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## **THE ROLE OF SYNERGETIC APPROACH IN TEACHING TECHNOLOGY, FINE ARTS, AND MUSIC SUBJECTS**

**Abstract.** In the process of dynamic development of the modern world, education in the context of globalization should be aimed at the formation of a comprehensively developing personality ready to solve various tasks. If earlier the main goal of the school was the formation of a personality with scientific abilities, now the global goal of education is to achieve the comprehensive development of each person, including the development of all components of personality. The National Curriculum is aimed at the development of a comprehensively developing personality, possessing independence of information, making non-standard decisions, understanding the multifaceted problems of interaction between society and nature, capable of solving global problems of our time. A comprehensively developing personality begins at school. The learning process at the primary education level creates the basis for the acquisition of knowledge, the formation of skills and abilities. At the same time, the learning process should be focused on a complete and holistic study of the entire universe, based on integration, which is one of the basic principles of the educational document, the management of mental activity aimed at the development of thinking. The synergistic approach to education is the formation of synergetic values among students by teaching the basics of the theory of self-organization. Teaching the basics of synergetics helps students to develop and grow harmoniously as individuals. The synergistic approach to education considers it important to take into account the unity of common problems of various scientific fields through the subjects taught. This allows students to approach the problem realistically, try to master the subjects perfectly, and achieve the ability to master the sciences of research and coordination. A synergistic approach to education makes transitions from the cognitive level, from the micro level to the system level, that is, to the macro level, or vice versa. These transitions

combine closely related aspects of a single process. As is known, the interests of elementary school students are very diverse due to their psychological and pedagogical characteristics. They are not very capable of passing the acquired knowledge through the filter of thinking. A synergistic approach to education creates the need to link, compare and harmonize what has been studied. This is one of the issues that are necessary in the modern era.

**Keywords:** education; synergistic approach; educational process; students; primary education.

## **INTRODUCTION / ВСТУП**

**Statement of the problem / Постановка проблеми.** After the Republic of Azerbaijan gained independence, the changes that occurred in all spheres of life in our society, democratic processes, reconstruction of the economy and management, development of all public life, require a new approach to education. Before gaining independence, like all countries that were part of the Soviet Union, Azerbaijan was in a closed system, isolated from the civilized countries of the world, and lived under conditions of complete information blockade.

The change in social relations in Azerbaijani society (the abolition of the totalitarian regime), the creation of an independent republic, the abundance of information, scientific and technological progress, and the renewal of the content of education in the education system led to the creation of the Concept of General Education in the Republic of Azerbaijan – a conceptual document of the National Curriculum. The existence of an education system with a non-linear way of thinking based on thinking and imagination, instead of a linear one based on memory, has become inevitable.

The ability of nonlinear thinking has become one of the main criteria for human development. Mastery of the nonlinear method of movement (or synergetic approach) leads to skillful and rational behavior with complex systems, understanding of ways to optimize one's activities in conditions of non-standard development of various phenomena of the surrounding world. The objectives of the synergetic approach to education are:

- the unity of nature, society and man, the laws of the biosphere;
- interaction between society, nature and humans;
- basic universal human problems, ways and methods of solving them;
- development of intellectual and practical skills in studying the evolution of the environment and providing knowledge about the improvement of nature, society and the human condition;

- spiritual and material world, motives, needs, environmental and culturally conscious habits of behavior, education of the individual in the field of active practical activity aimed at the coordinated development of man, society and nature;
- probabilistic and nonlinear analysis in non-standard situations, development of alternative thinking abilities when choosing methods for solving universal problems;
- the formation of a non-linear way of thinking, a personal attitude towards the world around us, the ability to choose a direction in a technologically changing world;
- integration of natural and human sciences, aimed at understanding and solving universal human problems;
- training in methods of synergetic analysis, forecasting and modeling of the development of specific events in which social and natural factors interact.

In the pedagogical process, synergetics reveals the need to comprehend and generalize both theory, approach, and research methods.

One of the issues that makes this study relevant is the inclusion on the agenda of the fact that a synergistic approach to the educational activities of primary school students participating in the study is a responsible issue and the importance of systematic education.

A synergistic approach to education creates in students the need to develop a worldview, creative determination, a tendency toward collectivism, and the ability to work in an epistemological environment.

The modern era sets the school the task of creating the opportunity for the younger generation to act independently, think, become the author of new ideas, and be able to pass the upcoming work through the filter of imagination. An important condition for the problem is a synergistic approach to education. Since synergetics represents provisions, ideas, principles and has a system of ideas and carries the content of a new methodological approach.

Synergetic educational methodology can manifest itself in different ways. It reflects itself as a set of problems, such as reflections on theory, the form of approach to science, and research methods.

The methodology of synergetics of education includes the foundations and structure of the theory of subjects, principles and methods of approaching the acquisition of knowledge, reflecting pedagogical reality, as well as activities to acquire such knowledge, assessment of the quality of programs, logical methods, research work, that is, the methodological foundations of synergetics of education are the theory knowledge, patterns of development of society and science, the formation of man and his thinking, philosophical, psychological and

pedagogical theories about national and universal values, their unity and a systematic approach to them.

Conducted research shows that integration occupies an important place among the issues that ensure educational success. With the help of integration, you can interact knowledge with each other, analyze and generalize what you have learned. Coordinated teaching of subjects serves to establish and shape collective cooperation and communication. The knowledge acquired during the learning process is included in the content of the knowledge they acquired outside of school, and new content is given to it. The synergy of education plays a major role in solving this problem. Because synergetics itself has a number of methods consisting of the integration of several fundamental sciences. Naturally, synergetics does not use any integrative method, but methods arising from necessity, based on a certain choice. Thus, today there is a great need for the use of synergistic methods in teaching.

The synergetic approach to education considers it important to have the problem of collective unity. The implementation of any issue under study creates the opportunity to train the team in various situations. In this process, interaction, understanding, structure, chaos, order, etc. arise. The presence of such concepts is a necessary condition. The team unites around socially beneficial goals in space and time, works together in the same process to achieve these goals, creates relationships and establishes responsible relationships. Participants exchange ideas with each other, share them, and accept the best. This situation is one of the issues accepted by the synergetics of education.

**Analysis of (major) recent research and publications / Аналіз (основних) останніх досліджень і публікацій.** Research shows that a synergistic approach to education is one of the necessary objectives that motivate educational success. The much-needed synergistic approach to education has not yet been fully explored. Many scientific and philosophical studies have been conducted on synergetics. In Azerbaijan, such scientists as A. Abbasov [1], F. Gurbanov [8], A. Mamedov [9], foreign teachers G. Haken [18], V. Arshinov [13], V. Budanov [14], E. Knyazeva [16], I. Larionov [17] and others explained the scientific and philosophical essence of synergetics and dealt with its philosophical direction.

In an article by Azerbaijani professors A. Mamedova [9], M. Zamanova [12] and R. Samedova [11] “Synergetic educational models and their role in education”, the main goal is to study the possibilities of applying synergetic principles to modern educational models. The implementation of this goal is carried out in two directions: in the first direction, the basic concepts and ideas of the theory of complex self-organization (synergetics) are analyzed, in the

second direction, the role of synergetics in modern educational models, and also the issues of innovative teaching are highlighted, which substantiates the importance of creative thinking.

Attitude of F. Gurbanov [8] to the principles of synergetics is expressed in a somewhat different way in the research work “Philosophical and methodological analysis as a scientific method of thinking about the synergetic approach.” According to F. Gurbanov, the peculiarity attached to the synergetic approach should be reflected in such a way that it does not exist in other areas of science, but belongs only to synergetic knowledge.

True, the history of the introduction of the problem of synergetics into science is long, and the explanation of its philosophical orientation is not a new issue, but its study and research in relation to education is a new, unexplored area.

### **AIM AND TASKS / МЕТА ТА ЗАВДАННЯ**

The *purpose* of the article is to study the theoretical issues of the synergetic approach to learning, determine the meaning of the systemic-synergetic approach to learning, as well as systematize the theoretical and practical issues of the synergetic approach to preparing children for learning in the family.

The *objectives* of the study are:

- determination of the content, essence and significance of the synergetic approach to education at the primary school level;
- study and analyze scientific, pedagogical and methodological literature on the problem;
- to determine the possibilities and ways of a synergistic approach to education in the educational process;
- determine the role of synergy in the formation of cognitive activity of younger schoolchildren;
- apply the principles of a synergetic approach to learning at the primary school level;
- determination of the importance of the role of a synergetic approach to education in organizing joint activities of primary school staff;
- conducting an experimental study of the synergistic possibilities of the dynamics of student collective movement.

### **THEORETICAL FRAMEWORK / ТЕОРЕТИЧНІ ОСНОВИ**

The 21st century is considered the century of technology. Countries of the world see their development (scientific potential, competitiveness) primarily in technology. The victory of our glorious army under the leadership of the

Supreme Commander-in-Chief in the 44-day Patriotic War is a vivid example of the use of thoughtful tactics and new innovative technological weapons.

The subject "Technology", taught in primary classes, helps young schoolchildren prepare for situations that they often encounter in their future lives. The technology takes into account creative thinking, connections between events and processes, the need for understanding and the ability to synergistically approach problem situations in younger schoolchildren. Technology is an integrative subject. The subject of technology is related to the subjects of Azerbaijani language, World Knowledge, Fine Arts, Music and Mathematics. The connection between humanitarian subjects and science subjects, the application of theoretical knowledge and practical knowledge constitutes unity. The systemic and synergistic study of the subject forms the basis of scientific research work. This system includes components of the Technology subject.

Technology is one of the most favorite subjects of primary school children. This subject is of great importance in the development of fine motor skills and creative thinking.

Let's consider the topic "What and how we do it" [3] in the textbook "Technology" for 1st grade.

«1.3. Prepares various products from given materials (paper, cardboard, fabric, plasticine).

1.3.4. Demonstrates teamwork and collaboration skills during group food preparation».

In this subject, students use different materials (plasticine, paper, etc.) to crush, measure, fold, make, cut, join, etc. Using such operations, they collaborate in pairs and groups.

As a result of joint activities, young schoolchildren in the subject "Technology" use creative thinking and prepare certain products. Younger schoolchildren are in the process of developing joint activity skills. In general, working in a team in later periods of a person's life creates the basis for achieving collective achievements, regardless of profession. Activities such as thinking together, learning together, and working together to achieve results indicate a synergistic approach to this topic.

The topic is "Rules of Self-Service and Sanitary Hygiene" in the 2nd grade technology textbook [4].

«3.1. Demonstrates mastery of basic household skills.

3.1.1. He explains his ideas about self-care and the rules of sanitary and hygienic education simply».

In these topics, students learn about self-care and hygiene practices. For

younger schoolchildren, these rules are associated with self-organization.

The topic “Ground and underground machines” in the textbook “Technology” of the third grade [5].

«2.1. Demonstrates understanding of process machines and process tools.

2.1.2. Distinguishes technological means (tools, mechanical tools) from each other».

On these topics, students mainly use the connection between man and nature, the use of above-ground and underground machines as a system for helping people, facilitating their work, traveling long distances, construction, etc., shows the importance of synergistic interaction.

The topic “Robotics” [6] of the fourth grade textbook “Technology” talks about robots with artificial intelligence created in the last period. For example, (robot Sofia) was in Baku in 2018. The pros and cons of robots are mentioned in the topic. Robots, a product of the human brain, once again prove the importance of simplifying human work through the collaboration of scientists.

STEM (Science, Technology, Engineering, Math), included as a project in the education system of Azerbaijan, is perceived with interest by schoolchildren. This project greatly contributes to the development of students' practical life skills that arise from the interaction of humanities and science subjects. This project method plays an important role in developing a personality with initiative, self-confidence, creative, logical and critical thinking, with 21st century competencies.

Every person who opens his eyes to the world grows up with a sense of music, that is, with the “Lullabies” that our mothers sing in a sad voice, grows up, turns from a biological being into a social being in society. The subject “Music” in primary school is a means of national propaganda, forming patriotism and national identity among younger schoolchildren.

The feeling of the Azerbaijani people with rich culture and ancient history brings our national music to the whole world with the help of musical instruments such as saz, gaval, kamancha, zurna, balaban. Choral culture, joint activities (synergic approach) in music lessons express the will, determination and unity of people. The singing of the anthem by the choir before the start of a lesson in primary school instills a feeling of love for the people.

As in all subjects, in the visual arts there are great opportunities for a synergistic approach to education. What is fine art? How people create works of art. Beauty of nature, blessings of nature, houses made by nature, patterns of earth etc. subjects (Class I) have great potential in terms of synergistic approach to education. This science, which speaks about the beauty of nature, the essence of fine art, the work of the individuals who created this art, the creations of

nature and people, the possibilities of art, is important in determining the possibilities of a synergistic approach to education.

The teacher, by giving the task to describe what he wants to see in the picture and draw an image on the picture, directly creates the basis for students' independent thinking, i.e., their cognitive activity, creative thinking, and the development of their imagination increase. The activity of the team regarding the text, their involvement in practical work can reveal the possibilities of a synergistic approach to education. Providing the benefits of nature as a continuation of the text helps deepen students' learning. Depicting fruits, vegetables, and artwork in text helps to highlight students' ability to talk or write about the size and color of fruits and vegetables and distinguish their shapes from each other, which necessitates a synergistic approach to education.

The topic, revealed under the title "Let's think – let's discuss," creates an opportunity for students to think creatively and engage in practical work in this direction. To solve the problem, it is important to provide images of national costumes in the text. The text reads: How are the clothes you see different from our everyday clothes? What can you say about their shape, size, colors and decorations? Some people wear national costumes on special occasions. Each nation has its own national costumes and patterns that decorate these costumes [7].

These provisions are not just a methodological view or principles and guidelines, it is a question that characterizes synergetics as a new approach.

From the point of view of a synergetic approach to education, fine arts subjects in grades III–IV of primary school have great potential. Topics such as "Warm and cold colors", "Contrast of colors in nature", "Mood of color in nature", "Human decorations", "Carpet patterns", "Museums", "Park", "Garden", "Boulevard" and others including the creation of man, the variety of buildings, the colorful nature of our native land, the blessings of our land, the peoples of our country, the customs of our country, ancient temples, bridges, caravanserais, folk art of our native country, etc. (classes also allow us to implement a synergistic approach to education. Primary school teachers, when teaching these subjects, primarily pay attention to the following:

1. Must know folk art;
2. We must study our historical past;
3. Must be able to see the uniqueness of the art world;
4. Must feel the beauty of antique carpets, clothes, objects and pearls;
5. Know folk artists and their works;
6. Students should have the opportunity to see the children's world;
7. Must be able to reconcile the past with the present;
8. Must see students' creative thinking abilities and be able to evaluate



them correctly. If a teacher can fulfill these requirements, then he will successfully implement a synergistic approach to education.

All this shows that a significant part of the texts presented in music textbooks of grades I–IV have great potential from the point of view of a synergetic approach to education. In solving this problem, a big role belongs to teachers who know how to interact with students.

### **RESEARCH METHODS / МЕТОДИ ДОСЛІДЖЕННЯ**

The following research methods were used in the article:

- in connection with the problem under study, subject curricula, textbooks, scientific and pedagogical literature on the subjects: Azerbaijani language, Knowledge of the world, Technology, Fine Arts and Music were studied and analyzed;
- theoretical (analysis and synthesis, generalization, comparison, specification, etc.);
- empirical (pedagogical observation, interview, survey, conversation);
- experiment (defining, creative-changing, testing).

### **RESEARCH RESULTS / РЕЗУЛЬТАТИ ДОСЛІДЖЕННЯ**

Summing up what was said throughout the study, we can come to the following conclusion.

Updating the content of education, scientific and technological progress, integration into the global education system require a new approach to learning. For this reason, a synergistic approach is the need of the hour for the success of the educational process. It is impossible to develop a well-rounded personality without a self-organizing linear thinking style based on logic and imagination, rather than a linear thinking style based on memory. Several schools have emerged in the world education system that help develop a synergistic approach. Holders of great intelligence – physicists, biologists, chemists, mathematicians, biophysicists – put forward valuable propositions about the synergistic approach, monographs and articles were written. From a pedagogical point of view, fundamental research has not been carried out in our republic.

In accordance with the purpose, object and subject of the study, specific tasks and issues to be solved were studied in the following areas. The first is a scientific-theoretical methodological direction. The essence of the first synergetic approach in question, the history of its development, an analysis of the current problem of our time, its goals, objectives, principles, as well as its place in pedagogical and psychological literature have been studied. Based on the challenges of the 21st century, the didactic principles and tasks of a synergetic approach to education are studied.

Synergetics is considered as a theory of self-organization, a special harmony of order and chaos, a new scientific worldview, a modern paradigm, modern methodology, a new scientific direction, a new language of scientific knowledge. The synergistic new ideology was examined as an activity of teachers, students and parents of stakeholders in the field of education.

A synergistic approach to education in modern times promotes independent decision-making, creative, logical, critical thinking of students, joint activities, the dynamics of teaching subjects, and understanding of the world as an integral being.

## **CONCLUSIONS / ВИСНОВКИ**

Synergetics is a new scientific direction, methodology, theory of self-organization and paradigm in research that studies complex systems. It has been studied that the education system is complex, open, self-organizing, unstable and unequal. The joint activity of students, teachers and parents at the stage of family preparation is one of the important conditions for achieving success in the educational process.

Conducted research shows that one of the ways to achieve success in student learning is strict control over the completion of children's homework in the family and the essence of the synergistic approach. The pedagogical content of the family is based on its organization as a pedagogical system, the essence of its impact on children. Thus, the family must understand the importance of the subsystem "family-child", "parent-support", "child-parent", "family-means", "parent-child" when preparing children for educational activities and keep this in mind.

As a result of the study, it became clear that in the modern era, the all-round development of students remains the main issue on the agenda. In this case, the family also bears a great responsibility. The family is responsible for effectively organizing children's education and preparing them for school. In this process, the family has a fundamental influence on both the learning and upbringing of children, controlling preparation for schooling and implementing a synergistic approach to education. So, along with the transfer of knowledge and skills, this also forms in them a sense of responsibility, attentive listening to adults, independent work, respect and love for family.

In accordance with the object of the study, using the example of teaching subjects taught at the primary school level, the possibilities of a synergistic approach to teaching in primary grades and ways of using it were studied. From the point of view of a synergetic approach to education, an analysis of teaching methods was carried out.

**Future Research Directions Prospects for further research in this direction / Перспективи подальших досліджень у цьому напрямі.**

Synergetics is the basis of a new type of scientific worldview. Synergetics of education includes a new type of methodology. A synergetic approach to learning involves a new scientific direction of the problem under study. The new sciences include a synergistic approach to education.

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## **РОЛЬ СИНЕРГЕТИЧНОГО ПІДХОДУ У НАВЧАННІ ТЕХНОЛОГІЙ, ОБРАЗОТВОРЧОГО МИСТЕЦТВА ТА МУЗИКИ**

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**Анотація.** У процесі динамічного розвитку сучасного світу освіта в умовах глобалізації має бути спрямована на формування усебічно розвиваючої особистості, готової до вирішення різноманітних завдань. Якщо раніше основною метою школи було формування особистості з науковими здібностями, то тепер глобальною метою освіти є досягнення загального розвитку кожної людини, включаючи розвиток усіх складових особистості. Національна освітня програма спрямована на розвиток особистості, яка розвивається, володіє інформаційною незалежністю, приймає нестандартні рішення, розуміє багатогранність проблем взаємодії суспільства і природи, здатна вирішувати глобальні проблеми сучасності. Усебічно розвиватися особистість починає зі школи. Процес навчання на рівні початкової освіти створює основу для засвоєння знань, формування вмінь і навичок. При цьому процес навчання має бути орієнтований на повне і цілісне вивчення світобудови, засноване на інтеграції, яка є одним із основних принципів навчального предмета, управління розумовою діяльністю, спрямованою на розвиток мислення. Синергетичний підхід до освіти – це формування в учнів синергетичних цінностей шляхом навчання основам теорії самоорганізації. Навчання основам синергетики допомагає учням гармонійно розвиватися та рости як особистості. Синергетичний підхід до освіти вважає важливим врахування через предмети, що викладаються, єдності спільних проблем різних наукових галузей. Це дозволяє учням реалістично підходити до проблеми,

намагатися досконало засвоїти предмети, досягати здатності оволодівати науками дослідження та координації. Синергетичний підхід до освіти здійснює переходи від когнітивного рівня, від мікрорівня до системного рівня, тобто до макрорівня, або навпаки. Ці переходи поєднують тісно пов'язані аспекти одного процесу. Як відомо, інтереси учнів початкової школи дуже різноманітні, що зумовлено їх психолого-педагогічними особливостями. Вони не дуже вміють пропускати набуті знання через фільтр мислення. Синергетичний підхід до освіти створює потребу зв'язувати, порівнювати та гармонізувати вивчене. Це одне з питань, які необхідні в сучасну епоху.

**Ключові слова:** освіта; синергетичний підхід; освітній процес; студенти; початкова освіта.

#### **TRANSLATED AND TRANSLITERATED / ПЕРЕКЛАД, ТРАНСЛІТЕРАЦІЯ**

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