SYNERGETIC APPROACH TO THE PROCESS OF SELF-ORGANIZATION IN MODERN EDUCATION IN DISTANCE LEARNING

ABORDAGEM SINERGÉTICA PARA O PROCESSO DE AUTO-ORGANIZAÇÃO NA EDUCAÇÃO MODERNA NA MODALIDADE DE APRENDIZAGEM A DISTÂNCIA

ENFOQUE SINÉRGICO DEL PROCESO DE AUTORGANIZACIÓN EN EDUCACIÓN MODERNA EN APRENDIZAJE A DISTANCIA

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ABSTRACT: In the realities of today, when all institutions of higher education are switching to a distance education system, it is necessary to find the main pedagogical motivational incentives for students. For a full scientific understanding of modern educational challenges, new, non-standard pedagogical approaches are required, which will help to open up wide opportunities for modeling an innovative educational process in the context of distance learning using new approaches, in particular the synergetic, which has traditionally been applied to exact and natural Sciences and is a new self-organizing system.

KEYWORDS: Modern challenges. Pedagogical approaches. Distance education. Student youth. Synergetic approach. Education. Educational activity. Self-organization.

***RESUMO**: Na realidade de hoje, quando todas as instituições de ensino superior estão migrando para o sistema de educação a distância, é necessário encontrar os principais incentivos pedagógico-motivacionais para os alunos. Para uma compreensão científica completa dos desafios educacionais modernos, novas abordagens pedagógicas não padronizadas são necessárias, que poderão ajudar a abrir amplas oportunidades para modelagem de processos educacionais inovadores no contexto da educação a distância usando novas abordagens, em particular sinergéticas, que tradicionalmente tem sido aplicado às ciências exatas e naturais e é um novo sistema de auto-organização.*

***PALAVRAS-CHAVE**: Desafios modernos. Abordagens pedagógicas. Educação a distância. Jovens estudantes. Abordagem sinergética. Educação. Atividade educacional. Auto-organização.*

***RESUMEN**: En la realidad actual, cuando todas las instituciones educativas de educación superior están cambiando a un sistema de educación a distancia, es necesario encontrar los*

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principales incentivos pedagógicos motivacionales para los estudiantes. Para una comprensión científica completa de los desafíos educativos modernos, se requieren enfoques pedagógicos nuevos y no estándar, que ayudarán a abrir amplias oportunidades para modelar procesos educativos innovadores en el contexto del aprendizaje a distancia utilizando nuevos enfoques, en particular sinérgicos, que tradicionalmente Se ha aplicado a las Ciencias Exactas y Naturales y es un nuevo sistema autoorganizado.

***PALABRAS CLAVE**: Retos modernos. Enfoques pedagógicos. Educación a distancia. Juventud estudiantil. Enfoque sinérgico. Educación. Actividad educativa. Autoorganización.*

Introduction

As known, today, in the context of general globalization in the economic, social, and financial spheres of society, it becomes obvious that the education system is at the crossroads, when outdated educational platforms are crumbling, at the same time the modern system is just beginning to form as a new educational paradigm. Several changes that will inevitably appear to replace the already outdated pedagogical forms of work and will require a rethink of the attitudes and views that have been established for decades. It is difficult to foresee what the effect will be, but it can be argued for sure that a synergetic paradigm will come to the fore, supporting harmonious entering the interdisciplinary knowledge field, which, according to all preconditions, will take the main place in modern pedagogical science.

It is known that the scientific community has been considering the issue of revising scientific passports of specialties in pedagogical sciences for a long time, at all levels of government, in the circles of scientists this issue today occupies a serious place in its relevance. And the project which is introduced today as an innovative view for revising the nomenclature of passports of specialties is a case in point.

It is known that in recent years, almost all dissertation research in pedagogical science is an interdisciplinary work which raises questions not only of a pedagogical nature but also includes terminology and the conceptual apparatus of related areas of knowledge as a multi-ideological content. All this indicates that today, in an era of changes, it is impossible to become fixed on one area, today's world of information imposes conditions under which detailed and open research in its essence is interesting. And therefore, it is the synergetic approach being perceived with caution by the pedagogical community at the end of the last century that will be unambiguously conquering key sense-bearing positions in education as a whole.

Methodology

The use of a synergistic approach in pedagogical content knowledge, the pedagogy of higher education included, was presented in the works of scientists, our compatriots, who laid the cornerstone in the future foundation of a synergistic approach in education.

Synergetics is a new area of research, which, according to the just statement of a number of scholars, "can act as a methodological basis for forecasting and management activities in the modern world" (KNYAZEVA; KURDYUMOV, 1993).

The works by V. I. Andreev, R. G. Barantsev, A. D. Zharkov, V. N. Korchagin, O. A. Kalimullina, V. S. Maslennikova, N. M. Talanchuk, P. E. Reshetnikov and others. It is important that the professional origins of this approach belong to Nikolai Mikhailovich Talanchuk, whose ideas of application of the synergetic approach in pedagogy began to spread further in Russia, as the first attempts to use physical and mathematical terminology in pedagogy in connection with conceptual apparatus of pedagogical science. Some of these scholars suggest considering the pedagogical system as a dissipative structure that exists under the condition of constant exchange with the environment: material resources, energy, information. Using this exchange, the pedagogical system maintains low entropy (a kind of orderliness) by virtue of the existing disorder in the external environment. The integration of chaos and order in a dissipative structure has some aspects:

- "order" can exist by virtue of "chaos" that is introduced into the environment;
- the pedagogical system can adequately respond to the effects of environmental "chaos" and thus hold steady only thanks to "order". The conceptual provisions of the synergetic approach highlight, as already mentioned, the main regularities for all social phenomena, where nonlinearity, unevenness, fluctuation and bifurcation actions dominate. As you know, the status of synergetics as a science in various fields of scientific knowledge suggests that the theory of self-organization is a direct interdisciplinary endeavor. As a research area and a concrete discipline, synergetics is being realized at the present stage in two directions: firstly, in a specific process of convergence of technical and humanitarian worldviews and, secondly, in changing the structuring of scientific knowledge (KALIMULLINA, 2013). And yet, the founder of the new direction is H. Haken, who said, "I called the new discipline "synergetics" not only because it explores the joint action of many elements of systems, but also because the cooperation of many different disciplines is necessary to find common principles governing self-organization" (HAKEN, 1980; HAKEN, 1985).

Discussion

Today, when almost the whole world is under stay-at-home order, when the word "remote" already sounds like something self-evident, the entire scientific community begins to ask the question about the quality of the proposed educational product that we offer to schoolchildren, students, masters, graduate students. Answering the questions posed by time, we can again speak of a synergetic approach to solve these issues, because it is the synergetic approach that is applicable to the problems of pedagogical systems based on nonlinear systems in the educational process.

The tasks of pedagogical science are teaching, upbringing, development and self-development of a young person as an individual who tries to independently enter society with their knowledge, skills, basic professional ideas, in which the civil and patriotic foundations of a citizen of Russia are laid. In today's time realities, training into self-training and education into self-education. The transition of a young person "being organized" to a "self-organizing" personality is non-linear, i.e., inherently synergistic.

From the perspective of a synergetic approach, the process of becoming a young person, the transformation into a personality, is similar to the process of the birth of order from disorder. This is one of the main concepts of synergetics, when insight, enlightment, something very special can be born out of chaos, but on the contrary, nothing can appear, an idea can get some kind of zeroing out. In any pedagogical activity, which today is a self-organizing structure, the relationship in it is of a non-linear, self-organizing nature. Based on the foregoing, we can confidently assert that the synergetic approach as an interdisciplinary phenomenon is logical to the application in the modern pedagogical situation. It provides special means for steering modern youth on the right course, giving a certain vector of motivation-need attitudes of young people in the process of distance education. Through a synergistic approach in the educational process, it is possible to create such conditions to meet the basic creative needs of the student's modern personality, using non-standard techniques and methods of work that will be put to good use by students and essential and sufficient in the theory and practice of pedagogical science.

The primary purpose of training from the point of view of synergetics is the adaptation of graduates to independent life in society and to independent professional activity (MANAKOV; GUN'KOV, 2017).

But the main thing why it is the synergetic approach that can become the main pedagogical platform is, in our opinion, that because through the interaction of dissipative

structures, which are now actively included in the distance educational process, it is possible to provide motivation and goal setting in the formation of a modern young person – the transformation of the theoretical base into practice. Dissipative systems suggest four levels of methodology that have already formed earlier and entered the practice of pedagogical science: philosophical, general scientific, specific scientific and methodology. We can logically position all these levels as open systems interacting with each other with a whole set of synergistic foundations.

In crisis situations, one of which we are now observing, important and essential are nonlinear methods which include the process of self-organization as one of the main scientific elements, and self-organization and synergetism are the phenomena, properties of objective reality. Today, when the modern educational paradigm is such that the success of the entire structured educational process can depend on self-organization, I would like to cite the words of prominent scientist Prigozhin (1986), who said:

> Self-organization is the growth and development of a new structure, the development of mechanisms and tools, the creation of organizational structures that ensure interaction not in vertical direction of hierarchies, but in horizontal direction of the active constituent elements of the system. Synergetics as a scientific paradigm, as a worldview, as a theory, as an area of research is a proposal for solving complex problems with allowance for new realities.

Today, the entire education system, the so-called “distant”, is part of a self-organizing system, which includes various educational substructures and superstructures. In the case of a modern system in education, self-organization is the formation, development and inclusion of a new structure in the overall integrated process, including the development of various mechanisms and tools, the creation of organizational structures that ensure interaction not in vertical direction of hierarchies, but in horizontal direction of active constituent elements of the whole systems. New digital educational technologies in university academic environment in terms of projecting the scientific and educational space are coupled with the generation and use of implicit knowledge, which is less structured and algorithmic in contrast to explicit knowledge (HAJRUTDINOV, 2020).

Today, the statement of prominent scientist who stood at the origins of synergetic science:

> Today, in synergetics itself one can distinguish several parallel layers of its existence in modern culture, arranged according to the degree of increasing the level of abstractness: subdisciplinary – the profane consciousness of everyday practices; disciplinary – the processes of individual creativity and

> development of disciplinary knowledge and research objects; interdisciplinary – the processes of interdisciplinary communication and transfer of knowledge in the dialogues of disciplines, pedagogy and education, when making decisions; transdisciplinary – the processes of assembly, self-organization and functioning of large interdisciplinary projects, interdisciplinary communication languages, the nature of the emergence of interdisciplinary invariants, quasi-universals, collective intelligence, network thinking. Superdisciplinary – the processes of creativity, formation of philosophical knowledge, development of science and culture. In each of these layers of communication practices synergetics has special traditions of application. These traditions are quite scientific and methodologically developed at the disciplinary level, especially for natural sciences (BUDANOV, s/a).

The sequence and priority of the teacher's roles in the syncretic activity in the teaching process have been revealed. The psychological structure of the teacher's syncretic activity has been clarified from the point of view of the requirements for teacher's personality with an explanation of the set of skills that the teacher of a higher education institution should have (DROZDOVA *et al.,* 2021).

Summary

To gain a thorough scientific understanding of modern educational challenges, new non-standard pedagogical approaches are required, which will facilitate modeling innovative educational processes in the context of distance learning using new approaches, in particular synergistic ones, which are traditionally applied to the exact and natural sciences.

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