

SYNERGETIC APPROACH IN THE EDUCATION SYSTEM

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Abstract. *The article analyzes the education system in relation to synergetics and the role that it can play in transformative processes, changing views on the learning process and pedagogical activity. Synergetics as a methodology, a scientific picture of the world that connects many sciences and gives a holistic, panoramic picture will allow you to see the opportunities and prospects of future education.*

Keywords: *synergetics, education system, interdisciplinarity, post-non-classics, nonlinearity, self-education, self-learning, traditional education, innovative education.*

Synergetics as a method, principle, idea, and today as a science, methodology, general scientific picture of the world (V.G. Budanov) has been developed in modern natural sciences and the humanities. Being a relatively young discipline, synergetics has gone through a certain stage of development and even some transformation. The initial stage of development of synergetics was characterized by the popularity and intensity of published works. Then the activity subsided somewhat, but at the present stage new directions have appeared: economic synergy, social synergy, innovation synergy, psycho-synergetics. «If earlier each of the creators of synergetics, being at the same time a physicist, mathematician and philosopher, happily combined these qualities, often intuitively, today, with an increase in the complexity of tasks, this is all manifested and divided, carried out in specific projects, in multidisciplinary communities by different people, using network communication methods and philosophical reflection» [2. 51].

Synergetics is understood as a post-non-classical paradigm, a post-non-classical stage of science after the classical and non-classical scientific paradigms. V.G. Budanov presented a vivid vision of the role and place of synergetics in modern science: the center of the intersection of mathematics, disciplines and philosophy. «... synergetics is in dialogue and tries to associate other modern scenarios of interdisciplinary synthesis, such as the philosophy of becoming, evolutionary epistemology, cognitive science, reflexive control, artificial intelligence theory, trialectics, integral psychology and medicine, etc.» [3. 18].

Modern realities, in conditions of instability, are unpredictable, polyvariant, contributed to the use of synergetics in the analysis of the social sphere. Synergetics or the theory of self-organization gives a new understanding of animate and inanimate nature, man, his activities, including in the humanitarian and social spheres, socio-synergetics is actively developing. The current stage of modernization and involvement in innovative transformations in the education system demonstrates that it is a complex, open, and difficult to predict system. «Post-non-classical education is in its infancy in the context of open and developing dialogue and communicative interaction with culture against the backdrop of the development of modern digital civilization, technical and scientific culture, modern high information technologies, and the knowledge industry» [8. 54].

Education is the most important part of the social sphere of society, on which the development and prospects of the future state depend, which stimulated the development of social

synergy. The relationship between synergetics and education is studied from two positions: the method and content of education. V.G. Glushko identifies two aspects in the relationship between synergetics and education. «In the first case, we can talk about a synergetic approach to education, about the analysis of the educational and pedagogical process of education and upbringing. In the second - about teaching synergistic knowledge and the formation of a synergistic view of the world» [4. 6].

The reforms carried out in the education system reflect its complexity, instability, non-linearity, as the instability of non-equilibrium systems. The education system is open, as it is interconnected with various spheres and activities of society. Search for the most optimal forms, methods and the entire system as a whole at the bifurcation point. Non-linear thinking is necessary in crisis situations, in conditions of uncertainty and multi-variant development. In pedagogy, non-linear thinking is necessary for a holistic perception of the surrounding world and a person, the ability to solve problems with indefinite content.

The main features of non-linear thinking are:

«1) the ability to argue one's position at the same time, the willingness to consider an alternative one;

2) a holistic view of the world, the ability to see the interdependence between various processes;

3) versatility (approach to the problem from different angles, willingness to accept and objectively analyze the opposite point of view);

4) willingness to solve problems in situations of uncertainty, when it is necessary to take into account and consider a fan of possible consequences;

5) complementarity (unity of conscious and unconscious, intellectual emotional, rational and intuitive)» [5. 27].

The main characteristics of the non-linear style of thinking are:

«● criticality;

● abstractness and notional, combined with the ability to establish relationships between the ideal model and the real process;

● logical rigor, evidence and reasoning, combined with a willingness to consider an alternative position;

● desire to study the nature and essence of concepts and phenomena;

● scale, focus on revealing deep connections and interdependencies between processes and phenomena of various nature;

● versatility (approach to the problem from different angles, readiness for an objective analysis of the opponent's point of view);

● readiness to act in a situation of instability, crisis, when it is often necessary to consider and calculate the fan of possible consequences of actions, taking into account the degree of their consistency with the internal state of the system» [14. 37-38]. Linear thinking is characterized by creativity, logic, imagery, etc.

Close attention to education today is due to the fact that the training of highly qualified personnel, the formation of creative personalities is relevant and vital. "The synergistic approach makes it possible to realize the idea of the creative "embeddedness" of a holistically understood person in the socio-cultural reality" [12. 179]. The synergetic approach explores education as an

open complex self-developing system. “There is an opportunity to apply synergetic modeling, to find new approaches in the field of its self-education and self-training” [4. 7].

Modern education is impossible without information technology. In the analysis of the literature devoted to the problems of pedagogy, positive and negative aspects of the technological effectiveness of education are noted. On the one hand, efficiency, effectiveness, economy are noted, since the modular system is flexible and non-linear, individualized and tailored to the needs of a particular subject. On the other hand, scientists note that the technologization of the educational process leads to the formation of a student's style of thought and action, focused on the norm, standard, which is the opposite of creative, critical, independent thinking.

Distance education is a set of educational technologies used in teaching activities using telecommunications, television and the Internet. A.A. Andreev distinguishes the following technologies of distance education: “case (portfolio) technology, Internet technology, television and satellite technology. A combination of technologies is allowed” [1. 68]. That is, distance education technologies are independent learning, but the educational process is controlled and directed by the teacher.

The works of Indian researchers also note the positive, strengths of e-learning, for example, flexibility in relation to time, place, etc. “E-learning is flexible with time, location and health concerns. This increases the effectiveness of knowledge and skills by providing access to a huge amount of data and improves collaboration, as well as strengthens the relationships that support learning” [15. 3].

A distinctive feature of modern education, many researchers note the focus on self-education, on the ability of the individual to learn in a rapidly changing world and an abundance of various, often conflicting information. The goal of modern pedagogy, many experts see: on teaching how to learn. «A synergistic approach to education lies in stimulating or awakening education, education as a discovery of oneself or cooperation with oneself and with other people” [6. 33]. Education takes place in the interrelation of external and internal resources. “... self-education, self-organization of one's education. That is why the motto of modern pedagogy is to teach children to learn independently» [13. 10].

Traditional education is aimed at the formation of knowledge, skills and abilities, the transmission of ready-made knowledge to students both in schools and universities. “From a synergistic point of view, the learning procedure, the way of communication between the student and the student, the teacher and the student is both mutual cyclic determination and mutual construction, formation and development” [6. 35].

Randomness, as one of the central categories of synergetics, also takes place in education. “Randomness in the pedagogical system represents a departure from rigid curricula, emphasizing the importance of improvisation, intuition, the ability to change the entire scenario of a lesson due to a seemingly random replica of a student or other small event” [10. 20]. M.K. Mamadjonova concludes that “... the analysis of the category of chance in the light of synergetics has an existential and semantic meaning and allows the student to philosophically comprehend his attitude to reality, his idea of his place in the world and life” [11. 16].

The main components of traditional education are knowledge, abilities, skills (KAS). E.A. Solodova notes that in modern education, in addition to knowledge, skills and abilities, activity and personal qualities are necessary. Their interaction forms the competence “... the result of non-linear interaction of KAS against the background of personal qualities in the process of activity.

This is a non-linear addition to KAS, because this is a new high-quality education - emergence" [13. 13]. «Emergent are new, unexpected properties that appear at the dynamic level of the system as a whole, which cannot be "subtracted" from the analysis of the behavior of individual elements» [6. 122]. Complex systems are those in which emergence appears, as the birth of new methods, techniques and technologies in pedagogy.

In an era of rapid and radical changes in various spheres of society, in the conditions of intensive development of high technologies, modernization, and innovation, it is necessary to take into account social problems. As an interdisciplinary and even transnational science, belarusian scientists note that synergetics is able to form a platform for the humanitarian and technological revolution (digital society, digital economy) [7. 59]. «Learning to think synergistically means learning to think in alternatives, assuming the possibility of changing the pace of events unfolding and qualitatively breaking phase transitions in complex systems» [6. 37]. The use of a synergistic approach in the education system will make the learning process creative, informal, and achieve a new goal of teaching how to learn.

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