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# ANALYSIS TO THE STUDY OF TERM PEDAGOGICAL TECHNOLOGY IN EUROPE AND ASIA

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## Abstract

The relevance of the topic is due to the fact that until now in pedagogical science there is no single approach to the concept of "pedagogical technology". This problem exists both in Russia and in other countries of the world. At the same time, the modernization of the learning process continues, in connection with which new modern pedagogical technologies appear. Therefore, there is a need to update the concept of "pedagogical technology". The purpose of the study is to identify the origin of the concept of "pedagogical technology", to analyze it and to define approaches to the study in such countries as Russia, China and England. The methods of synthesis, analogy and deduction, as well as retrospective analysis and comparative analysis were applied during the study. In the course of the research, the approaches to pedagogical technologies in Russia, England and China were studied. The general and different features that characterize the concept of "pedagogical technology" in the countries of Asia and Europe were identified. As a result of the study, it was concluded that pedagogical technologies both in Europe and Asia are actively used at all stages of the educational process. But at the same time, approaches to pedagogical technologies in various countries differ significantly both in their origin and in their development and use in the educational process. Summing up, it should be noted that pedagogical technologies will continue to develop and be introduced into pedagogical practice throughout the world.

## 1. Introduction

The relevance of the topic is due to the fact that recently there has been modernization of education, both local (for example, in Russia) and global. The development of new pedagogical technologies still remains one of the central problems despite the fact that at the moment there is no single approach to the concept of "pedagogical technology".

The history of the issue testifies to the fact that pedagogical technologies began to be extensively studied in the mid-1990s, both in Russia and abroad. For example, at this time the works of Russian researchers such as (Dyachenko, 2009, p. 205), and foreign researchers such as (Scales, 2008, p. 115) were released. A new round of research began in the 21st century. It is associated with the expansion of the world educational space, (Serikov, 2008, p. 29); (Yudin, 2008, p. 8) and many others. However, after the release of these studies, a number of changes took place in the development of society, which also had a significant impact on the educational process. For example, over the past 10 years the current society has rapidly plunged into the world of informatization, which in turn could not but affect the use of modern educational technologies. Therefore, the topic of "pedagogical technologies" requires further study.

## 2. Problem Statement

The variety of definitions of terms makes us once again turn to the analysis of initial concepts, as well as to the scientific foundations in solving the problem of using pedagogical technologies in Russia and abroad.

## 3. Research Questions

Among the main research questions, one should highlight the following:
- - to consider the variety of concepts of "pedagogical technology" in Russia, England and China;
- - to identify common and distinctive features;
- - to define approaches to the study of the concept;
- - to summarize the results and draw conclusions.

## 4. Purpose of the Study

We aim to study the available pedagogical technologies in Russia, England and China, since these countries have different approaches to teaching. England belongs to the countries where education is based on a liberal-democratic basis. China is a country where the educational process is influenced by the country's conservative traditions. The Russian education system is a combination of various approaches to the educational process.

## 5. Research Methods

Research methods included retrospective analysis; comparative analysis; knowledge synthesis method; as well as methods of analogy and deduction.

## 6. Findings

Turning to the history of the emergence of "pedagogical technology" concept in Russia, it can be noted that this term appeared in the 1950s. It was at this time that alternative methodological approaches were rapidly developing, they were a challenge to the traditional methodological approach, which practically dominated for a long time in Russian education. But it should be noted that already in the 1920s the concepts of "pedagogical technology" and "pedagogical technique" emerged in Russian pedagogical literature. These terms were synonymous and meant learning using all kinds of audiovisual means. In the 1930s in the work of Makarenko such a concept as "pedagogical techniques" was introduced. The author described the pedagogical process as a technological procedure. The concept of "pedagogical technology" included the use of ideas from reflexology (Ely, 1963, p. 39).

In modern Russian pedagogical literature, there are four main approaches to the concept of "pedagogical technology". The first approach supported by Likhachev (2010, p. 68) and Pidkasisty defines pedagogical technology as a didactic concept, the part of pedagogical science. The second approach considers pedagogical technology as a specific pedagogical system. This approach was supported by Bespalko (1989, p. 191) and Guzeev. The third approach assumes that pedagogical technology is an educational process (Bezrukova, Simonenko, Serikov). "Teaching technology is an educational activity that is subject to certain laws and is implemented by a scientific and substantiated project of the educational process. This technology is especially effective in comparison with traditional teaching methods and methods." (Serikov, 2008, p. 43).

Many Russian scholars made the proposal that there can be more definitions about the concept of "Pedagogical technology". Yudin (2008, p. 21) pointed out that "technology is a sequence of steps in recommended educational activities, identified on the basis of scientific ideas". There is also another defination made by him: "Pedagogical technology is a set of methods and teaching techniques that are guaranteed to lead to a given result" (Yudin, 2008, p. 39).

As far as the terms are concerned, it is quite logical to inference that this term is characterized by scholars as "pedagogical technology" and also as "pedagogical process". Moreover, in the writings of some authors, it is described as "order and system of certain means", there are also authors who describe it as a special "type of activity." In summary, the characteristic of this term is its special attributes, including: consistency, linear continuity, rationality, optimality, systemic order, balance, strict purposefulness, programmedness, etc.

The purpose of this type of training is personality traits that are individual for each student. Also, social aspects play an important role here, including study, educational background, environment.

In this case, the subject is characterized as a pedagogical process, the object is the student himself. Pedagogical technologies are aimed at the loyalty of learning (if we are talking about an oriented

approach). In addition, in this case, their active connection and interaction with many scientific disciplines, art, and spiritual values is observed. Pedagogical values become a system-forming factor .

Pedagogical technologies are differentiated by most authors into two categories: a qualitative component and a method of implementing the final results. Besides, Levina (2001, p. 34) divided pedagogical technologies into typical, traditional and non-traditional (innovative) according to the teaching methods , while Dyachenko (1994, pp. 24-29) divided pedagogical technology into individual and collective. It is also worth emphasizing that the student, as a rule, is "squeezed" into the framework of differentiated technologies in the learning process. The separation occurs due to the fact that at different stages of training, different coverage of information occurs.

Technology is a series of so-called "tools" that people use in a particular process of activity. The "set" of these tools includes various aspects, methods and principles of organizing the subject, only their joint work can bring to a positive result. This term implies organizational techniques and operations used by the performer during activities (Shcherbakova, 1990, pp. 15-29). The components of pedagogical technologies include the ways of thinking (program rationale), activities (organization, implementation, diagnostics) and communications, which is connected in a specific order.

Summarizing the analysis of the concept of "pedagogical technology" in the works of Russian scholars, we can draw the following conclusions that pedagogical technologies reflects the essence of teaching process which is strictly based on scientific materials. Therefore, we have every reason to believe that pedagogical technology shows how effective, in conditions of constantly changing reality (due to objective and subjective reasons), the joint functioning of various principles, methods and means in the matter of the successful organization of the educational process carried out with the intention of achieving the wanted (predicted) result.

In view of the fact that in the pedagogical process it is possible to designate conditionally any intermediate, partial or aspectual result, in the educational systems of various educational institutions it makes sense to consider the range of pedagogical technologies that solve either particular or complex problems. So, in Russia the following pedagogical technologies are most popular: information and communication technologies; developing critical thinking; design; developmental education; problem-based learning; gaming; modular; workshop technology; case - technology, the list of them can be significantly extended (Zaitsev, 2012, p. 46). They are used at all stages of training, while constantly developing and modernizing.

However, pedagogical technologies are used not only in Russia. There are similar concepts in England. Thus, the term "educational technology" in English sounds like "Instructional Technology" and it is also synonymous with the term "educational technology". "Instructional technology" began its development in the 1940s and at that time the term meant "the use of audiovisual aids in the learning process". Then, from the 1950s onwards, its meaning was "programmed learning". Later, in the 1970s, it began to mean "pre-planned learning process, the result of which is the final results achieved through long-term work" (Aubrey, 2017, pp. 14-27).

In 1963, in a monograph by Ely "The evolving role of the audiovisual process in education: definition and glossary of related terms" the term "instructional technologies" has been described as "audiovisual communications". The monograph says that this is a section of the theory and practice of

education related to the development and use of messages that control the learning process. It commits to: (a) explore the unique and relative strengths and weaknesses of both graphical and non-representational messages that can be used in the learning process for any reason; and (b) structure and systematize the interactions between people and tools in the educational environment. These responsibilities include planning, production, selecting, managing and using both components and entire training systems. Its practical purpose is the effective use of all methods and means of communication that can contribute to the development of the full potential of students (Ely, 1963, p. 24).

Further, in 1970, the term is mentioned by the US Teaching Technology Commission. In the report, the Commission defines instructional technology as a systematic way of designing, delivering and evaluating the overall learning and teaching process in terms of specific goals, based on research in the field of learning and communication between people and the use of human and non-human resources to achieve more effective learning (Ely et al., 1970, pp. 306-326).

In the same year, Silber puts forward his own concept of the term: "Instructional technology is the development of components of learning systems and management of this organization in order to solve educational problems". Then, in 1982, Cassidy published the following definition: "Instructional technologies are associated with improving the efficiency and effectiveness of learning in educational contexts, regardless of the nature or content of this learning (Cassidy, 1982, p. 77).

The way how the approach to pedagogical technology has changed can be traced by how it was defined by British researchers in the last 30 years. So, in 1994, Richey and Seels wrote in their work that "instructional technology is the theory and practice of designing, developing, using, managing and evaluating processes and resources for learning" (Seels, 1994, p. 35). Soon in 1995, Gentry put forward the following definition: "Instructional technology is the systematic application of strategies and methods based on the concepts of behavioral and physical sciences and other knowledge to solve educational problems.". In the 21st century, Gagne (1987) notes that instructional technology includes teaching practices that systematically focus on effective learning, whether they involve the use of media or not. The main goal in learning technology is to promote the application of these well-known and proven methods in the design of training programs (p. 84-96).

In modern England, the term "instructional technology" is regarded as the branch of education concerned with the scientific study of instructional design and development. The main goal is to create engaging, effective learning processes using available technology tools to achieve pedagogical goals and keep learners motivated (Yudin, 2008, p. 29).

One of the most common learning technologies in England is active learning technology. It is a type of study method in which learners are supposed to be actively involved in the process of re-creating meanings, knowledge and skills. This method stimulates questions, interest and research, using evaluation as an opportunity for continuous development (Scales, 2008, p. 4). We can conclude that this technology is used to stimulate the cognitive abilities of students with the help of various questions and tasks, while increasing their independence.

Also in England, the technology of reflective practice is used, which is based on the student's ability to reproduce, recall and analyze the educational process in terms of the correctness and constructiveness of its construction. Also, the student must learn to apply the knowledge gained during

the training. Usually, methodologists believe that this type of learning should be phased, so Gibbs designed a cyclical model of reflective learning, which contains the following stages: action plan; the description of specific actions taken; the senses; assessment (reflection in action); analysis (reflection after action); extraction of new knowledge, conclusions and construction of a new action plan. In order for the educational process to be effective, reflection should be present at all stages passed.

Constructive learning is based on "constructing" new blocks of knowledge or "schemes" in the process of learning. The student must build on the old knowledge gained earlier. "Knowledge, meanwhile, is presented in the form of an infinitely replenished mind map, where all its elements are interconnected." (Hattie, 2008, p. 53-58). This technology activates the thinking activity of students, contributes to the acquisition of autonomy in learning, as well as the application of the acquired knowledge in life.

One of the most relevant pedagogical technologies in England is interactive learning – "a special format for organizing the educational process, in which all students are necessarily involved in the learning process, they speak out, discuss and reflect on their thoughts." (Scales, 2008, p. 67). In the course of interactive learning, students practice the following: critical thinking, solving complex problems, analyzing circumstances, weighing alternative opinions, making thoughtful decisions, participating in discussions, communicating with colleagues.

One of the main technologies in English education, as well as in Russian, is problem-based learning, which implies the presence of a certain educational problem, in the process of solving which students use the knowledge they already have. Along with this, they gain new experience and replenish their knowledge base. The spectrum of knowledge and skills used in problem-based learning is very diverse (Scales, 2008, pp. 141-142). John Biggs believes that "problem-based learning reflects the way people learn in real life; they are simply trying to solve the problems that life presents them with the means that are at hand." (Biggs, 2003, p. 232). The use of problem-based learning allows students to improve their group work skills as well as communication skills. Students learn to better orient themselves in time and act more decisively. Also, this technology teaches you to use knowledge from life experience, learn independently, as well as gain life experience and value the experience and knowledge of colleagues.

It should be said that English education is characterized by the use of such technology as coaching pedagogy, which relies on the joint work of a student and a teacher. This teaching technology is individual, cyclical, does not take much time, and is also based on communication between teacher and student; the teacher must constantly receive feedback and support the student in the process of joint work. Coaching pedagogy ensures continuous development, acquisition of reflection skills, independence in learning, allows students to learn effectively and establish communication with colleagues, share knowledge and receive it. It should be added that the technology of coaching is also actively applied in Russian education.

Against the backdrop of the coronavirus pandemic, distance learning (e-learning), which is based on the use of various traditional and new information and telecommunication technologies, is becoming another relevant technology. "Such tools provide the student with a free choice of educational disciplines that meet the standards, and also enable the student to engage in dialogue with the teacher, regardless of

location". This allows you to study in any part of the country and abroad without interrupting personal affairs (Scales, 2008, p. 218). This approach is extremely relevant nowadays, as there were problems with face-to-face training, so this technology had to be introduced everywhere.

Thus, speaking about England, we can conclude that there are a huge variety of different learning technologies. We have considered only a few of them and all of them are actively used in the educational process. Pedagogical technologies make learning not only entertaining and interesting, but most importantly - effective, because this is their main goal.

In China, pedagogical technologies are also distinguished. In Chinese language there is a term "audiovisual education", which is synonymous with the term "educational technology". According to official data it first appeared in pedagogical Chinese literature in the 1930s. For over 70 years, educational technologies in China have gone through two stages of development: the stage of audiovisual education and the stage of informatization of education.

It can be said that from the 1930s to the 1970s, the early stage of the development of audiovisual education took place. Its main characteristics include presentations, projections, recordings, films, etc. All of these media for audiovisual education have begun to enter universities and urban primary and secondary schools. The main focus was on the creation of audiovisual equipment and the design of basic audiovisual education courses in colleges and universities.

From the 1980s to the early 1990s, a later stage in the development of audiovisual education took place. The main focus was on the creation of audiovisual education systems, the development of modern textbook systems and the opening of computer courses. The organization of audiovisual educational specialties and the conduct of audiovisual experiments have also attracted more and more attention.

In the period when the final stage of the development of audiovisual education took place, the birth of informatization of education also took place. This period is considered a transitional stage from audiovisual education to informatization of education. In 1982, the Ministry of Education decided to establish computer courses in high schools, as well as in some colleges and universities, including Tsinghua University, which became the starting point for informatization of education in China. The end of the 1990s and the beginning of the 2000s are considered the start and accelerated stage of the development of informatization of education. The main feature of this stage is the development of online education. The main focus was on the three pillars of networked education (network building, database building, team building) and on exploring network learning models as well as integrating information technology into curricula.

The last decades, 2010-2020s, are a period of in-depth development of modern pedagogical technologies in China. Key characteristics include the growth of ubiquitous computing. The main focus was on the study of e-learning and non-formal education. At the same time, the theory of blended learning begins to develop.

But pedagogical technology in China does not mean only audiovisual education. Professor He Kekang, an expert on pedagogical technologies in China, noted the ambiguity of this concept. On the one hand, this is a new methodological branch, a second-level discipline in the field of pedagogical science, which is a bridge connecting the theory of pedagogical science with the practice of pedagogical education. On the other hand, he defined "pedagogical technology" as a discipline of technical level in

educational research. This approach distinguishes the views of Chinese researchers from Russian and English ones. In addition, pedagogical technologies also have obvious characteristics of applied disciplines and complex disciplines (He, 2009, p. 79).

In terms of problem-solving methods, Chinese researchers write that pedagogical technologies mainly apply a special approach that covers the entire education system, which is, "a systematic approach to the overall process of teaching and learning". In the particular process of implementation, pedagogical technologies can be used in different levels of education system; Not only can we describe it as a macro problem in education planning but also it is a problem for development of school subjects (Liu, 2006, pp. 12-19).

Pedagogical technologies are a specific component of educational practice. They include tools and methods for analyzing and solving practical problems in the learning process. The purpose of pedagogical technologies is to accomplish required knowledge. Educational technology refers to the design, utilize, management and evaluation of appropriate study processes and learning resources. They also find out what students really want and figure out solutions to various kinds of educational problems.

In the process of systematic analysis and problem solving, it is also necessary to support various related theories and technologies of analysis and processing (such as: demand analysis technology, data processing technology, assessment technology, system management technology, etc.) (Wu, 1994, p. 118).

Currently, the following forms of education are considered the main ones in China: collective learning; individual training; group training and e-learning. Pedagogical technologies in China are applied at various stages of education, including preschool, primary, secondary or higher education.

Many years of practice and application of educational technologies helped to accumulate rich experience and stereotyped learning models have been formed. For example, a form of collective learning is based on audiovisual technology, the form of individual training is based on computer technology, the form of group training is based on process technology, and the form of e-learning is based on network technology or communication technology. Nevertheless, it should be noted that the application of these learning models associated with various technologies should be designed and developed taking into account the characteristics of the training group. Besides, in the learning process, it must be controlled and evaluated by the teacher to obtain the desired result. If a teacher does not apply the theory of educational technologies, but uses only some of the technical means provided by this technology, then his activity cannot be called a practical area of educational technologies. An essential aspect is that the application of theory, methods and techniques of pedagogical technology takes the first place, and the application of technical means occupies the second one.

One of the newest educational technologies is the technology of using virtual reality. This saves time within the lesson, and on the other hand, reduces time for preparing for class in advance. Thanks to modern technologies, not only can teachers get a more convenient way of teaching, but also they get the chance to turn themselves from an organizer of the educational process, into an assistant or a guide while students are trying to get the knowledge actively (Qiu, 2020, pp. 328-341).

Each technology has its own specific theories and methods. Of course, there are some similarities between them, but they cannot be confused. In addition, it should also be noted that these four pedagogical technologies are selectively used in accordance with the goals and objectives of learning.

Depending on the characteristics of students, one teaching technology is used as the main one in combination with others.

There are also the following aspects of the application of educational technologies in practice: development of educational programs; development and application of teaching aids; development and application of control systems; application of computer technology in all aspects of education. Since the ideology of educational technologies welcomes modern educational ideas and the introduction of new technical means, it is readily used by teachers and lecturers, but does not surpass or replace other branches of education to address issues in education and training. To modernize pedagogical technologies, we must study and test in practice various new educational theories and methods. This allows you to improve the effectiveness of the educational process and get closer to the main goal of education - to knowledge (Zhu, 2009, p. 44).

## 7.  Conclusion

We analyzed the meaning of the term "pedagogical technology" in the pedagogy of three different countries: Russia, England and China and found that it appeared at approximately the same time (in the 1930s) and had the same meaning. Its meaning consisted in the use of audiovisual means in the learning process (except in Russia, where the use of audiovisual means was insignificant). Further, the term "pedagogical technology" gradually developed and began to mean a projected educational process that guarantees the achievement of the planned results.

The pedagogical technologies of Russia are characterized by consistency, continuity, rationality, optimization, systemacy and purposefulness. The main goal of pedagogical technologies is the development of the student's personality, as well as significant increase in the effectiveness of educational work. English educational system is characterized by the practical application of many different pedagogical technologies, in which the student has the desire and ability to realize his potential. Meanwhile, in China, pedagogical technology is considered a completely new direction in teaching.

The use of pedagogical technologies in pedagogy of different countries has its own differences. In Russia and England, many different teaching technologies are used, and all of them are equally important. In China, there are four main forms of education, in which special pedagogical technologies are used.

Based on the above, it follows that today there is no single concept of "pedagogical technology". The study found that pedagogical technologies in Europe and Asia are used in educational practice at each stage of the educational process, but approaches to pedagogical technologies differ significantly in the level of their development and specificity of practical application.

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## References

Aubrey, K. (2017). *Understanding and using educational theories.* Linkoln: Bishop Grosseteste University.

Biggs, J. (2003). *Teaching for Quality Learning at University.* London: Open University Press.

Bespalko, V. P. (1989). *Educational technology.* Pedagogika [In Rus.].

Cassidy, M. F. (1982). Toward integration: Education, instructional technology, and semiotics. *Educational Communications and Technology Journal, 20*(2), 75-89.

Dyachenko, V. K. (1994). New pedagogical technology in action. *Nachalnaya shkola, 4*, 24-29 [In Rus.].

Dyachenko, V. K. (2009). *Cooperation in training.* Pedagogika. [In Rus.].

Ely, D. P. (1963). *The changing role of the audiovisual process in education: A definition and a glossary of related terms.* Washington, DC: National Education Association

Ely, D. P., Funderburk, E., Briggs, L. J., Engler, D., Dietrich, J. E., Davis, R. H., & Brademas, J. (1970). Comment on the report of the commission on instructional technology. *AVCR, 18*, 306–326. https://doi.org/10.1007/BF02768503

Gagne, R. M. (1987). *Instructional technology: Foundations.* Routledge.

Hattie, J. (2008). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement.* Routledge.

He, Kekang (2009). *Education technology.* Beijing: Beijing Normal University Press [In Chinese].

Levina, M. M. (2001). *Technologies of professional pedagogical education.* Publishing Center "Academy" [In Rus.].

Likhachev, B. T. (2010). *Pedagogica: Course of lectures.* Vlados [In Rus].

Liu, Meifeng (2006). *Research on the positioning of the subject of education technology.* Education Science Press [In Chinese].

Qiu, Xin (2020). Virtual reality as a tech tool for students studying Russian in China. *Russian Language Studies, 18*(3). 328-341. https://doi.org/10.22363/2618-8163-2020-18-3-328-341 [In Rus.].

Scales, P. (2008). *Teaching in the Lifelong Learning Sector.* Open University Press.

Seels, B. B. (1994). *Instructional technology: The definition and domains of the field. Association for Educational Communications and Technology.* Washington DC: Association for Educational Communications and Technology.

Serikov, V. V. (2008). *Training as a type of pedagogical activity.* Academy. [In Rus.].

Shcherbakova, L. B. (1990). *Podgotovka studentov pedvuzov k izucheniju i ispol'zovaniju massovogo i peredovogo pedagogicheskogo opyta [Training of pedagogical University students and the study and use of mass pedagogical experience].* Minsk: MPU [In Rus].

Wu, Zaiyang (1994). *A brief history of China's Electro-Chemical Education.* Beijing: Higher Education Press [In Chinese].

Yudin, V. V. (2008). *Technological design of the pedagogical process.* University book. [In Rus.].

Zaitsev, V. S. (2012). *Modern pedagogical technologies.* Chelyabinsk State Pedagogical University, textbook 2. [In Rus.].

Zhu, Shiqing (2009). *Education technology, Third Edition.* Anhui: University of Science and Technology of China Press [In Chinese].