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OPPORTUNITIES FOR MANAGING THE LEARNING PROCESS IN THE CONTEXT OF DIGITALIZATION

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Abstract: this article includes various concepts, theories and approaches aimed at integrating modern technologies into educational processes and improving learning efficiency. The use of digital technologies in education involves innovative pedagogical models that are presented to develop higher-order thinking skills and conceptual understanding, and in many cases improve students' creativity, imagination and problem-solving skills.

Keywords: digitization, information technology, education, internet, management, distance education, platform, information.

Introduction

The process of digitalizing education in universities involves the use of applications, software, and other digital educational tools in distance learning courses. “The work carried out in recent years has certainly yielded results: services have become convenient and accessible to people. However, digital technologies are changing daily, opening up new opportunities.

In the era of global digitalization, there is an objective need to involve the state and its constituent parts in this process, as it affects almost all spheres of life — from directly immobilizing certain processes to reshaping them in new digital forms.

Digitalization of education is the process of updating and improving the educational process through digital technologies. Through digitalization, education gains the following new opportunities:

- **Online Learning:** Students can attend lessons remotely, at their own time and from their own location.
- **Interactive Materials:** Videos, graphics, simulations, and many other interactive materials make the learning process engaging and effective.
- **Analysis and Monitoring:** Digital systems allow for the analysis of students’ achievements, difficulties, and progress.
- **Personalized Learning:** Educational programs can be tailored to meet the individual needs of each student.
- **Collaboration and Communication:** Digital platforms facilitate communication among teachers, students, and parents.

Analysis of Related Literature

The formation of a digital learning environment occurs in various forms. E.V. Ustyujanina and S.G. Evsyukov highlight the following forms:

- Converting existing educational materials — including lectures, presentations, textbooks, independent assignments, and assessment tools — into electronic formats.
- Creating an interactive electronic environment based on collaboration between teachers and students, including teachers’ electronic offices, classrooms for webinars, debates, and forums.
- Developing new types of learning tools such as electronic textbooks, collections of electronic problems, video lectures, quests, and computer games.

- Creating entirely new forms of teaching by utilizing the capabilities of the electronic learning environment — for example, expanding the spectrum of visual information delivery, modeling various situations through role-playing games, simulating competitive games, and more.
- Integrating artificial intelligence capabilities into the educational process.

Currently, the educational environment is increasingly characterized by innovation. The innovative nature of the learning environment naturally leads to its substantive renewal. Therefore, in modern conditions, reliance on information, communication, and digital technologies ensures the content of the educational environment is meaningfully updated.

In our view, even within a digital learning environment, as S.V. Tarasov noted, it retains its existing components while being somewhat expanded. Specifically, the digital learning environment is complemented not only by its content, methodological, and communicative components but also by a technological component. Consequently, digital technologies — in particular, those applied in education — consist of computer devices and multimedia tools.

A.B. Fedorov views media education in the modern world as a process of personal development aimed at forming communication culture with mass media. This involves developing creative and communicative potential, critical thinking, full comprehension, interpretation and analysis of media texts, evaluation, and teaching various forms of self-expression through media technologies and materials.

This includes the ability to create electronic textbooks and use them independently; work freely with programs such as Zoom, Google Meet, Google Drive, Camtasia Studio; enrich distance learning platforms with creative innovations, and more.

To establish a digital learning environment at a higher education institution, it is first necessary to reform the internal processes of the educational institution. Timely implementation of new technologies into the learning process ensures the competitiveness of the institution and guarantees high efficiency in preparing the new generation professionally.

Digitalization today is recognized as an inevitable step in both societal and scientific development. It shapes the new individual not only as a bio-social being but also as a technological entity. This, in turn, imposes a responsibility on educational researchers to create a new educational environment that promotes social development, maintains systemic balance, and develops human-centered technologies.

In the social sphere, information technologies and Internet networks allow for the discovery of new truths necessary for a detailed study of general data emerging during research processes. In other disciplines, they create conditions for developing and advancing new methods and technologies.

However, the socio-pedagogical challenges of the current era of societal digitalization require a fundamental reconsideration of the education system and its structural components. This demands not only the transformation of educational subjects but also a radical reorganization of the educational space itself.

Research Methodology

Currently, this involves not only an environment that directly provides individuals with physical effort and diligence but also a network of digital technologies created through the actions of educational subjects, supported by interconnected pedagogical measures. At the same

time, the digital environment is not merely a process that generates risks for individuals; it also constitutes a new form of lifestyle, activity, and relationships for them.

The risks of the digital environment primarily relate to privacy, the security and uncertainty of data on networks, and financial issues that determine the purposes of its availability. Changes in local education are associated with the influence of the information environment, which can alter educational content and its system; however, this has not yet been fully considered in the context of future socio-pedagogical tasks.

In today's era of digitalization, forms of collaborative interaction in education are extremely important. As soon as a person enters the virtual world, they begin to engage in "live" communication within a community, often without fully realizing it.

From this perspective, a series of reforms are being implemented in our country to create a new digital learning environment. In particular, based on the Resolution PQ-4851 of the President of the Republic of Uzbekistan dated October 6, 2020, **"On Measures to Further Improve the Education System in the Field of Information Technologies, Develop Scientific Research, and Integrate It with the IT Industry,"** the **"Digital Uzbekistan – 2030"** strategy was launched. This defines key conditions for the development of digital technologies, their integration into everyday life, and the processes associated with these goals.

Analysis and Results

The process involves the use of Internet services for storing, managing, and processing data. These services are hosted on multiple servers and are centrally managed.

- **Smart Technologies:** Methods that enable the performance of certain intellectual activities created by humans, complementing traditional technologies and performing specific tasks. Examples include smart watches, smart suits, smart umbrellas, and more. These rely on one or several sensors in smart devices, which analyze specific tasks according to pre-programmed rules, draw conclusions, and perform tasks through interaction with other smart devices.
- **Internet of Things (IoT):** The IoT allows billions of physical objects connected to the Internet to obtain and exchange information about other educational tools and resources through social networks. Currently, in typical home settings, many devices are equipped with modern educational tools (projectors, electronic boards, televisions, computers, surveillance cameras) and software (multimedia, electronic textbooks, audio-visual materials). IoT aims to work together with these educational devices and assist in creating an intelligent network of objects. For example, if these educational devices are connected to the Internet, they can be remotely controlled via a smartphone.
- **Virtual Reality (VR):** VR is an artificial informational environment consisting of a set of software and hardware tools that deliver information to the user's mind through sensory organs (sight, hearing, and touch). Virtual reality is an interactive technology that creates the illusion of movement in a real environment on a computer. Instead of perceiving the objective reality through natural senses, specially created computer information is perceived using an interface, computer graphics, and audio. Neurons in the human brain respond to virtual elements as they would to real-world elements. Consequently, a person perceives the virtual environment and reacts to events within it as if they were happening in reality.
- **Augmented Reality (AR):** AR is an informational environment in which interactive digital elements are overlaid on real-world objects. This technology aims to enhance the real world using virtual elements through visual devices. AR virtual objects are overlaid and observed simultaneously with real-world data captured by a camera. As a result, the real world is supplemented with artificial elements and additional information. This can be implemented

through programs for common smartphones and tablets, augmented reality glasses, stationary screens, projection devices, and other technologies.

- **E-Learning:** E-learning is a method of organizing education through digital technologies, which can be carried out online or offline via a computer or other digital devices. It can be accessed through computers, laptops, tablets, or smartphones, providing students with a versatile and convenient way to learn regardless of their location.
- **Learning Management Systems (LMS):** LMS are human-computer systems or forms of distance education designed to manage learning activities. They include a set of educational materials such as video lessons, lecture materials, presentations, and books, and allow for interactive communication between teachers and students.
- **Massive Open Online Course (MOOC):** A platform that allows learners to access education throughout the year or in short sessions. Through MOOC platforms, prestigious educational institutions such as Harvard and MIT offer online courses in various fields and at different levels. Additionally, MOOC platforms enable the enrollment of thousands of students simultaneously, allowing them to participate in courses at scheduled times during the year or at their convenience.
- **Content Management Systems (CMS):** Platforms consisting of pre-designed templates and a set of functions for data input and design. CMS allows for the convenient and easy creation and modification (adding, editing, and deleting) of websites composed of text and multimedia pages, acting as a website management system.
- **Big Data:** A continuously growing collection of large datasets, accompanied by technical and software tools for processing this data. Unlike traditional databases, Big Data allows for the collection, processing, and transmission of massive amounts of information. Effective analysis of this data facilitates the extraction of valuable information.
- **Data Science:** An interdisciplinary field focused on extracting new knowledge, i.e., useful information, from large datasets. This field prepares data for analysis and identifies critical information necessary for making high-level organizational decisions.
- **Artificial Intelligence (AI):** A system capable of interpreting external data accurately, learning from it, and applying it to various situations to achieve specific goals and tasks. AI enables machines to simulate human intellectual behavior and reasoning abilities.
- **Infographics:** A graphical method of presenting information, in other words, visually represented data. Infographics use visual tools such as graphics, images, diagrams, tables, maps, and schemes to convey information. They are designed to present information quickly, visually, and dynamically.

Education has historically been a source of personal value and opportunities, as well as a driving force for social, economic, political, and cultural development. To ensure that it continues to hold such power by 2030, it is necessary to implement the digital transformation of education.

- **Digital Transformation of Education**
- The digital transformation of education is the process of updating curricula and programs, educational content, teaching methods, and forms, as well as fundamentally improving the assessment of each student's achievements in a rapidly developing digital environment.
- Digital transformation in education is the process of achieving **"digital maturity,"** resulting in the creation of a digital learning environment composed of integrated information systems that encompass all participants in the educational process. The use of digital technologies in education is particularly relevant compared to other sectors.
- Currently, digital educational technologies are applied at all levels of the education system. To use these technologies effectively, it is first necessary to possess knowledge, skills,

and competencies related to their capabilities. Only then can the expected benefits of digital educational technologies be achieved.

- In higher education institutions, the use of digital technologies manifests in multiple ways: the application of numerous electronic textbooks and teaching guides in the learning process; organizing lessons and managing educational activities; implementing distance learning; conducting remote administrative activities; continuously monitoring student feedback; organizing automated assessments; forming large scientific databases containing electronic learning resources; integrating virtual and augmented reality technologies; and effectively using computer hardware and software across computer science disciplines. Digital technology serves as the sole catalyst for implementing changes in the teaching process.
- The use of digital technologies in education supports the development of higher-order thinking skills and conceptual understanding. It often underpins innovative pedagogical models that enhance students' creativity, imagination, and problem-solving abilities. Through digital technologies, students can improve their logical reasoning, generate knowledge on various concepts, enhance communication skills, and organize their activities effectively. It also enables students to engage with remote or virtual laboratory simulations.
- Moreover, digital technologies facilitate international collaboration. Students can communicate face-to-face even via computers and mobile devices. In this way, they are capable of overcoming all barriers that may arise during communication.
- **Assessment and Pedagogical Support:** The assessment process allows educators to monitor students' mastery of knowledge and accordingly improve their teaching methods. It can also increase the dynamic participation of students in discussions. When students are able to enhance their knowledge, they actively participate in seminars, group discussions, and other academic activities. Digital technology supports assessment and facilitates the development of skills.

Today, digital education holds an invaluable role in our country's education system. It not only tracks students' mastery of subjects but also observes how they study, how they engage with subjects, their interest in tasks, and their responses to challenges at their level. As a result, students' abilities in independent learning, adaptation to personalized learning, and self-directed study are further developed. Conducting lessons using digital content and providing interactive assignments during classes also helps students develop competencies in areas that interest them.

Platforms such as Hemis and Moodle have quickly contributed to resolving many existing pedagogical challenges. Through these platforms, essential digital learning resources, class schedules, assessments, and assignment systems are made available, allowing students to access and utilize electronic learning systems continuously.

Digital education envisions free access to electronic learning content and provides extensive opportunities to individualize the learning process based on each student's abilities. Currently, the volume of electronic content is increasing — textbooks are being digitized, and online courses are being developed. E-learning offers students more opportunities to acquire knowledge independently and navigate through large flows of information.

In this context, the teacher's role shifts from being a mere transmitter of knowledge to a mentor who guides the learner along the most personalized learning path. The traditional principle of "I know everything, so do as I say" is replaced by a new paradigm: **"I help you learn to do this yourself."**

Objectives of Digitalizing the Educational Process:

- Ensuring openness and transparency in educational activities;
- Automating academic, scientific, moral, and organizational processes within the education system;

- Structuring analytical data and optimizing and accelerating decision-making processes;
- Monitoring the effectiveness of educational participants' activities;
- Ensuring continuity and coordination between administrators (employers), educators, and learners;
- Preventing bureaucratic barriers in the educational process and reducing financial expenditures;
- Reducing the time spent on management processes and increasing labor efficiency.

The characteristics of the learning process in higher education institutions, as well as the significance of universities in society and the economy, are rapidly evolving. Worldwide, universities compete with each other to attract students, faculty, and financial resources. In this competitive environment, higher education institutions that are aligned with modern trends and utilize new digital opportunities are gaining a significant advantage over others.

Digitalization has created new opportunities for education and management by facilitating data collection and analysis, as well as collaboration and communication. Its advantages include increased efficiency, enhanced student engagement, personalized learning, and the use of innovative teaching methods. Moreover, digitalization simplifies the management of universities, curricula, faculty members, staff, and resources.

One of the main advantages of digitalization is its ability to increase student engagement. By using digital tools such as online learning platforms, social networks, and mobile applications, universities can create interactive and engaging learning experiences that motivate and guide students throughout their studies. Additionally, digitalization enables universities to utilize innovative teaching methods, including gamification and virtual reality.

Conclusion: If the development of digital technologies continues along current trends, significant changes in people's lifestyles can be expected in the coming years. This will make all sectors more flexible and ensure that the knowledge and competencies of the workforce meet the needs of society.

To enhance the effectiveness of the digitalization process in education, it is advisable to:

- Develop mechanisms for the continuous improvement of media competence among all educational participants;
- Utilize various existing ICT applications and further enrich video lesson content;
- Provide practical support in equipping educational institutions with modern technical infrastructure;
- Regularly publish all scientific journals and research related to digital education on websites;
- Actively implement the developed electronic management systems;
- Establish mechanisms to increase accountability of all educational participants on distance learning platforms and across all social networks.

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