



DISTANCE LEARNING AS AN INNOVATIVE TECHNOLOGY IN HIGHER EDUCATION INSTITUTIONS

Mirkhodjaeva Dilorom Batirovna

**PhD, Associate Professor, Tashkent Institute of Textile and Light
Industry**

***Abstract.** Distance learning as an innovative technology in higher education institutions has become an essential component of modern educational systems. It ensures accessibility, flexibility, and continuity of the learning process regardless of geographical and time constraints. The integration of digital platforms, interactive tools, and online resources enhances students' independent learning skills, critical thinking, and digital competence. Moreover, distance education promotes personalized learning trajectories and supports lifelong learning principles. However, its effective implementation requires well-developed infrastructure, digital literacy of both teachers and students, and appropriate pedagogical strategies. Thus, distance learning represents a transformative approach that significantly contributes to improving the quality and efficiency of higher education.*

***Keywords:** distance learning, innovative technology, higher education, e-learning, digital platforms, online education, flexibility, independent learning, ICT, lifelong learning*

Distance learning is considered one of the most significant innovations in modern higher education, transforming traditional teaching and learning processes through the integration of information and communication technologies (ICT). It represents a flexible, accessible, and student-centered approach that allows learners



to acquire knowledge and skills regardless of geographical, temporal, and physical limitations [1].

From a scientific perspective, distance learning is defined as an educational system in which interaction between instructors and students occurs remotely посредством digital technologies such as learning management systems (LMS), video conferencing platforms, and online communication tools. This form of education is grounded in several pedagogical theories, including constructivism, connectivism, and learner-centered approaches, which emphasize active knowledge construction, collaboration, and autonomy [2].

One of the key components of distance learning is the use of digital platforms (e.g., Moodle, Google Classroom, Zoom), which facilitate content delivery, communication, assessment, and feedback. These platforms support both synchronous (real-time) and asynchronous (self-paced) learning, enabling students to engage with educational materials according to their individual needs and learning styles.

The effectiveness of distance learning in higher education is обусловлена рядом факторов. Firstly, it enhances accessibility to education, especially for individuals in remote areas or with physical limitations. Secondly, it promotes lifelong learning by providing opportunities for continuous professional development. Thirdly, it fosters the development of digital competencies, critical thinking, and independent learning skills among students [3].

However, the implementation of distance learning also presents several challenges. These include technological barriers (limited internet access, недостаток оборудования), the need for high levels of self-discipline among students, and the requirement for teachers to develop new digital and pedagogical



competencies. Additionally, ensuring academic integrity and maintaining student engagement remain significant concerns [4].

Distance learning as an innovative technology plays a crucial role in the modernization of higher education systems. It not only expands educational opportunities but also reshapes the traditional roles of teachers and learners, making education more flexible, inclusive, and adaptive to the demands of the digital age. Successful implementation depends on the availability of technological infrastructure, effective instructional design, and continuous professional development of educators.

The word “technology” originates from the Greek words “techne” meaning art, skill, craftsmanship, and “logos” meaning science or law. Literally, “technology” means the science of mastery. In order to implement students’ cognitive and creative activity in the educational process, modern educational technologies are used, which make it possible to improve the quality of education, use study time more efficiently, and reduce the share of reproductive activity by decreasing the time allocated for homework [5].

A wide range of educational pedagogical technologies is presented in schools and applied in the learning process. Innovative pedagogical technologies are interconnected, interdependent, and form a specific didactic system aimed at fostering values such as openness, honesty, kindness, empathy, and mutual support, while ensuring the educational needs of each student according to their individual characteristics.

Distance learning is an educational process that uses a set of telecommunication technologies aimed at enabling learners to master the required volume of information without direct contact between students and teachers during the learning process [6].



Distance learning is the interaction between teachers and students at a distance, reflecting all the components inherent in the educational process (goals, content, methods, organizational forms, and teaching tools), implemented through specific Internet technologies or other means that ensure interactivity [7].

Distance learning is an independent form of education in which information technologies serve as the leading means.

Distance learning during the coronavirus pandemic. Modern distance learning is based on the use of the following key elements: information transmission environments (mail, television, radio, information and communication networks), methods that depend on the technical environment of information exchange.

In the 21st century, interactive interaction with students through information and communication networks is considered перспективным, among which the Internet environment stands out most prominently. In 2003, the ADL initiative group began developing the SCORM standard for distance interactive learning, which предполагает the wide use of Internet technologies. The introduction of such standards contributes both to increasing the requirements for distance learning content and to the development of software [8].

Advantages. Distance learning allows:

- reducing the cost of education compared to traditional forms, as there is no need to rent classrooms, organizational expenses decrease, teachers can work with a larger number of students simultaneously, and other cost-related factors are minimized;
- saving time (no commuting or travel time required);
- providing an individualized approach, allowing learners to choose their own pace and convenient study time;



- improving the quality of education through the use of modern tools, extensive electronic libraries, etc.;
- creating a unified educational environment (especially important for corporate training);
- offering accessibility for people with physical disabilities;
- enabling individuals to study simultaneously in more than one educational institution or in multiple fields;
- ensuring continuous professional development;
- enhancing learning effectiveness through the active use of images, text, audio, and video materials.

Distance educational technologies using the Internet are applied both for short-term professional development courses and for obtaining higher education degrees. The main forms of distance learning include online and offline modes [9].

Learning via the Internet has several significant advantages: Flexibility — students can study at a convenient time and place; Accessibility — learners are not limited by distance and can study regardless of their location; Cost-effectiveness — expenses related to travel are significantly reduced.

Forms: Chat-based classes are educational sessions conducted using chat technologies. These classes are held synchronously, meaning that all participants have simultaneous access to the chat. In many distance education institutions, there is a “chat school,” where the activities of distance teachers and students are organized through chat rooms [11].

Web-based classes include дистанционные lessons, conferences, seminars, business games, laboratory work, workshops, and other forms of educational activities conducted using telecommunication tools and other возможностей of the “World Wide Web” [12].



For web-based classes, specialized educational web forums are used — a form of user interaction on a particular topic or problem through posts left on a website equipped with appropriate software.

Unlike chat-based classes, web forums allow for longer (multi-day) interaction and are characterized by asynchronous communication between students and teachers.

Teleconference is usually conducted based on mailing lists using email. Educational teleconferences are aimed at achieving learning objectives. There are also forms of distance learning where учебные materials are sent to regions by post.

This system is based on a teaching method known as the “natural learning manner.” Distance learning is a democratic, simple, and flexible system of education. In the 21st century, it is actively used by residents of Europe for obtaining additional education. By continuously completing practical tasks, students acquire stable automated skills. Theoretical knowledge is absorbed without additional effort, naturally integrating into training exercises. The formation of theoretical and practical skills is achieved through systematic study of materials, as well as listening to and repeating exercises from audio and video resources (if available) [13].

Telepresence. There are many different ways of distance learning. For example, remote presence using the R.Bot 100 robot. In modern technological conditions, an experiment of this type of distance learning is being conducted in one of the schools in Moscow. A student with a disability, staying at home in front of a computer, can see, hear, and communicate through a robot. The teacher asks questions, and the student answers. At the same time, the teacher can also see the student because the robot is equipped with a monitor. This creates an almost complete impression for the student of being physically present in the classroom with peers. During breaks, the student can also communicate with classmates. If the experiment proves successful,



it may open the way for a large-scale project to implement this method of distance learning across Russia.

Disadvantages of Distance Learning. Distance learning faces several challenges, including difficulties in self-discipline and self-control at home, unreliable internet connections, the relatively high cost of software and subscriptions to specialized platforms for teachers and students, as well as the shortage or high cost of hiring highly qualified IT specialists for software development.

The sudden forced transition to дистанционное learning in the fourth quarter of the 2019–2020 academic year revealed a number of additional difficulties, including:

1. Insufficient availability of computers and other technical equipment in families with school-age children;
2. недостаточный уровень reliability and accuracy of information on educational platforms;
3. Lack of assignments for certain grade levels on some websites;
4. Additional difficulties for older teachers in mastering modern computer technologies;
5. Reduced objectivity in assessing students' knowledge, as it was difficult to verify independent work;
6. Decreased student motivation — students who previously showed good results in face-to-face learning often experienced a decline in performance;
7. Paid subscriptions for teachers on some platforms used for organizing distance education;
8. Overload of educational websites due to a sharp increase in users, leading to system failures during peak hours.

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