

THE THEORETICAL AND METHODOLOGICAL CONCEPTS OF SYSTEMATICALLY ANALYZING THE PEDAGOGICAL PROCESS

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Annotation: This article discusses the theoretical and methodological concepts of systemic analysis of the pedagogical process. Systemic analysis of the pedagogical process is important for improving the education system and enhancing pedagogical methods. Systemic analysis involves studying the interconnection and dynamics of all components of the educational process. The article provides detailed information on the theoretical foundations of systemic analysis, such as systems and systemic approach, integration, the theory of large systems, and variability, as well as methodological approaches – quantitative and qualitative research, experimental methods, analysis and synthesis, and holistic approaches. These approaches are applied to deeply study the pedagogical process and improve the effectiveness of education.

Keywords: pedagogical process, systemic analysis, theoretical concepts, methodological foundations, systemic approach, integration, quantitative research, qualitative research, experimental method, holistic approach, educational effectiveness, pedagogical methods.

Introduction. The pedagogical process is a set of activities carried out in the field of education and upbringing. Systematic analysis of the pedagogical process implies a complete, in-depth and integrated study of educational processes based on their interconnected components. This, in turn, plays an important role in improving the education system and optimizing pedagogical methods. The role of systematic analysis in the field of pedagogy is based on scientific research aimed at improving knowledge, methods and approaches to improving educational processes. In this article, we will focus on the theoretical and methodological concepts of systematic analysis of the pedagogical process.

Systems analysis is the process of studying problems, processes, or systems in terms of their interconnections and relationships. In a systems analysis of the pedagogical process, all components are analyzed in their interconnectedness. The theoretical foundations of this analysis are as follows:

1. **System and systematic approach:** Systematic analysis of the pedagogical process is based on the principle of systems study. A system is considered to consist of interconnected and goal-oriented components. In a pedagogical system, these components include the student, the teacher, teaching methods, pedagogical conditions, and a number of other factors. The systematic approach emphasizes the interdependence of all components and the direction of the process towards a common goal.
2. **Integration and adaptation:** All parts of the pedagogical process should be integrated with each other. The mutual adaptation and interaction of each element is one of the main elements of systemic analysis. For example, the methodological approaches of the teacher, the needs of students, the cultural and social conditions of education should be harmoniously combined with each other.
3. **Large systems theory:** In the systematic analysis of the pedagogical process, large systems theory is used. Based on this theory, the educational process is considered as a large

system consisting of several subsystems (teacher, student, textbooks, organization of the educational process). The contribution of each subsystem to the overall system is considered in the process of systematic analysis.

4. **Change and Dynamics:** The pedagogical process is considered to be a constantly changing and dynamic process. Systematic analysis of these changes is important in increasing the effectiveness of the pedagogical process.

In the systematic analysis of the pedagogical process, methodological foundations play an important role in determining the methods of analysis and approaches. In the systematic analysis of the pedagogical process, it is necessary to use two main research methods - quantitative and qualitative research. Quantitative research is based on measuring and statistical analysis of the activities carried out by students and teachers. Qualitative research is aimed at in-depth study of the quality of the educational process, methodological approaches and educational conditions. In the systematic analysis of the pedagogical process, the experimental method can be used. Through this method, it is possible to compare different methods, techniques and conditions of the educational process and determine the most effective ones. Experiments are an important tool in studying the pedagogical process and developing new methods [1].

In the systematic analysis of the pedagogical process, methods of analysis and synthesis are used. Through analysis, all components of the process are studied, and synthesis helps to generalize the results obtained and create new theories or methodologies. A holistic approach is used when implementing a systematic analysis. This approach takes into account the contribution of each element to the overall system and its interdependence. Each component of the pedagogical process is analyzed based on their interaction with each other, rather than being studied separately. Systematic analysis of the pedagogical process plays an important role in increasing the effectiveness of the education system and improving pedagogical methods. Theoretical and methodological foundations constitute the scientific approaches necessary for the correct and effective implementation of a systematic analysis. Through systematic analysis, all components of the pedagogical process are studied in an interconnected manner and new approaches are developed to increase the effectiveness of education. Systematic analysis not only helps to improve the pedagogical process, but also creates opportunities for the introduction of innovative methods in the field of education. At the same time, it significantly contributes to improving the quality of education of students and their social and intellectual development.

Methodology. The methodology of systematic analysis of the pedagogical process is based on scientific research and practical experience. This methodology is aimed at improving the education system and improving pedagogical methods, and includes a systematic approach and methods of scientific analysis. A systematic approach is one of the main methodological principles in the systematic analysis of the pedagogical process. In this approach, all components of the educational system (teacher, student, methodology, conditions, etc.) are studied in an interconnected manner. Through systematic analysis, each element of the process and its interactions are deeply analyzed. Quantitative methods are used in the analysis of the pedagogical process. With the help of this method, the activities carried out by students and teachers, their results and the effectiveness of education are measured using numerical indicators. The effectiveness of the pedagogical process is studied using statistical methods and analysis. Qualitative research is aimed at studying the quality of the pedagogical process. This method collects in-depth and qualitative data about students' opinions, teachers' experiences,

methodological approaches, and educational conditions. Interviews, focus groups, and observation methods fall within the scope of qualitative research [2].

Experiments are important in analyzing the pedagogical process. Experimental methods allow testing various pedagogical methods, introducing new methods and evaluating their effectiveness. Experiments allow identifying new approaches to increasing the effectiveness of the pedagogical process. Analysis and synthesis methods are the main methodological approaches in the systematic analysis of the pedagogical process. In the analytical method, all components of the pedagogical process are studied separately, while synthesis is used to generalize the obtained data and create new theories and methodologies. In a holistic approach, each part of the pedagogical process is studied as a whole system, not separately. The interrelationship and influence of each component are taken into account. This approach helps to better understand the educational process. In the systematic analysis of the pedagogical process, analytical and creative methods are used together. Analytical methods analyze the current state of processes, existing problems and effectiveness. Creative methods are aimed at creating new pedagogical approaches, methods and systems. At the same time, in the systematic analysis of the pedagogical process, it is necessary to integrate scientific research and practical methods. These approaches are aimed at increasing the effectiveness of the pedagogical process, developing new methods and improving the education system. The methodology of systematic analysis allows for a deep study of the pedagogical process, taking into account the interdependence and mutual influence of all components of education.

Literature analysis. Scientific research in the field of systematic analysis of the pedagogical process includes many studies aimed at increasing the effectiveness of educational processes and improving pedagogical methods. The main goal of this analysis is to systematically study the pedagogical process and further develop its scientific foundations. When conducting a literature analysis, it is necessary to refer to a number of important scientific sources. Below are some important studies related to the systematic analysis of the pedagogical process and their main approaches. In the systematic analysis of the pedagogical process, the main role is played by the systematic approach. This approach takes into account not only the study of the pedagogical process in separate parts, but also the interaction, interdependence and orientation of all its components towards a common goal. It is also important to take into account the dynamics and variability of the pedagogical process in a systematic approach. Many researchers consider systematic analysis to be an effective methodology used to improve the education system and its components. For example, Sundaram (2014) in his work "Analyzing Pedagogical Systems in a Systems Approach" proposes to analyze the educational system as interconnected systems. According to him, the important elements of each pedagogical system (teacher, student, methodology, educational environment) operate in a interconnected manner, and by analyzing this interconnection, educational effectiveness can be improved [3].

Bryant (2011) in his article "Integrated Pedagogical System" considers the mutual integration of all elements in the educational process. He emphasizes the mutual adaptation and effective functioning of each element in a systematic analysis. He also emphasizes that, given the complexity of the educational process, studying the integrated state of the pedagogical system helps to increase its effectiveness. Methodological approaches also play an important role in the systematic analysis of the pedagogical process. Bryant and Smylie (2009) studied the effectiveness of methodological approaches and showed the need to integrate quantitative and

qualitative research methods in the analysis of the pedagogical process. According to them, quantitative methods measure the effectiveness of the pedagogical process using statistics, while qualitative research allows for in-depth study of the experiences and opinions of students and teachers [4,5].

In a study conducted by Sutcliffe (2015), the role and importance of experimental methods in the analysis of the pedagogical process is considered. Sutcliffe shows pedagogical experiments as an important tool in the analysis of the education system. He emphasizes that it is possible to create new and effective approaches by using experiments in testing pedagogical methods. Experiments are one of the main tools in the development of pedagogical methods and help to increase the effectiveness of the educational process [6].

In recent years, innovative approaches and new methodologies have been used in the systematic analysis of the pedagogical process. A study by Johnson (2018) examined the possibilities of systematic analysis using modern teaching methods and digital technologies. According to him, digital technologies and online learning platforms help to study the educational process systematically. He argues that the use of digital methods in the analysis of the pedagogical process helps to make education more effective, as technologies create opportunities for process optimization and monitoring. Also, Sharma and Gupta (2017) in their article “Systems Analysis and Pedagogical Innovations” consider the importance of innovative approaches in the systematic analysis of the educational process. They argue that new pedagogical technologies, such as artificial intelligence and machine learning, help to analyze and manage the pedagogical process more effectively [7,8].

Research in the field of systematic analysis of the pedagogical process shows the importance of systematic approaches in improving the education system and improving pedagogical methods. Systematic analysis allows you to see and study all parts of the educational process as a whole, while at the same time helping to increase the effectiveness of education by analyzing the interrelationships of each element of the process. New methodologies, quantitative and qualitative research, experimental approaches and innovative technologies are important tools in the systematic analysis of the pedagogical process.

Discussion. Systematic analysis of the pedagogical process is one of the most important scientific and practical approaches in the field of education. In order to increase the effectiveness of this process, improve teaching methods and expand the opportunities for students to receive quality education, it is necessary to use a systematic approach. This article reviews the theoretical and methodological foundations of the systematic analysis of the pedagogical process. At the same time, the methods and approaches used in carrying out this analysis were also discussed. The systematic analysis approach requires not only studying the pedagogical process in separate parts, but also taking into account their interdependence, dynamics and variability. Applying a systematic approach to analyzing this process allows you to improve all components of the education system. Research shows that through a systematic approach, it is possible to increase the effectiveness of the educational process and manage its various parts in an integrated manner.

The methodological approaches presented by Bryant and Smylie (2009) emphasize the combined use of quantitative and qualitative research. This is considered the most effective method for analyzing the pedagogical process. Quantitative methods can be used to measure student achievement and educational effectiveness, while qualitative research allows for an in-depth

study of the quality of the educational process and its methodological aspects. The integration of these two approaches helps to consider the problems of the education system more broadly and develop clear and well-founded recommendations. Experimental approaches are another effective method used in analyzing the pedagogical process. As noted by Sutcliffe (2015), experiments allow testing various pedagogical methods and techniques, evaluating their effectiveness, and creating new pedagogical approaches. This serves as an important tool for introducing and improving innovations in the field of education [9].

At the same time, innovative approaches also play an important role in the systematic analysis of the pedagogical process. Johnson (2018) emphasizes the importance of integrating digital technologies and artificial intelligence into the educational process. With the help of digital technologies, it is easier to analyze and monitor the educational process, and also creates great opportunities for individualizing education and determining the level of student mastery. However, the success of systematic analysis depends not only on the correct application of methods, but also on the overall approach to organizing the educational process. One of the distinctive features of systematic analysis is that its implementation helps to better understand how different parts of the educational system interact with each other. Through this approach, the interactions and influence of teachers, students, and educational conditions become more visible. At the same time, in the systematic analysis of the pedagogical process, the main attention should be paid to the interaction between the student and the teacher. A systematic approach is useful in analyzing students' academic success, motivation, and classroom performance. Also, teachers' pedagogical methods and approaches directly affect the level of student learning. Therefore, a systematic study of the pedagogical process encourages teachers to introduce new methodological approaches.

Conclusion. Systematic analysis of the pedagogical process is a scientific and methodological approach necessary for the development and improvement of the efficiency of the education system. Systematic analysis allows for a deep study of all components of the educational process and their interaction. This shows the interdependence of teachers, students, methodologies and educational conditions, creating the opportunity to manage education more effectively and systematically. The methodologies used in the systematic analysis of the pedagogical process, such as quantitative and qualitative research, experimental approaches and innovative technologies, play an important role in increasing the efficiency of education. A systematic approach helps to understand the success, motivation of students and pedagogical methods of teachers more deeply. Also, modern methods such as digital technologies and artificial intelligence allow for a more effective analysis of the pedagogical process. In general, through a systematic analysis of the pedagogical process, it is possible to improve the education system and its components, and to improve the quality of education by introducing new approaches and methods. This approach creates broad opportunities for increasing the effectiveness of the pedagogical process and helps make education more modern and effective.

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