



PEDAGOGICAL TECHNOLOGIES AND INNOVATIONS

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Article history:	Abstract:
Received: 17 th January 2022 Accepted: 14 th February 2022 Published: 27 th March 2022	The theory and practice of pedagogical technologies is still being developed and is a new object of study in pedagogy. According to the dictionary of S.I. Ozhegov, technology is a set of processes in a particular industry, as well as a scientific description of production methods. Technology (from Greek <i>techne</i> - art, skill, skill and ... logic, from Greek <i>logos</i> - word, teaching) - a set of methods implemented in any process. Hence, pedagogical technology is a set of rules and their corresponding pedagogical techniques and ways of influencing the development, training and upbringing of a student.
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In many international publications devoted to pedagogical technology, one can find such an understanding of it: "pedagogical technology is not just the use of technical teaching aids or computers; this is the identification of principles and the development of methods for optimizing the educational process by analyzing factors that increase educational efficiency, by designing and applying techniques and materials, and also by evaluating the methods used" [1]. The essence of this approach lies in the idea of complete controllability of the work of a school or other educational institution. According to the characteristics of the Japanese scientist and teacher T. Sakamoto, pedagogical technology is the introduction of a systemic way of thinking into pedagogy, which can be otherwise called "systematization of education" (ibid.) [2].

M.I. Makhmutov thus reveals the meaning of the concept of pedagogical technology: "technology can be represented as a more or less rigidly programmed (algorithmic) process of interaction between the teacher and students, which guarantees the achievement of the goal" [3].

In this definition of pedagogical technology, attention is drawn to the structure of interaction between the teacher and students - this determines, in fact, both the methods of influencing students and the results of this influence. The words "hard-coded" seem to free the teacher from the need to think: take some well-known technology and apply it in your work. Without pedagogically developed thinking, without taking into account many factors of the pedagogical process and the age and individual characteristics of students, any technology will not fulfill its purpose and will not give the proper result. "Programmed" means that before using this or that technology, it is necessary to study all its features, what it is aimed at, what it is used for, what pedagogical concepts it corresponds to, what tasks it can help the teacher to solve under certain conditions. No wonder they say: a teacher who has mastered pedagogical technology is a person who owns pedagogical skills.

Any technology in one way or another is aimed at the implementation of scientific ideas, provisions, theories in practice. Therefore, pedagogical technology occupies an intermediate position between science and practice. Pedagogical technologies can differ for various reasons: by the source of occurrence (based on pedagogical experience or scientific concept), by goals and objectives (formation of knowledge, education of personal qualities, development of individuality), by the possibilities of pedagogical means (what means of influence give the best results), according to the functions of the teacher, which he performs with the help of technology (diagnostic functions, functions of managing conflict situations), according to which side of the pedagogical process a particular technology "serves", etc.

When determining the status of pedagogical technology, it is useful to correlate it with the scientific concept that underlies it, indicate the range of goals achieved with its help, and determine its essential features. Signs of pedagogical technology are: goals (in the name of what it is necessary for the teacher to apply it); availability of diagnostic tools; patterns of structuring the interaction between the teacher and students, allowing to design (program) the pedagogical process; a system of means and conditions that guarantee the achievement of pedagogical goals; means of analyzing the process and results of the teacher and students. In this regard, the integral properties of pedagogical technology are its integrity, optimality, effectiveness, applicability in the real conditions of the school.

We will reveal the content of each feature and property.

The target attribute indicates what can be achieved by applying a specific technology in the development of individuality, in the education of a personality, in teaching a student. The provision of technology with diagnostic tools helps the teacher to track the process and results of pedagogical influences. The means of analysis and introspection

allow the teacher to evaluate their actions and the activities of students in self-development and self-education, to evaluate their effectiveness. The goals, means of pedagogical diagnostics and performance analysis help to evaluate the technology in terms of its effectiveness and expediency. For example, the so-called non-standard lessons - auctions - were popular among elementary school teachers. Their meaning is as follows: in order to enhance the activity of students, the teacher offers them a number of tasks, and whoever solves it faster will receive a reward. Here are all the signs of technology that we have analyzed - the goal, diagnostics and result. But what is the result? Is this technology effective? If such lessons can stimulate the development of the desire not for knowledge, but for obtaining material rewards, arouse greed in children, can they be called pedagogically effective and expedient?

The next significant group of features of pedagogical technology is the patterns of structuring the interaction between the teacher and students and the selection and use of pedagogical means on their basis. Often the teacher takes into account various requirements, methodological recommendations, instructions, etc., and does not always notice what his students want, what their interests and needs are. In such cases, no technology will help the teacher achieve their goals. The activities of the teacher (his goals, needs and motives, actions, means and conditions for their application, etc.) must correlate, correspond to the activities of the student (his goals, capabilities, needs, interests, motives, actions, etc.). Only on this basis does the teacher select and apply the means of pedagogical influence. Structuring the interaction between teacher and students and the use of pedagogical means express the most key characteristics of pedagogical technology - guaranteed achievement of goals [4].

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Another important property of pedagogical technology is its optimality. The term optimal (from the Latin word *optimus* - the best) means the most appropriate for certain conditions and tasks. Yu.K. Babansky singled out several criteria for the optimality of the pedagogical process. Applying these criteria, it can be argued that pedagogical technology will be optimal if:

- its application contributes to the achievement by each student of the level of education, development and upbringing in the zone of his proximal development;
- its application does not exceed the scientifically justified time spent by the teacher and students, that is, it gives the maximum possible results under the given conditions for the time intervals determined by the standard of education and the charter of the school.

It is important to pay attention to such properties of technology as its effectiveness and applicability. The result of the application of technology is the changes in the development, learning and upbringing of the student that occurred under the dominant influence of this technology over a certain time. Obviously, the two technologies can be compared in terms of their performance and other properties.

Not every technology can be applied by every teacher, a lot depends on the experience of the teacher, his pedagogical skills, methodological and material security of the pedagogical process, etc. [5]. Therefore, when describing or studying a particular technology, it is necessary to pay attention to its reproducibility in certain school conditions.

Thus, pedagogical technology is not didactics, not a theory of upbringing, it is not a method of teaching or upbringing either. The specificity of pedagogical technology lies in the fact that the pedagogical process built on its basis must guarantee the achievement of the set goals. The second difference of technology lies in the structuring (algorithmization) of the process of interaction between the teacher and students, which is not reflected either in didactics, or in the theory of education, or in teaching methods [6].

How many technologies can there be? In principle, there can be many technologies, since they can differ for various reasons - depending on the basic concept, goals, means used, etc. At the same time, each scientific concept can correspond to several technologies that implement it. In addition, new concepts and corresponding technologies are being developed: computer, block-modular, concentrated learning, etc.

Any scientific concept, in order for it to "work" in the pedagogical process, needs a technology corresponding to it. Moreover, each of them can correspond to several technologies. It follows that there can be much more pedagogical technologies than scientific concepts. They are developed by both scientists and teachers. Therefore, in practice there are a sufficient number of them, another thing is that not all of them can be called technologies, since they do not always have the features and properties of pedagogical technologies.

The author presents the following concepts and technologies: pedagogy of individuality and the technology of its formation (2), the system of problem-based learning and its technology (part 2), the concept of motivational support of the educational process and its technology (2, part 3), pedagogical conflictology and conflict management technology (part 3). In pedagogy, in addition, there are author's pedagogical technologies of I.P. Ivanova, L.A. and B.P. Nikitin, V.F. Shatalova, R. and D. Bayardov and others. Many technologies are still being developed [7].

In recent years, a new field of knowledge, pedagogical innovation, has become increasingly important. This is a field of science that studies new technologies, school development processes, and new educational practices. The word "innovation" comes from the Latin *inovatis*: in - in, novus - new and in translation means renewal, novelty, change. Pedagogical innovation is a change aimed at improving the development, upbringing and education of schoolchildren.

Innovations in education, understood in a broad sense as the introduction of a new one, as a change, improvement and improvement of the existing one, can be characterized as an immanent characteristic of education, arising from its main meaning, essence and significance. After all, the novelty of any means is relative both in personal and temporal terms. What is new for one school, one teacher, may be a milestone for others. Novelty is always concrete-historical in nature. It does not matter whether an idea, concept, technology is objectively new or not at the present time, it is possible to determine the time when they were objectively new (for example, Comenius' classroom system was new at one time). Born at a specific time, progressively solving the problems of a certain stage, an innovation can quickly become the property of many, the norm, generally accepted mass practice, or outlive, become obsolete, and become a brake on development at a later time. Therefore, the teacher needs to constantly monitor innovations in education and carry out innovative activities. The main functions of a teacher's innovative activity include progressive (so-called defect-free) changes in the pedagogical process and its components: a change in goals (for example, the new goal is the development of a student's individuality - see: 2), a change in the content of education (see new education standards) , new teaching aids (computer learning), new ideas of education (Yu.P. Azarov, D. Bayard, B. Spock), new methods and techniques of education (V.F. Shatalov), development (V.V. Davydov, L .V.Zankov), education of younger schoolchildren (Sh.A. Amonashvili), etc.

The classification of innovations can be based on certain criteria on the basis of which it will be carried out. The first criterion is related to the area in which innovations are carried out. The second general criterion can be considered the mode of emergence of the innovative process, the third - the breadth and depth of innovative activities, and the fourth - the basis on which innovations appear.

According to the first criterion, that is, depending on in which area, in which sector of education innovations are carried out (what is being updated), the following innovations can be distinguished: 1) in the content of education, 2) in technology, 3) in the organization, 4) in system and management, 5) in educational ecology.

Depending on the method of implementation of innovations (the second criterion), they can be divided into a) systematic, planned, pre-conceived; b) spontaneous, spontaneous, random. Depending on the breadth and depth of innovative activities, one can speak of a) mass, large, global, strategic, systematic, radical, fundamental, essential, deep, etc.; b) partial, small, small, etc. Innovations in educational ecology relate to the architecture of school facilities, their complexes, location and social environment.

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