for students and teachers, enhance security on campuses, and facilitate monitoring student health and well-being.

Forming an educational environment in conditions of digital transformation is a strategic task today that stands out as a priority direction and can be solved through developing and widely implementing digital education, which occupies a special place in the global educational space.

Conclusion

In digital education, teaching can be improved by stimulating students with interactive and engaging learning environments using digital technologies. For instance, digital technologies offer new ways of communication and collaboration for teachers and students. The integration of communicative digital tools into classroom practice allows for the expression and learning of core academic education through multimedia conversations and exchanges. In addition, digital technologies can open up dialogue between different cultures and countries to develop targeted intercultural communication and collaboration. In turn, these online connections create additional opportunities for developing digital literacy, 21st-century skills, and digital citizenship.

Digital technologies also open up immersive learning spaces, giving students new learning opportunities. Problem-solving games, software modeling, and 3D printers support cognitive development and enable students to understand abstract concepts, visualize virtual objects, and engage in tangible production. By participating in this dynamic digital environment, students can view and discuss core concepts from different perspectives.

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