

Innovative Methods in Education

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Nowadays, there is a wide range of understanding of synergetics in different contexts, but the present paper deals with pedagogical synergetics. Pedagogical literature doesn't have a definite determination of the term "pedagogical synergetics". This is explained by the fact that neither pedagogical synergetics has not been fully formed nor conceptual and categorical framework has been fully developed yet.

The global civilizational crisis of the end of the XXth century is determined by two major reasons. First of all, we entered into the "epoch of bifurcation, which is born by unification of many cyclical processes, at the same time, by the increasing rates of self-organization of a new informational society, mechanisms of which may become the warrantors of crisis recovery.

The crisis of the modern system of education is a part of the global crisis and is determined by the orientation to the narrow disciplinary approach without horizontal links or differentiation between humanitarian and natural-science disciplines.

These differentiations limit people to react adequately to the increasing ecological crisis and instability of political and economic situations. We can't consider the problems in complex or to understand links between the subjects being in different spheres of our mind.

Nowadays, the destiny of the civilization can't be determined by the governments, the international organizations or the scientists up to the moment of the population or, using synergetic terminology, self-organizing community, support of their activities.

A new scientific direction, known as the synergetics, was formed in the last quarter of the XXth century. The science began to consider synergetics which contains the theory of self-organizing and integrity of appropriate mathematical methods.

The new direction of the scientific researches – synergetics – has a special statute. It is interdisciplinary, because it is aimed at display of the laws of self-organizing and co-evolution of the difficult systems of any nature, regardless the nature of its compound elements.

This determines the specific role of synergetics in the system of education. Nowadays, synergetic research works exceeds the frames of natural-science knowledge and the spheres of mathematical physics, laser physics, plasma physics and physical chemistry, in which the basic synergetic models were developed. Synergetics is fruitfully applied in human nature, culture and society researches, in neurobiology, neuroimmunology, cognitive psychology and perceptual psychology, different spheres of medicine, economy, sociology, science and cultural studies.

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The system of education may be considered as the open one, because, firstly, it contains a constant process of informational exchange (knowledge) between the teacher and the students (feedback) and the process of informational goal-seeking, causing new aims, methods and means of teaching. At the same time, the content of education is changing, which doesn't correspond to the system of knowledge and skills of the trainees at the current moment, causing nonlinearity of the process and the results. Thus, the results of educational process significantly differ from intentions of its participants. It also should be noted, that constantly increasing educational informational space breaks the stability of the system.

Thus, we refer synergetics, which relies on the principle of the world evolving under nonlinear laws. In the wide sense, this idea may be displayed in multivariance or alternativeness of choice.

In the sphere of education multivariance means the creation of conditions for choice and giving each participant the possibility of the individual way to success and decision making, provision development of alternative and independent way. Put it differently, such choice incorporates in possibility to determine individual trajectory of education, rate of studies and to achieve different levels of education, to choose the type of educational institutions, disciplines, teachers, forms and methods of study, creative tasks, etc. In our opinion synergetic concept gives possibility to renew scientific-pedagogical knowledge. It aims us at multidimensionality complexity and polyphony (alternativeness and variability) of perception processes, discovery of unknown or less known conditions, and recognition of a significant role of chance in their development.

Thus, synergetics may become as the methodological background for forecasting and managerial activity in the modern world. Synergetics is aimed at the search for universal laws of evolution of open unequal systems of any nature.

Using synergetic ideas, it becomes clear, that complex systems should not be forced in their ways of development, at the same time, synergetics shows that each complex system as the rule has not only one, but variety of its own ways, corresponding its own nature, synergetics also demonstrates that chaos may become the mechanism of self-organizing and self-development of the structures.

In that connection, creation of the new course of teaching, being not a mechanical linking of traditional courses of physics, chemistry, biology and ecology, but presenting a result of interdisciplinary synthesis on the basis of interrelated historical-philosophic, cultural and evolutionary synergetic approach of the modern natural science, is an important task.

Its teaching became possible on the background of a new paradigm, able to unify natural-science and humanitarian components of culture and awareness of universal role of meta language, synthesizing fundamental laws of natural science, philosophy and synergetics.

Education process foresees three directions:

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1. Synergetics for education - integrative courses of synergetics at secondary and high schools after completion of the appropriate cycle of - preparatory school, primary school, secondary school, the cycle of fundamental disciplines, post-graduate studies, faculty for teachers' refreshment and upgrade qualifications, life-long

education. It should be started by creation of teaching literature and special FPK streams. This is the way of the spiral ascend on the levels of awareness of the world integrity.

2. Synergetics in education – involvement of material, illustrating the principles of synergetics in to the proper disciplines. The sections, studying the processes of establishment and creation of a new, may be found in each natural-science or humanitarian discipline, at the same time, the language of synergetics should be used simultaneously with traditional one, giving possibility to create a horizontal field of interdisciplinary dialogue, the field of integrity of the science and culture.
3. Synergetics of education – synergetics of the educational process, achievement of personhood and knowledge. Anthropropic, postnonclassical character of synergetics is displayed in the processes of dialogue and development of self-referential systems. Brilliant examples of pedagogical mastership and proprietary technology are the best samples of application of integral synergetic approaches, nowadays, the problem is not to create a unified methods, but to teach the teachers to create his/her own inherent method and style, being on positions of anthropology.

Synergetics, regardless its future, has already caused expansion of our knowledge and even ignorance about the world. There should be determined different types of knowledge and different types of ignorance. There is a significant difference between our knowledge and ignorance about something and the case, when we know, that we don't know the proper things. The first one doesn't bother us, we perceive ignorance as a matter of course, while the second type of ignorance mobilizes the researchers to find out the reasons of our ignorance. That is why, the process of search for truth is not as simple as we thought, thinking that research is the way from ignorance through hypothesis to knowledge. In reality, the way to the truth foresees awareness of ignorance of something resulting in its following research.