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SYSTEMATIC ANALYSIS OF EDUCATION

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Abstract

Today, almost all regions of the world are governed by knowledge and intelligence. Today humanity is very advanced in science and education. In our information age, the prestige of intellectual professions is growing. Bringing a person to this potential, realizing his intellectual potential is the most important task of the education system. However, countries around the world see that economies with underdeveloped education are also underdeveloped. Today it is impossible to educate modern personnel without the introduction of a modern education system. The synergetic methodology is an important area that contributes to integrated education, which can become the basis of modern education based on a systems approach. The problem of a systems approach to modern education, promoted in the article, focuses on interdisciplinary integration, critical and logical thinking as part of synergistic education. This is an approach that corresponds to modern education, proving that it is constantly evolving, tirelessly working on itself and that stagnation in the learning process is unacceptable.

Keywords: system, systems approach, systems analysis, modern education, synergetic methodology, science and education, theory and practice.

АННОТАЦИЯ

Бугун дунёда деярли барча соҳаларни билим ва ақл бошқармоқда. Бугун фан ва таълимда инсоният жуда илгарилаб кетди. Бугунги кунда ахборотлашган асрда интеллектуал касблар нуфузи тобора ортиб бормоқда. Инсонни бу салоҳиятга олиб келиш, унинг ақл имкониятларини рўёбга чиқариш таълим тизимининг энг муҳим вазифасидир. Ваҳоланки таълими тараққий этмаган мамлакатлар иқтисодиёти ҳам тараққий этмаганлигини бутун дунё мамлакатлари кўриб келяпти. Бугунги кунда замонавий таълим тизимини жорий этмасдан туриб, замон талабига мос кадрларни етиштириб бўлмайди. Синергетика методологияси тизимли ёндашув асосида айнан замонавий таълим учун асос бўла оладиган,

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интеграцион таълимни тарғиб этаётган муҳим йўналишдир. Мақолада тарғиб этилаётган замонавий таълимга тизимли ёндашув масаласи синергетик таълимнинг бир қисми сифатида фанлараро интеграцияни, танқидий ва мантиқий тафаккурни, доимо ривожланиб боришни, ўз устида тинимсиз ишлашни, таълим жараёнида турғунликка йўл қўйиб бўлмасликни исботлаб берадиган замонавий таълимга мос келадиган ёндашувдир.

Калит сўзлар: Тизим, тизимли ёндашув, тизимли таҳлил, замонавий таълим, синергетик методология, фан ва таълим, назария ва амалиёт.

АННОТАЦИЯ

Сегодня почти все регионы мира управляются знаниями и разумом. Сегодня человечество очень продвинулось в науке и образовании. В наш информационный век престиж интеллектуальных профессий растет. Довести человека до этого потенциала, реализовать его интеллектуальный потенциал - важнейшая задача системы образования. Однако страны всего мира видят, что экономики стран со слаборазвитым образованием также недостаточно развиты. Сегодня невозможно воспитать современные кадры без внедрения современной системы образования. Методология синергетики - важное направление, способствующее интегрированному образованию, которое может стать основой современного образования, основанного на системном подходе. Проблема системного подхода к современному образованию, продвигаемая в статье, фокусируется на междисциплинарной интеграции, критическом и логическом мышлении как части синергетического образования. Это подход, который соответствует современному образованию, доказывая, что оно постоянно развивается, неустанно работает над собой и что стагнация в процессе обучения недопустима.

Ключевые слова: система, системный подход, системный анализ, современное образование, синергетическая методология, наука и образование, теория и практика.

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Today, in almost all areas, concepts of the system approach, system analysis are introduced. System analysis, system approach are among the most pressing issues of our time, as they are related to the logical and critical way of thinking. Today it is very difficult to make progress without modern education. The bitter truth is that today we have to admit that Uzbekistan's economy is at least many years behind the education system of developed countries. According to the" Rising " national movement's general information on Uzbekistan's place in world rankings, our country ranks 79th in the international database on measuring and evaluating the impact of the education system in 2019 among 203 countries, 101st in prosperity and the sustainable economic development index ranked 105th in the human development index rankings [6]. **Today (2021) it ranks 71st in education, a notch lower than Kyrgyzstan, which means that more effort, labor and new approaches are needed to improve the quality and effectiveness of education.** Today in the world almost all spheres are governed by knowledge and intelligence. Today mankind is very progressed in science and education. In today's information age, the prestige of intellectual professions is growing. So much progress has been made in genetic engineering, robotics, nanotechnology, cosmology, biotechnology and many other fields that the human mind is proving to have such a wide range of possibilities. Bringing a person to this potential, realizing his intellectual potential is the most important task of the education system. Today, it is impossible to cultivate modern personnel without the introduction of a modern education system.

Synergetics methodology is an important area that promotes integrated education, which can be the basis for modern education based on a systematic approach. In today's world, the process of education is so advanced that now developed countries can achieve high economic potential only with intelligence, without spending any additional material and natural resources, without using any energy. For example, if we look at the U.S. economic growth graph from 1980 to 2010, which is one of the most developed countries in the world, we notice that the country has spent almost no energy since the 1980s in terms of GDP , i.e wealth. [8]. The main reason for this is only intellect and knowledge. This means that today, by setting modern education on the right track, economic growth can be achieved without much effort or strain. At the initiative of the President of Uzbekistan, since 2019, the country has implemented many reforms to provide modern education. For example, presidential schools, specialized schools, private educational institutions, reforms in higher education and so on.

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The manifestation of synergetic patterns in education is reflected primarily in the transfer of interdisciplinary integrated knowledge. Today in our education system there are such issues as "STEAM sciences", "STEAM sciences". What is “STEAM science”? What kind of teaching is meant by the theory of teaching STEAM sciences? It is natural that the question arises. STEAM is an abbreviation of capital letters of English words, namely:

Science
Technology
Engineering
Arts
Mathematics

STEAM science is a logical synthesis of the integration of several disciplines, combining theory and practice and taking a hands-on approach to the learning process. In fact, people and thinkers in Uzbekistan have always tried to learn and think logically in many areas. An example of this is that all of our scholars, especially the medieval Eastern thinkers, had an encyclopedic knowledge. This means that the systemic approach to modern education that we promote is a coherent approach to modern education that proves interdisciplinary integration, critical and logical thinking, constant development, self-improvement and stagnation in the educational process as part of a synergetic education.

First of all, it should be noted that the educational process can also be the object of system analysis as a whole. The concept of a system has been defined in many scientific and philosophical literatures and the essence of all of them is mutual. A system is an object or set of objects consisting of elements. A system is an object or set of objects consisting of interconnected and ordered elements striving toward a common goal. The system is a set of interrelated, controllable elements with a certain structure, each of which performs a specific function, is a single purposeful. This definition is specific to complex systems. It is this definition that suits us best, and the objects that require study in society are precisely complex systems [7]. The learning process we are studying is also a complex system. We can interpret the learning process as a complex system with synergetic laws. The educational process is a complex system, since it consists of interconnected and interrelated elements: preschool education, general secondary education, specialized secondary vocational education, higher education, teacher, student, and so on. These elements are combined in a hierarchical order and strive for a

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single goal, performing the functions necessary to achieve this goal. But it should also be taken into account that today the educational process is really approached as a system that develops as a whole, in which the development of each element is important for the development of the whole system ?; Or is every element in this system moving on its own?; Probably, it is difficult to achieve a single national education system, as the educational process in Uzbekistan is still not considered as a whole system. We call it an educational system, but is education really seen as a system today?; Does each element of his composition really reform together?; Do all aspects of the educational process work together to improve the level and quality of education? There are many such questions and we believe that it is up to us to find the answers to these questions. Education cannot be achieved by reforming higher education alone, or secondary education, or pre-school, vocational education. When any reform is applied, effectiveness can only be achieved if it is applied in a way that is appropriate to the stage from the bottom up to the top of the education. For example, the higher education system has undergone a number of modern reforms in recent years. Modular training, distance learning, changes in assessment, etc. These innovations are in high demand all over the world, and it is very good, but it takes at least 1 year for a student who is not fully aware of these innovations to realize that part-time students do not fully understand or even witness cases of graduation , recognize it, find a solution. In our opinion, when applying innovations, as mentioned above, if they are adapted to each level of education and applied elementary, it will be an integrated education, the student entering higher education institution will focus more on the study of his specialty, not wasting time mastering the method or understanding of innovation. The goal is to look at learning as a whole system.

Every system has, above all, the property of integrity. I.e, the integrity of the system is such that its essence as a system is lost when it is broken down into separate parts. For example, when we talk about higher education, we are referring to a certain system of training highly qualified personnel. When it is divided into parts (i.e. teacher, student, department, faculty, rector, etc) it undermines its integrity and its essence as a system is denied.

The system is interdependent. I.e, the elements that make up this or that complex system, the parts must have a strong influence on the development of the system in interdependence. For example, the development of the educational process depends not only on higher or secondary education, but also on the development

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of each element of the educational system, the development of each level of education.

The goal-oriented nature of the system means that the system and its subsystems are goal-oriented. For example, higher education and its components have the sole purpose of training highly qualified professionals.

When we talk about the structural characteristic of a system, we mean that the elements that make up the system are organized according to a law. For example, the organization of the educational process is built on the specific laws and rules of a particular society, country.

The efficiency (effectiveness, usefulness) of the system is one of the conditions for the existence of the system. If the system does not work, the system will completely disappear or the existence of such a system will only lead to excessive costs, turning into useless behavior. This function is one of the most important functions in the learning process. Of course, every stage of education must be productive. The effectiveness of an education system is determined by its future, development and contribution to development.

The education system itself is one of the most important types and elements of the entire social system. Education as an integral element of the social system consists of a set of various structurally and functionally related components that serve the purposes of training and education of people and the younger generation, organization and management of the educational process.

What is analysis? The concept of analysis has the following classifications:

1. It is the study of things, events, etc., in terms of essence, law, and other aspects;
2. To study, evaluate something, information, etc. from a certain point of view;
3. Determining the content of something and exploring its essence [7].

So, when we systematically analyze the educational process, we first of all look at it as a complex system consisting of integral, interconnected elements. Then we examine (analyze) the laws and essence of this complex system, approach the education system from a certain point of view (for example, synergetic) and study the essence of education in a new way.

Systematic analysis occupies a special place as a relatively perfect type of analysis. Systems analysis is a branch of science, formed on the basis of several disciplines (mathematics, cybernetics, synergetics, etc.) and identifying systemic problems of the object under study, the use of modeling in their imagination, based on which various alternative ways (solutions) is a field that brings together knowledge to help you choose the best option based on. Systems

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analysis is a type of analysis performed using analytical tools (methods) used to study complex social, political, military, economic, scientific issues [7].

The development of systems analysis began in the mid-twentieth century. The main role was played by the processes of analysis, knowledge and practical application of complex objects. Systematic analysis was used as an independent field of study in the 1950s and 1960s in the United States for major business tasks such as technical development of the armed forces, space exploration, government administration, capacity allocation, demand for labor and equipment, and product needs. The development of a systematic approach in the form of a concept in the modern sense is carried out in parallel in two directions - in theoretical and practical form. In the theoretical direction, different concepts are gradually merged into a system that is seriously studied, and an independent scientific field - system theory emerges [7]. Among the classic works on the theory of systems are the works of the Austrian biologist Ludwig Von Bertalanfi (1901-1972) and his followers. The most prominent representatives of this industry are A. Poincare, A. Bogdanov, A. Kolmogorov, V. Arnold, I. Prigogina, R. Akoff, E. Laszlo.

In systems analysis, a particular system is isolated from its environment, its composition is determined, its structures, functions, integral characteristics, as well as the factors that make up the system, and the relationship with the environment are analyzed. The systems approach applies to sets of objects, individual objects and their components, as well as properties and integral properties of objects. For example, the modern educational process in the system of higher or general secondary education is highlighted as an object of research, all its problems, achievements and shortcomings, the activities of the elements that make up the system, etc. are studied separately, thoroughly analyzed and general, theoretical, practical conclusions are drawn.

It is no coincidence that in our country today support for students, even the issue of student housing, rent is considered at the level of public policy [1]. There are many such reforms. The main thing is to focus all efforts on the development of education, there is a slight delay in their perception and understanding, in our opinion.

Since the mid-twentieth century, developments in the systems approach and general systems theory have continued. The systems approach is one of the important methodological principles of modern science and practice. Systems approaches are widely used in solving many theoretical and practical problems.

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In the systems approach, the analyzed object is considered as a specific set of elements, the interdependence of which determines the integral properties of this set. The main focus is on the object under study, its interaction with the external environment and the environment, to identify emerging connections and relationships. The systematic approach to the educational process focuses on the object of study, i.e, a particular stage of learning (e.g., higher education) and gives its analysis of the relationship with the outside world and the environment.

The importance of the systemic approach to the educational process is that, since education is an open system, it allows the best way to organize this process based on innovation and knowledge, national and universal experience. A comprehensive approach takes into account the internal and external environment of the process. This means that in the process of modern education should take into account not only internal but also external factors - social, political, spiritual, educational, economic, geopolitical, demographic, environmental and other factors. These factors are important aspects of the analysis of modern education. For example, in many cases, when a new social system is formed in society, when educational reforms are carried out, when new ideas and innovations appear, a similar environment is formed, and at this stage of formation the influence of external and internal factors must be considered.

Systems analysis refers to the study of a number of disciplines, operations, socio-political processes, optimal management theory, and systems theory and methods of organizing systems and other theories related to systems analysis. Systems analysis uses a combination of theoretical and practical directions to successfully solve the outlined problems. Today, systematic analysis is used as an effective research methodology in many fields in the process of identifying and analyzing problems. It should be noted that system analysis is a complex type of activity that requires special scientific training, purposeful selection and appropriate application of various scientific methods, knowledge of the problem under study.

The term “systematic analysis” first appeared in 1948 in connection with the functions of external management in the work of RAND corporation. The famous Russian scientist A.A Bogdanov first expressed his views on the basis of a systematic approach, and thus laid the foundation for the creation of the science of systems theory. He hypothesizes that any process or object has some degree of organization, and views all events as processes of organization and decay:

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according to the scientist, the higher the degree of integration of the elements of the object, the higher its degree of organization [2]. Ludwig von Bertalanffy (1901-1972) was the first to establish the theory of complex systems. He was able to describe the general features of complex systems. He separately studied the properties of simple and complex systems. He was able to show that simple systems are closed to the external environment and, conversely, complex systems are open to the external environment [3].

Systems theory is actually the science of systems, and systems analysis is the methodology for studying systems. In the late 1970s, a new trend in the theory of complex systems emerged, called "synergetics". This concept was first described in 1977 by the famous scientist Kherman Khacken in his work on the science of synergetics.

Thus, the system analysis of the modern educational process is understood as analytical methods used to study the problems, problems and shortcomings of the educational system, which has a complex structural basis, with theoretical, methodological, scientific, philosophical, economic, social, political , spiritual, legal content. In our study, we recommend the use of synergetic methods based on a systems approach in this process.

However, only on the basis of the analytical approach (thesis, monograph, scientific article, commentary, report, reference, review and other similar sources and even social systems, including the education system) representatives of the industry can explain the content of strategic issues, determines the main tasks of ensuring the development of social, economic, cultural and political spheres. Systems analysis is an interdisciplinary research method that generalizes the methodology of studying complex technical, natural and social systems. According to N.N. Moiseva, systems analysis is a set of methods based on the use of computers and aimed at studying complex systems - technical, economic, ecological and others [4].

It is possible to identify the strengths and weaknesses of the systematic approach in the modern educational process.

The power of systematic analysis lies in the fact that it constantly derives from specific needs, influences practice, constantly expands the range of objects of study, and cannot be excluded from the real needs of society. Today it is the development and progress of the educational process, and thus the question of material well-being, that has become the basic need of our society as a whole.

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The weakness of systematic analysis is that this method of analysis sometimes makes decisions by using undeveloped, underdeveloped methods of systems research, which, in turn, leads to ignoring real problems. Such cases may arise during the research process, but can be resolved later on the basis of consistency and gradualism.

The ultimate goal of systems analysis is to resolve the problem situation that has arisen in the object of systemic research (a specific organization, community, enterprise, individual region, social structure, etc.). Today in our society, it is advisable to take a systematic approach to solving problems in the education system. However, systematic analysis is associated with the study of the problem situation, identifying its causes, developing solutions, making decisions and organizing the subsequent work of the system that solves the problem situation. The first step in the study of any system begins with the definition of the object of analysis of this system. At this stage there are tasks that radically separate the methodology of systematic analysis from the methodology of other disciplines. First of all, it is necessary to take into account the purpose and scope of the analyzed object, its patterns. I.e, the purpose of modern higher education, its scope, activities, powers, laws, regulations, and functions are analyzed and various sources for decisions are prepared based on this analysis. These sources can also be in the form of a report, thesis, report, recommendation, normative document, draft resolution, minutes of the meeting, etc. In the life of society, including the education system, one can understand the processes of development of various laws, decisions, codes, spiritual and moral principles.

The main tasks of system analysis of the modern educational process:

A number of foreign and domestic sources on systematic analysis outline a number of functions of systematic analysis. Including:

The managerial function of system analysis is to provide information for decision-making, decision-making, implementation of decisions, and monitoring the execution of decisions at various stages of the management process. In the educational process, this function plays an important role in the development and implementation of certain theories, methodologies, innovations based on the interests and needs of the student and the teacher.

The diagnostic function of systematic analysis is to form (describe) an objective picture (scene) of the current situation, that is, the situation(s) that arose in the process or activity. In particular, representatives of the industry rely on this task

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to highlight the current state of the education system, achievements and shortcomings in the development of each level of education, the quality of education, efficiency, its place in world rankings.

The stimulating function of systematic analysis is to prevent (and give them a constructive tone) potential problems, dangers, and conflicts of various forms and manifestations that may arise in the process. Бу функция таълим тизимида жуда муҳим ҳисобланиб, соҳанинг келажагини олдиндан кўра билиш маҳоратини англатади.

Knowledge of systems analysis is a mental function that serves to understand the nature of the situation arising from the activity, to change the methods, approaches, values used in the implementation of management, in a word, the mentality of management.

The systemic approach to the modern educational process serves to improve the effectiveness of the educational process, giving it a theoretical and methodological, scientific and pedagogical, scientific and professional content. This, in turn, requires the development and implementation of measures to educate harmoniously developed individuals in the field of education, the introduction of science and technology in the educational process, training world-class specialists, taking into account national needs and interests.

The need for a systemic approach to the modern educational process is that this method of analysis plays an important role in the development and consolidation of effective research methods in the field today, as well as in their practical application. Knowing the process of learning, its features are a research method of practical importance in determining the level of importance for the development of society, predicting the future of each stage of learning or managed subsystems that make up the system.

It should be noted that in a systematic analysis, not only the system itself, but also its subsystems should be studied as a whole. The need for a systematic approach to the modern educational process, which plays an important role in identifying, analyzing the problems that are now becoming increasingly relevant in this area, the development of innovative methods of training and education aimed at them. At the same time, a systematic analysis generates ideas that are constructive for the development of education. The education system has a special place in society in human self-organization, that is, in self-education, preservation, protection, and, in general, in the ability of man in every way to organize himself. Every sane person lives their life interacting with the

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educational system throughout their lives. It can be argued that organizing a person through education through conscious activity and noble goals is up to him alone. So, smart education is the potential for a secure future [5].

In Conclusion:

Firstly, a systemic approach to modern education is important today in the implementation of integrative activities of all levels of education. Identifies key problems in the learning process, finds their starting point and proposes solutions.

Secondly, the systemic approach is based on critical and logical thinking in the application of each innovation in the educational process and develops theoretical and practical recommendations for adaptation to the national education system.

Thirdly, the systemic approach to modern education is the most basic and important approach to developing a modern education system, an analytical approach to importing education from developed countries and incorporating it into the national education system..

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