

# **Synergetic Approach to Evaluation of Quality and Efficiency of Modern Educational Technologies**

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Recent educational technologies are multidimensional system of preparing the professionals, which uses in its educational process the most up-to-date results of researches in humanitarian, natural sciences and technical sphere. The scientific and methodic foundations for projecting of the modern educational technologies are the methodological principles of innovational didactics and engineering pedagogics. The modern educational, development and upbringing tasks are being solved using educational technologies based on thorough analysis and high-level corollaries. The educational technologies are treated as actually existing event and a social-didactic process in the module of psychological-pedagogical disciplines. Understanding the complexity of the studying event, its polymodal structure it is necessary to develop new methodological approaches to analysis and evaluation of the phenomenon.

The knowledge engineering suggests that in XXI century there will appear such a metascience combining humanitarian, natural, engineering and technical knowledge. The probable foundation of this science will be synergetics. This term descends from the Greek word «synergeticos» which means «joint», «coordinately working», «jointly co-operated». Synergetics is a new scientific direction, which has an integrating character, combining different fields of sciences – physics, chemistry, biology, psychology, social and pedagogical sciences, astronomy, philosophy, educology with general rules. Synergetics can be treated as a science about

evolution and self-organization of different nature systems. Within its framework the universal laws of evolution true for inanimate substance, biological world, socium, and individuality for the first time. Synergetics allows describing new conceptual foundations for understanding and objective evaluation of quality and efficiency of pedagogical events and educational processes.

Modern educational technologies reflect the essence of the educational process in the higher school and include its innovational features. The quality of modern educational technologies on the basis of comparing the achieved and being researched results of educational activity of all participants of the educational process.

Innovational and didactic system of providing the modern educational technologies is based on integration and structuring the modern scientific knowledge which guarantee the preparation of analytically and system thinking professionals. Innovational and didactic system of providing the modern educational technologies is based on integration and structuring the modern scientific knowledge which guarantee the preparation of analytically and system thinking professionals. There is a necessity in combining of orientations on traditional linear classifications and gnoseological schemes following up the ecological, engineering, technical, social, economical, natural, scientific and spiritual processes with a forecast for future. Authors include in their theory of pedagogical systems and didactics of higher education the principles of non-classical sociology, especially diatropic, synergetic, and personality-oriented. Synergetics, like diatropics, combines social and cultural traditions of different system, gives methodological foundation for creating the new culture of sociological and pedagogical thinking. As a part of methodological synergetic instrument the personality-oriented approach allows all the participants of the educational process to work with the personality like with psychological-pedagogical event whose complexity and

uniqueness can be evaluated by the words of the prominent psychologist of XX century B.G. Ananyev: "It appeared to be easier to invent superintelligent robots than to imagine the appearance of human individuality". Synergetics increases the development possibilities of empiric and methodological foundation of psychology, engineering pedagogics, andragogics, acmeology, and innovational didactics, allows formulating the new characteristics of projecting the authors' science-capacious educational technologies.

Considering the objective modern scientific knowledge peculiarities the authors suggest that modern educational technologies must become the elements of university-internal and international systems of quality of education. It needs to be kept in mind that the quality of education determines its effectiveness and efficiency. When analyzing the subject of the research the objectiveness, reliability and authenticity of evaluation of the educational technologies are considerably determined by synergetic approach. The concept of "educational technology" includes many components. It is considerably broader than the concept of "pedagogical process". The effectiveness of educational technology is determined by educational, development and upbringing processes optimization, which allows receiving the education conforming to the modern demands of socium. The elements of educational technologies conform to the elements of pedagogical system. However, the educational technology is described not only with the structural components, but algorithms of all educational process participants.

The authors suggest to evaluate the quality and efficiency of educational technologies in the technical universities considering the following didactic principles: purposefulness, advisability, deliberateness, scientific, system, acmeologic, and synergetic character, accessibility, consistency, provision of psychological

processes perception, understanding, feedback, and forecasting the new knowledge. It was proven by the psychologists that there are spaces, "gaps" in the information flow, which influences the human, that are filled with meanings and senses. The task of the professor is to consider the didactic features of the process of operating those "gaps" when structuring the educational information. The meaning and the sense of the educational material act as the mediators of the information processes. The aggregation of the subjective and methodological knowledge, outdistancing education and thinking extrapolation allow the students to create the cognitive hypothesis and to build up logical-theoretical shape of the event being studied. The psychological-pedagogical analysis from the point of view of their compulsory and top-priority learning suggests the highlighting the subjective, logical and psychological components or the invariant. The first is associated with regularity, facts and methods of exact scientific discipline, the second – with logical operations and ways of logical thinking, the third – with capabilities of planning, controlling the activity, amending it, and evaluating the final result from the position of conformity of it to the given task.

The modern educational technologies in the technical university will be of a better result on the basis of world understanding (Weltanschauung - German). Empiric synthesizing allows getting corollaries, suitable for all levels of education, pedagogical systems and authors' educational technologies, developments and upbringing. Stochastics and bifurcation in the process of evolution lead to irreversibility and constant growth of variety and complexity of shapes of the animate world. The universal statement is also fair for the animate substance, individuality and socium. There is a constant growth of variety and complexity of systems and technologies. The task of the professors and researchers is to determine the mechanism of unity of the self organization processes,

human' life powers reserve, possibilities of personality development under educational influence, conformity of quality and efficiency of recent educational technologies to general rules of systems development. The considerable contribution to the development of synergetic approach to the pedagogical events and processes study can be made by the technical universities' professors and engineering pedagogics as a science about quality and efficiency of educational technologies and about engineering personnel training systems .

### Literature

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