



## MODERN INFORMATION TECHNOLOGIES IN EDUCATION AND THEIR APPLICATION IN TEACHING

**Matibaeva Raziya Baltabaevna,**

Doctor of Historical Sciences, Associate Professor of the Department of Arabic Language and Literature al-Azhar International Islamic Academy of Uzbekistan [matibaevarb@rambler.ru](mailto:matibaevarb@rambler.ru)

Article history:	Abstract:
<b>Received:</b> 11 <sup>th</sup> November 2022	Information technology opens up new horizons for people - not only in work but also in training. With the spread of the Internet, education has undergone significant changes. This article highlights how to use distance learning technologies today, and what are their advantages and features.
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The desire to acquire modern knowledge, to be enlightened, and to have a high culture should become a vital need for all of us.

For sustainable development, we must deeply master digital knowledge and information technology, which will enable us to follow the shortest path to achieve all-around progress. In the modern world, digital technologies play a decisive role in all areas [1].

Technology when translated from Greek means art, skill, or ability, and this is nothing but processes. A process should be understood as a certain set of actions aimed at achieving a set goal. The process should be determined by the strategy chosen by the person and implemented using a combination of various means and methods.

Information technology is a process that uses a set of means and methods for collecting, processing, and transmitting data (primary information) to obtain new quality information about the state of an object, process, or phenomenon (information product).

Information technologies are used to achieve the following pedagogical goals:

1. The development of the personality of the student, preparing him for independent productive activity in the conditions of the information society, including the development of the knowledge inherent in it and the transfer of information:

- development of constructive, algorithmic thinking due to the peculiarities of working with a computer;
- development of creative thinking by reducing the share of reproductive activity;
- development of communication skills through the implementation of joint projects;
- formation of the ability to make optimal decisions in a difficult situation (during computer business games and work with simulator programs);
- development of research skills (when working with modeling programs and intelligent learning systems);

- formation of information culture, the ability to process information (when using text, graphic and spreadsheet editors, local and network databases).

2. Intensification of all levels of the educational process: - improving the efficiency and quality of education through the use of information technology;

- identification and use of incentives for the activation of cognitive activity (it is possible to use most of the listed technologies - depending on the type of personality of the student);

- deepening interdisciplinary connections as a result of the use of modern information processing tools in solving problems in a variety of subjects (computer modeling, local and network databases).

The same pedagogical goals determine the main directions of the development of information technologies themselves. Today, special attention is paid to the improvement of such technologies as - technology to increase the efficiency and quality of the learning process due to additional opportunities for cognition of the surrounding reality and self-knowledge, the development of the student's personality;

- technology of management of the educational process, educational institutions, and the system of educational institutions;

- technology of controlled monitoring (control, correction of the results of educational activities, computer pedagogical testing, and psychodiagnostic);

- communication technology that ensures the dissemination of scientific and methodological experience;

- technology for organizing intellectual leisure, and developing educational games.

A huge amount of software is being created in the education system to support the educational process. These can be databases (DB), traditional information and reference systems, storage (depositories) of information of any kind (including graphics and video), computer training programs, as well as programs that allow you to administer the educational process.



To date, there is a wide range of programs from the simplest, controlling to complex multimedia products. Let us consider in more detail the software training tools that are most widely used in the education system. Training programs (TP) are specific textbooks designed for the independent work of students. Such programs are educational: they contain explanations, rules, and examples of tasks, which contribute to the maximum activation of students, individualizing their work and providing them with the opportunity to manage their cognitive activity. TPs are only a part of the entire education system, therefore, they must be linked to all educational material.

Electronic textbooks are an automated learning system that includes didactic, methodological, and information and reference materials on the academic discipline, as well as software that allows you to use them comprehensively for self-acquisition and control of knowledge.

An electronic textbook can be used both for self-education and as a methodological support for any course, just like a paper textbook. Computer tests and crossword puzzles evoke more positive emotions in students than similar tasks on paper, and they also save time in the classroom and individualize learning.

The main areas of application of IT in the educational process of the school are: - the development of pedagogical software for various purposes;

- development of websites for educational purposes;
- development of methodological and didactic materials;
- management of real objects (training bots);
- organizing and conducting computer experiments with virtual models;
- implementation of a targeted search for information of various forms in global and local networks, its collection, accumulation, storage, processing, and transmission;
- processing of the results of the experiment;
- organization of intellectual leisure of students.

Distance learning is a set of information and communication technologies (ICT).

The main components of distance education are:

- interactive feedback between the learner and the learning tool;
- computer visualization of educational information;
- archival storage of large volumes of information, their transmission, and processing;
- automation of the processes of information retrieval activities and methodological support, as well as monitoring the results of the assimilation of educational material.

The means of distance education are all types of information technologies, the means of which are computers, computer networks, multimedia systems, and telecommunications.

Consider the advantages of distance education:

1. Availability - you can study anywhere where there is a computer with Internet access (at home, at work, with a laptop on the train), and does not depend on the location of the training center.

2. Sociality - relieves social tension, providing an equal opportunity to receive education, regardless of the place of residence, material conditions, age, and health status.

3. Quality - allows you to learn and consult with highly qualified teachers, constantly monitor the assimilation of knowledge, and maintain constant contact with other students.

4. Individuality - allows you to implement an individual curriculum for the student, an individual schedule of classes, and a sequence of studying subjects.

5. Mobility - the information is corrected by the teacher every day.

Thus, distance education provides students with access to non-traditional sources of information, increases the efficiency of independent work, provides completely new opportunities for creativity, and allows teachers to implement fundamentally new forms and methods of teaching using conceptual and mathematical modeling of phenomena and processes.

A digital educational environment (DEE) is an open set of information systems designed to support various tasks of the educational process. The use of digital technologies in almost all spheres of our life has moved into the phase of a frontal offensive. The main thing today is that in the course of using digital technologies in education, the safety of the child must be guaranteed: his physical and mental health, full socialization, and successful education. The use of digital technologies brings positive innovations into our lives. Many educational materials, class magazines, and diaries are moving into the category of online versions. The student will be able to study without leaving home. After all, electronic resources will help to find the necessary information for both schoolchildren and students. To provide such access, general education schools, and secondary and higher professional educational institutions are being actively equipped with modern technologies, broadband Internet access, etc. The use of digital technologies makes the teaching process itself change, and encourages teachers to master new teaching methods.

The role of the teacher in the process of applying digital technologies in the organization of the educational process is not decreasing, but increasing and becoming more complex. Such is the dialectic of the mod-



ern development of society. The "teacher-student" tandem, proven for thousands of years, is growing with new opportunities, as it has happened more than once with the introduction of various technical means, and a strong connection between generations is gaining new strength. The role of the teacher in the educational process is key. The task of technology is to be a reliable assistant. Online technologies make it possible to collect and analyze data on the progress of children, measure individual dynamics of activity during training, and as a result, provide the teacher with a complete picture of how the educational process can be adapted and improved. The positive impact of individualization of learning through the use of online technologies in the school, children who are taught individually learn the program much better than those who study in the traditional system. Artificial intelligence technologies will now be applied even in the most ordinary schools.

The purpose of using digital technologies in organizing the educational process is to assist the teacher in collecting and analyzing data on learning, as well as in building the most optimal learning path, depending on the level of each student and his pace of learning. That is, here we are talking primarily about building individual programs so that the teacher can work with each child individually, and can determine by the child's behavior how many and what tasks are needed for him to master some skill or knowledge. One first-grader needs to solve 20 tasks to learn to count within ten, and another needs 200.

The primary school will play the most important role in the new learning process. It lays the appropriate foundation for achieving high results at all subsequent stages. Moreover, special importance is given to the early development of mathematical skills. George Duncan of Northwestern University has conducted a study showing that a child's performance in math, reading, and mindfulness is most likely to predict a child's future achievement. At the same time, mathematics has the most accurate prediction. Interestingly, the level of proficiency in mathematics in primary grades also affects future reading success, as well as reading skills themselves.

Meanwhile, in the process of applying digital technologies, the practice of using digital technologies in extreme crises in which societies find themselves when introducing quarantine measures is of interest. The use of digital technologies during a pandemic allows you to discover new facets of the use of digital technologies, and to see the effectiveness or inefficiency of certain technological solutions. One of the advantages is that the time for independent work increases, and this develops the skill of self-organization, which is so necessary for a situation where the role of the family in organizing the educational process will increase significantly.

Connected, personalized and lifelong learning are key features of today's education, and emerging technologies are supporting the sector's digital transformation into a data-driven, intelligent realm. Online services and open digital resources will become an integral part of the educational process and will become better. The current generation should have a broad understanding of the technology used as a tool for gaining knowledge. Mobile educational content allows the student to acquire constantly updated information in a convenient format promptly. This method is new to us, but very useful.

It is obvious that young people with digital thinking, coming into any field, will bring with them new digital ideas and specific digital products that can gradually make our society more and more digitized and make the concept of an IT country a reality.

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