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Effectiveness of Educational Technologies

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Annotation: The article analyzes the technological approach to training and education. The essence of the technological approach to learning and its development is revealed. The main categories and concepts in the field of educational technology are analyzed. The role and significance of teaching technology in the pedagogical system has been studied.

Keywords: Technological approach, pedagogical innovation, category, pedagogical system.

The results of psychological and pedagogical research and the development of the educational process constantly require generalization and systematization. One of the means to solve this problem is a technological approach.

The technological approach to teaching and upbringing, which originated in the 60-70s of the twentieth century, attracted practicing teachers with the idea of managing the educational process.

Programmed learning contributed to the spread of the technological approach to the educational process.

The idea of a technological approach to the educational process was not immediately accepted. However , interest in educational technologies was growing. Problem-based learning technology was developed in Kazan, and programmed learning was introduced in other regions. In the 70s, V.F.'s technique gained popularity. Shatalov, who created an effective educational technology. With the introduction of educational technologies into practice , the problem of a technological approach to the educational process was developed. The main signs of technologization of the educational process were formulated : unification in the system of mass education and upbringing, standardization, bringing the creative process to a higher level of organization, streamlining the educational system ...

In pedagogical practice, such phenomena arise that characterize the natural and objective movement towards technologization in the educational process too.

An example is the development of technologies for analyzing pedagogical situations, gaming activities, conflict resolution, communication, requirements that did not arise out of nowhere, but by systematizing already known ideas.

The effectiveness of educational technologies depends on pedagogical efforts. These include , first of all, a person's individual abilities, his culture, interests, and hobbies. The nature of educational technologies depends on the attitude towards the child. It determines the type of technology: cooperation, free education, authoritarian .

The rules that make up the technology are a means of realizing respect for the student. The rules can be implemented by any teacher; it is more difficult to comply with all the conditions for treating children with respect, because they reflect the internal worldview position of the teacher.

Modern educational technologies carry out a comprehensive approach, fulfilling the mandatory requirements:

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1. They influence students in three directions - consciousness, feelings and behavior.
2. A positive result is achieved through the organic merging of education and self-education of the individual.
3. Unity and coordination of the efforts of all social institutions related to education - the media, literature, family, school, art, law enforcement agencies, the collective - is an indispensable condition for an integrated approach.
4. Availability of a system of specific educational cases.
5. An integrated approach involves a systematic approach to the process of education and management.

Any modern pedagogical technology is a synthesis of the achievements of pedagogical science and practice, a combination of traditional elements of past experience and what is born of social progress, humanization and democratization of society.

To highlight the structure and functions of educational technology, the principles of its development and design, one should turn to different areas of science and practical activity (production, management, information, pedagogical, etc.), since different technologies are united by a common invariant structure and properties, common approaches to development and implementation of results, principles and patterns of operation.

A distinctive feature of any technology is its systemic nature, manifested in a clear structure and the presence of integrative functions of a given system, in the algorithmic nature of its process and its controllability. Description of pedagogical technologies is a complex matter due to their specific features and stochastic processes in pedagogical systems. This description can be greatly simplified if we compare educational technologies with technological systems in other fields of knowledge. The most important task of such an analysis, carried out by us on the basis of technological literature, is to determine *the essence, structure, functions, types and principles* of technologies.

The essence of the technology lies in finding ways to conduct the technological process that would intensify it and allow achieving the desired results at the lowest cost. Methods of conducting production and other processes are associated with the procedures and operations of the labor process, as well as with certain means. In this case, a procedure is understood as a set of actions through which the main technological process or its individual stages are carried out, and an operation is a practical solution to a problem within the framework of this procedure. The operation is perceived as a homogeneous, logically indivisible part of the process, as a technological unit.

The very concept of “technology” cannot be understood without the concept of “culture”. To identify the connection between “culture” and “technology”, we will use the philosophical definition of culture, which is understood as a system of material and spiritual (suprabiological) means that ensure specific human activity . The elements of the cultural system will be its subjects, spheres and means of activity **.** For any of the known socio-historical types of cultures (agrarian, industrial and post-industrial), the concept of “mode of activity” is central , since it is in the sphere of activity that the subjects of activity and means of culture are connected.

We can say that culture is embodied in activity, since the method of activity includes knowledge, skills, norms, abilities, available means of activity, as well as specific technology that serves as evidence, a calling card of the level of culture.

Consequently, culture, technology and a method of activity are interdependent in an operational sense: for example, a subject of professional activity must have training focused on the formation of a certain method of activity within a certain culture, which sets the technological process of this activity.

In the process of development of society, there is not only a quantitative growth of culture (a set of material and spiritual means that allow solving a certain range of socially significant problems), but, what is more important and interesting, this development has an ethical or moral direction. The initial ethical concept of culture is materialized both in the tasks and their inherent meanings, and in the ways

of solving these problems. These methods themselves are determined by the system of values accepted in society, goals, and the achieved level of development of society. This idea was well formulated by Yu.M. Lotman: “We ourselves are thinking, we are also inside a thinking system of a higher order. This thinking machine is culture.”

Education, being one of the spheres of culture, prepares specialists for other spheres of culture. Consequently, both the sphere of education and the sphere of professional activity can be described by the same concepts: “way of activity”, “technology”, “knowledge, abilities, skills”. Various professional fields of activity differ in their technologies, which in educational practice correlate with diverse didactic models. A change in professional technologies naturally leads to a change in learning technologies. In turn, a change in both production and training technologies leads to a change in personal potential, updating the intellectual and emotional qualities that people working with certain new technologies should have. And since personality qualities are derived from a person’s lifestyle and his life activity as a whole, the analysis of this social aspect of the problem will lead us to the correlation of “socialization and education”, which is beyond the scope of this work, although it is of undoubted interest.

Goals can be production, scientific, educational, medical and even creative (to the extent that they can be formalized and subject to rules).

“Teaching technology” is not a new concept in pedagogy; it appeared in the mid-60s as a reaction to the emergence of TSO.

Technical teaching aids have enhanced the teacher’s capabilities and optimized the student’s work. Great hopes were pinned on TSO; Carnegie even called it the basis of the fourth revolution and equated it with such epoch-making events as book printing and the emergence of educational institutions. But TSO did not change either the structure of the educational process or its nature, since no means , even a magical one, can be an instrument for the formation of any method of professional activity. The mode of activity can only be determined by culture. For example, for an agricultural civilization it will be hand and tool technologies. For industrial - machine, for post-industrial - organizational, activity , information.

Technology is a procedural category . Consequently, on the one hand, it determines the content and method of activity, and on the other, it is associated with a system of means, tools, mechanisms and other material and technical means, methods and forms that implement this activity and control it. But there is also a third side - the emotional-value attitude of the subject to the activity he performs: environmental, ethical, aesthetic, economic. It is the restructuring of the psyche and intellect of a person working with technology, a change in his goals, motivational orientations, the emergence of new knowledge - all this can lead to the birth of a new technology.

Each of the technologies from an information point of view is a hierarchy of fairly autonomous subsystems:

1. subsystems of the properties of “raw materials” (chemical, physical, mechanical, psychological, biological, etc.);
2. a subsystem of processes characteristic of technology and their specificity;
3. a subsystem of mechanisms and apparatus with the help of which the process occurs;
4. subsystem for managing processes and the entire complex, including the one who manages (technologist);
5. ecological subsystem;
6. subsystem of economic assessments.

The last two subsystems that enter the market, society and the environment are called external subsystems, the rest are called internal. Subsystems cannot be equally well developed; often some of them lag behind others in development quite significantly.

Each of the subsystems is developed and implemented by specialists of different profiles (adjusters, managers, materials scientists). These specialists have knowledge, skills and abilities from various fields.

Consequently, the team servicing any technology must be multidisciplinary. The central figure of the process is the technologist, who has multidisciplinary information regarding different subsystems. For engineering technologies the cycle looks like this

Technology subsystems have their own concepts and terms (their own metalanguage). Subsystem developer specialists, as a rule, have little knowledge of other subsystems. Hence the emphasis on specifics and isolation in one's subject area. Where does this lead? Excessive specialization, narrowness of knowledge with its depth leads to one-sidedness, makes the technology unprofitable, since achievements and scientific developments in related fields are missed. Now in the sciences there is a tendency to create a complex of related technologies, for example, all chemical technologies, all educational ones.

Scientific discoveries are most often made at the intersection of sciences, or more precisely, at the intersection of principles. To go beyond the flanks of your science and expand your field of knowledge is most effective at the level of principles.

The effectiveness of any technology is determined by the same thing that determines the effectiveness of any activity - principles. The principles are implemented in specific rules. For example, what are our life principles, these are the rules of our daily behavior. All principles are arranged in a hierarchical structure and are divided into: global, general, sectoral, and specific.

Global principles are interesting in that their effect extends to both production and non-production technologies, and that they explain the peculiarities of the functioning of educational technologies. Let's briefly look at some of them.

The next global principle is environmental safety of technology . For the education system, this environmental principle "means teaching taking into account human nature, taking into account the properties of his psyche and the characteristics of his thinking," that is, "environmentally friendly" educational technology must be adaptive, humane and effective . The principle of environmental safety forces a different approach to the principle of efficiency not only in chemical production, but also in medicine and education. The high efficiency of production (i.e. its low cost) reduces the quality of services, and the stingy pays twice: if he saves on treatment facilities, he will go broke on treatment, if he saves on treatment, he will go bankrupt on a funeral. If the state saves on education, then, as the Japanese have calculated, it goes bankrupt on the construction and maintenance of prisons. When a university does not want to introduce new teaching technologies, citing the economic crisis, it risks not getting out of this crisis at all, since its graduates are unlikely to be in demand in the labor market.

Among the global principles there is also one - the hierarchical principle of managing technological systems. It means that the technological process as a whole must be managed at two levels: global (at the level of a plant, clinic or educational institution) and local (at the level of individual blocks, subsystems). Manage simultaneously and according to the same principles.

There are few global principles. There are much more industry principles. The common denominator of industry principles (for all sciences) is the focus on the subsystems of the technological complex. For example, a change in educational technologies begins with a change in the activities of the subjects of the educational process - the learner ("raw materials") and the teacher ("technologist").

Traditional teaching technology is characterized by subject-object relationships: the teacher is a pump, and the learner is a vessel that the teacher must fill with knowledge. Such manipulation of the student does not require pedagogical skill and special knowledge from the teacher.

The second industry principle (common to education and medicine) is the principle of the "technologist" subsystem - puts forward special requirements for the training of a technologist. Since people serve as the "raw material" for doctors and teachers, the "technologist" in society is subject to

special three-tier requirements: fundamental knowledge in his field (i.e., competence), the humanistic orientation of his personality and technological skill (pedagogical or medical).

Medical and educational problems are often poorly formalized, that is, the problem is not strictly solved , but a decision is made . Naturally, the requirements for the decision maker are increasing , and not only for his competence, but also for his inherent moral views, for his humanity (including his ecological and noospheric worldview).

Humanistic orientation means such a construction of the educational process that would most closely correspond to the natural mechanisms of students' assimilation of experience and contribute to the development of their intellectual powers and creative abilities.

The dominant feature of new technologies of contextual and modular learning is precisely the humanization of the thinking and actions of the teacher and student: it manifests itself in a different approach to educational material than before; it changes the style of communication between teacher and student towards dialogue and cooperation; it changes the personality of both the teacher and the student, changing the motivation of the latter's teaching and the psychological and pedagogical culture of the former.

The transition to new training technologies will require the development of another industry principle, also related to the "technologist" subsystem: since it is long and expensive to train a technologist, it is necessary that he have a fair margin of safety and that he work longer without breakdowns. The teaching profession is a profession with psychological risk: teachers are susceptible to so-called emotional burnout. This phrase is used in psychology to describe the unhealthy state of mind of somatically healthy people who work with clients, patients, students, that is, in the "helping others" mode.

Consequently, in accordance with the principle of " technological saving ", it is necessary to develop a number of abilities in the teacher:

- drama and conflict resistance ;
- ability for self-regulation and self-control;
- optimistic forecasting, i.e. reliance on the positive in a person;
- empathy according to the formula "to be higher, but not to put yourself higher."

No pedagogical discipline teaches this. Of all four components of pedagogical mastery (professional knowledge, humanistic orientation, pedagogical abilities and pedagogical equipment), one is taught - professional knowledge, which in essence is a technocratic approach to fulfilling the state order for teacher training. Meanwhile, there is an excellent system for organizing the behavior of an actor - the system of K.S. Stanislavsky, which is nothing more than the technology of inductive theatrical pedagogy . If Stanislavsky's system is superimposed on contextual teaching of pedagogy, and the educational material is designed in the form of a modular program, then you can get a good combined system for training future teachers in pedagogical skills.

We have described only part of the industry principles relating to the specifics of technology subjects. As for the production process itself (training, education and management), it is described in sufficient detail in the famous book by V.P. Fingerless. Particular principles of technology are tied specifically to their technology and constitute its essence.

So, in a general scientific sense, technology is defined as a set of methods of processing, manufacturing, changing the state, properties, form of raw materials, material in the process of production. The task of technology as a science is to identify physical, chemical, mechanical and other laws in order to determine and use in practice the most efficient and economical production processes.

The technical and methodological actions of the teacher in the classroom (teacher in the classroom) always depend not so much on the content of the educational material, but on the teaching technology: traditional, modular, contextual, etc. The main basis for the differences between traditional technology

and innovative technologies is the choice of relationships, either “student-student- student" or "student-content of education".

Technologization of the pedagogical process is a trend in its development, which is aimed at increasing the efficiency of the educational process and guaranteeing that students achieve planned learning outcomes.

Any human activity has, as it were, two levels: the first is technological (“how it is done”) and the second is labor (“how to do it” or “how will I do it”). Technology is always developed and designed in advance. Labor process planning is carried out on the basis of technology. The technology is objective, it does not depend on the personal characteristics of the person implementing it.

Scientifically based technology is an intermediate link between a certain science and the corresponding production. It is clear that the laws of physics cannot be directly used in production, bypassing their technologization . And teaching technology is, as it were, a connecting link between the theory of teaching and its practical implementation. In order to use theory in the educational process, scientific knowledge must be technologized and turned into a tool for solving pedagogical problems.

The question of the place occupied by technology in modern pedagogy is not clearly resolved. The idea of the place of technology depends on the meaning attached to this concept.

Since two parties always participate in the pedagogical process - the teacher and the student, two “layers” can be distinguished in the teaching technology as an activity procedure:

the first (internal) constitutes the student’s activity;

the second (external) is the activity of the teacher.

The “inner layer” of educational technology appears to us as the interaction of the learning content (“tool”) and the learner (“material”), during which its transformation occurs—the technological process itself.

The “outer layer” of educational technology can be considered as an activity for the implementation of the technological process itself in specific conditions.

In the professional activities of each teacher, his personal characteristics are manifested: focus, motivation, teaching abilities, character, temperament, mental states, personality traits, self-awareness, individual style, creativity and others. Therefore, the ways in which teachers implement the technological process may be different due to their individual characteristics.

With the development of pedagogical technologies, the problem arises of determining how it differs from traditional methods. There are several opinions on this matter:

1. Technology is a technique with a rigidly programmed result that can be achieved and certain means designed to achieve this result.
2. Technology and methodology are equivalent concepts, but in the latter more attention is paid to the personality of the student and teacher, and the ways of their interaction.
3. Methodology is a broader concept; it can include several technologies. In this case, most often, the methodology is considered as an integral pedagogical system.
4. Methodology and technology are one and the same .
5. Technology is a specific method of learning in which the main burden of implementing the learning function is performed by a human-controlled learning tool. In this case, the leading role is given to the teaching aid, which, without the help of a teacher, performs the teaching function. The teacher does not teach, but performs the functions of stimulating, organizing and coordinating the activities of students.

The current state of affairs in pedagogical theory and practice most accurately and fully reflects the first of the considered options (E.O. Ivanova).

The composition of the technology is not a set of methods, but a written description of the steps of activity leading to the desired result, which is possible when relying on objective stable connections (laws) of the parties to the pedagogical process.

The technology is based on the laws of the educational process, as a result of scientific knowledge of the process of human education. The methodology is based on empirical experience, the skill of the teacher, it is closer to his artistry and art.

Technology is the framework, methodology is the shell, the form of the teacher's activity. The function of technology is to build an educational process that provides a given result. This is possible by using essential foundations, identifying what works, and this makes it possible to implement another important function of technology - the transfer of experience, its use by others, so it should initially be devoid of a personal touch. Pedagogical education at the level of essential reproduction must be built on technologies, and not on methods that are either unique or involve their formal repetition.

Literatures:

1. Theory of learning. / Zakirova IN. G., Grigorieva WITH. G., Kayumova L. R. Kazan: Kazan University , 2018. – 165 With.
2. Learning Theory and Pedagogical Technologies: Brief Summary lectures / R.G. Gabdrakhmanova , I.F. Yarullin , Kazansky (Volga) Federal University. - Kazan, 2013. – 92 p.