JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS

VOLUME 5, ISSUE 06
MONTHLY JOURNALS

ISSN NUMBER: 2751-4390
IMPACT FACTOR: 9,08

UDK: 37.013.32

ORGANIZATION AND DEVELOPMENT OF THE DIGITAL EDUCATIONAL ENVIRONMENT BASED ON AN INTEGRATIVE APPROACH

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https://doi.org/10.5281/zenodo.20599675

Abstract: This article discusses the theoretical and practical aspects of organizing a digital learning environment based on an integrative approach. Integration provides interdisciplinary connections in the educational process and forms a comprehensive worldview in students. The digital learning environment, in turn, makes the educational process interactive, flexible and personalized through modern technologies - computers, the Internet, multimedia, artificial intelligence and virtual reality tools. The article analyzes the pedagogical significance of the integrative approach, the advantages of the digital learning environment, their compatibility, practical examples (STEM education, virtual laboratories, educational projects), stages of organization, as well as problems and their solutions. In conclusion, it is emphasized that organizing a digital learning environment based on an integrative approach serves to develop complex knowledge, digital competence and creativity in students.

Keywords: Integrative approach, digital learning environment, interdisciplinary integration, digital competence, STEM education, virtual laboratory, gamification, artificial intelligence, pedagogical methods, innovative education.

Introduction. In the 21st century, the use of digital technologies in the educational process has become a global trend. The digital educational environment not only accelerates the process of acquiring knowledge, but also makes it interactive, flexible, and personalized. At the same time, the integrative approach to education - the harmonization of various disciplines, methods, and technologies as a unified system - is one of the important principles of modern pedagogy. The organization of a digital educational environment based on an integrative approach, on the one hand, comprehensively forms students' knowledge, and on the other hand, prepares them for real-life situations. In this approach, interdisciplinary connections, digital tools, and pedagogical methods are used together. The integrative approach means the harmonization of various disciplines, methods, and technologies in the educational process as a single system.

The theoretical foundations of this approach are formed in pedagogy, psychology, and didactics, all of which are aimed at the comprehensive development of the student's personality. Although the concept of integration was initially applied in natural sciences, it later entered educational theory and became an important principle for ensuring interdisciplinary connections.

From a pedagogical point of view, the integrative approach serves the formation of a complex worldview in students. Because in real life, problems are solved not only within the framework of a single science, but also through the integration of various fields of knowledge. For example, to understand environmental problems, it is necessary to combine biology, chemistry, geography, and computer science. Thus, integration forms in students the ability to apply theoretical knowledge in practice.

The integrative approach to psychological foundations is aimed at expanding students' thinking, developing creativity, and increasing motivation. When a student simultaneously acquires knowledge in different subjects, associative connections are formed in their brain. This helps to consolidate knowledge and retain it in long-term memory. Also, integration forms in students the ability to take into account different points of view when solving problem situations.

An integrative approach to didactic foundations is an important tool for the effective organization of the educational process. Through integration, the content of lessons is enriched, student activity increases, and the educational process becomes interactive. For example, in the project-based learning method, students combine knowledge from several subjects to create a practical project. This process develops their independent thinking, teamwork, and creative abilities.

The theoretical foundations of the integrative approach are also harmonized with the modern educational paradigm. Today, the main goal of education is not to equip students with knowledge, but to form them as individuals capable of effectively operating in real-life situations. From this point of view, integration serves the development of competencies in students. Competence is a harmonious combination of knowledge, skills, and personal qualities, which is formed more effectively through an integrative approach.

The theoretical foundations of the integrative approach have been deeply studied in pedagogy, psychology, and didactics, aimed at ensuring interdisciplinary connections in the educational process, forming a comprehensive worldview in students, and developing competencies. This approach serves the comprehensive development of the student's personality as one of the most important principles of modern education.

The digital educational environment is one of the most important concepts of modern pedagogy, which means the organization of the educational process through computer technologies, Internet networks, multimedia tools, and the capabilities of artificial intelligence. This environment creates ample opportunities for students to acquire knowledge and for teachers to effectively manage the educational process. To understand the essence of the digital educational environment, it is necessary to consider its main features, advantages, and impact on the educational process.

First of all, the digital educational environment is based on the principle of interactivity. If in traditional education the student is more in the role of a listener, then in the digital environment he is involved in the learning process as an active participant. For example, online tests, virtual laboratories, simulations, and elements of gamification involve the student in the process. This contributes to the consolidation of knowledge and the development of practical skills.

The second aspect is flexibility. The digital educational environment can be adapted to the individual needs and interests of students. Platforms based on artificial intelligence analyze the student's level of knowledge and provide them with appropriate tasks and resources. This process ensures personalized learning and allows each student to develop at their own pace.

The third aspect is global opportunities. Thanks to the digital educational environment, students have access to knowledge sources around the world. For example, international online courses, open educational resources (MOOCs), electronic libraries, and scientific databases expand students' knowledge. This makes it possible to integrate the educational process on a global scale. Also, the digital educational environment ensures speed and efficiency. The exchange of information between the teacher and the student takes place in real time. For example, through online forums, chats, and video conferences, students can immediately receive answers to their questions. This process increases the effectiveness of education and encourages students to actively communicate.

Another important aspect that determines the essence of the digital educational environment is the use of multimedia tools. Video lessons, animations, graphics, and interactive presentations facilitate students' visual and auditory perception of knowledge. This makes the educational process more interesting and effective. In addition, the digital educational environment serves the formation of digital competencies in students. Today, digital literacy is a necessary skill for every person. Through working in the digital environment, students learn to use computer programs, search for information on the Internet, analyze information, and apply it in practice.

The digital educational environment essentially transforms the educational process into an interactive, flexible, global, and effective form. It develops in students not only scientific knowledge, but also digital competencies. Therefore, the digital educational environment is an integral part of modern education and plays an important role in preparing the future generation for the requirements of the digital society and the economy.

Integrative approach means the harmonization of various disciplines, methods, and technologies in the educational process as a single system. The main goal of this approach is to form complex thinking in students, apply knowledge in various contexts, and prepare them to solve real-life problems. The digital educational environment ensures the effective organization of the educational process using educational platforms, electronic resources, interactive tools, and artificial intelligence created on the basis of modern technologies. The combination of these two directions is an important factor in improving the quality of education.

The essence of the integrative approach. In the integrative approach, the boundaries between disciplines are blurred, the student considers the same topic from the point of view of different disciplines. For example, the topic of ecology can be studied in connection with biology, geography, chemistry, and computer science. This forms a comprehensive worldview in students. Also, the integrative approach develops students' skills in creativity, critical thinking, and problem-solving.

Advantages of the digital educational environment. The digital educational environment allows students to acquire knowledge anywhere and at any time. Electronic textbooks, video lessons, virtual laboratories, and simulations make the educational process more interesting and effective. In addition, the digital environment provides an individual approach: each student can learn at their own pace, conduct independent research, and consolidate their knowledge. Teachers, with the help of digital tools, monitor the activities of students, analyze the results, and give individual recommendations.

The importance of harmony. The combination of an integrative approach and a digital educational environment makes the educational process more effective. For example, if digital simulations are used in the process of integrating mathematics and physics, students will have the opportunity to consolidate theoretical knowledge through practical experience. Furthermore, the integration of history and literature can be further enriched through digital archives and electronic libraries. This forms in students the skills of understanding interdisciplinary connections and applying knowledge in real life.

In the future, the harmony of the integrative approach and the digital educational environment will deepen. Artificial intelligence, virtual reality, and blockchain technologies are expected to be widely implemented in the educational process. This allows students to receive more interactive, secure, and personalized learning. At the same time, new methodological opportunities will open up for teachers: they will be able to develop educational programs tailored to the interests and needs of students.

The combination of an integrative approach and a digital educational environment is one of the most important principles of modern education. This harmony develops complex thinking in students, allows them to apply knowledge in practice, and makes the educational process more

effective. As a result, society will have the opportunity to educate a creative and innovative generation that meets the requirements of the digital age.

Practical examples: STEM education. STEM (Science, Technology, Engineering, Mathematics) is the most striking example of an integrative approach. STEM projects in the digital environment form a complex of knowledge and skills in students. Virtual laboratories. With the help of virtual laboratories, it is possible to conduct safe and effective experiments in chemistry and physics. Educational projects. For example, in the project "Solving Environmental Problems," biology, geography, computer science, and mathematics will be integrated.

Stages of organizing a digital educational environment based on an integrative approach. The integrative approach means the harmonization of various disciplines, methods, and technologies as a single system in the educational process. The digital educational environment ensures the effective organization of the educational process using educational platforms, electronic resources, interactive tools, and artificial intelligence created on the basis of modern technologies. The combination of these two directions plays an important role in improving the quality of education. The organization of the digital educational environment based on an integrative approach is carried out in several stages.

At the first stage, the general goals and objectives of the educational process are determined. The main goal of creating a digital environment based on an integrative approach is to develop students' understanding of interdisciplinary connections, comprehensive thinking, and the ability to apply knowledge in practice. The tasks will be to effectively organize the educational process using digital tools, support students' independent research, and ensure an individual approach.

In the second stage, digital resources used in the educational process are selected. This includes electronic textbooks, video lessons, virtual laboratories, simulations, electronic libraries, and interactive platforms. Resources should serve to ensure interdisciplinary integration. For example, virtual laboratory experiments are prepared for biology and chemistry, electronic archives and multimedia materials for history and literature.

In the third stage, the educational process is designed based on an integrative approach. At this stage, a lesson plan, assignments, and lessons demonstrating interdisciplinary connections are developed. For example, the topic of ecology can be studied in connection with biology, geography, and computer science. In the digital environment, this process is carried out through interactive maps, graphs, and simulations.

At the fourth stage, the created digital resources and the designed educational process will be implemented in practice. Students participate in classes through electronic platforms, conduct experiments in virtual laboratories, and work with multimedia materials. Teachers, with the help of digital tools, monitor the activities of students, analyze the results, and give individual recommendations.

At the fifth stage, the effectiveness of the educational process is monitored and analyzed. In the digital environment, this process is carried out through automatic monitoring of student activity, analysis of test results, and assessment of student development dynamics. Based on the monitoring results, necessary changes are made to the educational process.

Results of the integrative approach. The integrative approach means the harmonization of various disciplines, methods, and technologies as a single system in the educational process. The main goal of this approach is to form complex thinking in students, apply knowledge in various contexts, and prepare them to solve real-life problems. As a result of the implementation of the integrative approach in practice, a number of positive changes will occur in the educational process.

As a result of the integrative approach, students gain a deeper understanding of interdisciplinary connections. This forms in them the ability to apply knowledge in various

contexts. For example, through the integration of mathematics and physics, the student connects theoretical formulas with practical experiments. Also, the integration of history and literature allows students to gain a deeper understanding of cultural heritage.

The integrative approach develops creativity in students. Interdisciplinary activities require students to develop new ideas and take an unconventional approach to problems. This forms innovative thinking. As a result, students will be ready to create innovations in various fields in the future.

Another important result of the integrative approach is the formation of practical skills in students. An integrative approach, integrated with the digital educational environment, allows students to test theoretical knowledge in practice through virtual laboratories, simulations, and electronic platforms. This prepares them to solve real-life problems.

As a result of the integrative approach, society will have the opportunity to educate a creative and innovative generation that meets the requirements of the digital age. Such a generation creates innovations in various fields, solves problems based on a comprehensive approach, and contributes to the development of society.

The results of the integrative approach lead to profound changes in the educational process. Such results as complex thinking, awareness of interdisciplinary connections, creativity, practical skills, independent research, and critical thinking serve the personal development of students. As a result, the educational process will be effective, and society will have the opportunity to educate an innovative and creative generation.

Conclusion. The organization of a digital educational environment based on an integrative approach is one of the most important tasks of modern education. This approach forms comprehensive knowledge, digital literacy, and creativity in students. With the help of digital technologies, interdisciplinary integration becomes more effective, and the educational process adapts to global standards. Thus, the combination of an integrative approach and a digital educational environment is the most correct way to prepare the future generation for a digital economy and a society of knowledge.

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