The Use Of Elements Of Innovative Pedagogical Technologies In Educational Activities

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Summary

The article considers the position of scientists on the concept of "pedagogical technology", identifies the signs of pedagogical technology and existing classifications, considers non-traditional (innovative) learning technologies, as well as their practical forms of application in the educational process, summarizes the results, makes recommendations for the practical application of the studied material. The article considered the basic concepts of pedagogical technology, as well as some types of non-traditional (innovative) teaching technologies. Also, examples of the use of some elements of innovative technologies in practical educational activities are given.

The choice of specific non-traditional pedagogical technologies is determined by the target orientation, content specificity, individualization of training, technical equipment of the educational institution, etc.

Key words:
pedagogical design, modern educational technologies, ways of designing innovative pedagogical technologies

1. Introduction

Renewal of education is possible only through scientifically grounded improvement of pedagogical technologies, which has become one of the most important problems of pedagogical science and practice.

To date, didactic scientists and innovative teachers have developed an optimization technology for organizing the educational process in the classroom; the technological process of the stage-by-stage formation of mental actions; basic technological methods of enlarging the didactic units of assimilation of mathematical educational material; support sheets; commented management of the educational process; technological pillars of the process of teaching creativity: knowledge as the foundation of creativity, strict selection of educational material, repeated repetition of differently organized material, versatile development of the student's personality, constant teacher control over the student's work and an individual approach [1-8].

The lessons of the history of pedagogy are very instructive. To understand a lot, let us turn to the history of the development of pedagogical technologies.

Pedagogical activity began to be "technologized" long before the majority of teachers, scientists and practitioners realized the objectivity of the ongoing processes.

The first pedagogical technologists were, apparently, in Ancient Egypt and Babylon. They were the first to encounter the repetition of operations in the pedagogical process, and developed separate "technological" techniques. The first scientific pedagogical technology was created by Jan Amos Comenius (1592-1670). He formulated the most important idea of this technology - a guarantee of a positive result. Comenius considered the creation of a teaching mechanism the primary task of implementing the idea, calling it a "didactic machine."

"For a didactic machine," he wrote, "it is necessary to find: 1) firmly set goals; 2) means precisely adapted to achieve these goals; 3) firm rules on how to use these means, so that it is impossible not to achieve the goal. " The described module "goal - means - rules for their use - result" constitutes the core of any technology [5-8].

Comenius also strove to find a general procedure for teaching, in which it would be carried out according to the uniform laws of human nature. Then learning would have required nothing more than "skillful allocation of time, objects and methods." Since the time of Comenius, many attempts have been made in pedagogy to make teaching look like a well-established mechanism.

Over the course of the 20th century, many attempts have been made to "technologize" the educational process. Until the mid-1950s. these attempts were mainly focused on the use of various technical teaching aids - computers, radio and others.

In the 1970s. a systematic approach to teaching made it possible to solve didactic problems that meet the set goals, the achievement of which should be amenable to a clear description and definition. A systematic approach is at the heart of any pedagogical technology.

In the 1970s-1980s. pedagogical technologies have covered almost all countries, having received UNESCO recognition.

For a long time it was believed that in relation to pedagogy the term "technology" does not "work", since it characterizes the processes occurring in industrial production.

But it is possible to "technologize" any human activity, provided that its elements are repeated and that they are carried out on a large scale, since this creates suitable economic conditions for the creation of special equipment.

In this regard, the term "pedagogical technology" is legitimate and fair.

Below are definitions of this term by various authors.

"Pedagogical technology is a direction in pedagogy that aims to improve the efficiency of the educational process, to ensure that students achieve the planned learning outcomes; this is research aimed at identifying the principles and developing techniques for optimizing the educational process by analyzing factors that increase educational efficiency, by designing and applying techniques and materials, as well as by evaluating the methods used "[10].

"Teaching technology is the area of application of a system of scientific principles to the programming of the learning process and their use in educational practice with a focus on detailed and assessable learning objectives; it is focused more on the student, and not on the subject being studied; to test the established practice (methods and techniques of teaching) in the course of empirical analysis and the widespread use of audiovisual means in teaching, determines the practice in close connection with the theory of teaching "[9].

"Pedagogical technology is a set of psychological and pedagogical attitudes that determine the special selection and arrangement of forms, methods, methods, techniques, educational tools (diagrams, drawings, diagrams, maps). Technological education provides the opportunity to achieve an effective result in the assimilation of knowledge, skills and abilities by students, the development of their personal properties and moral qualities in one or several related areas of teaching and educational work. Technology is an organizational and methodological toolkit of the pedagogical process "[11].

"Pedagogical technology is:
- content and operational activities to ensure the pedagogical process;
- systematic and consistent implementation in practice of a pre-designed educational process;
- a set of interrelated means, methods and processes necessary to organize a targeted impact on the formation of a personality with given qualities;
- activities aimed at creating conditions for the formation of the level of education of the individual;

- rationally organized activity to ensure the achievement of the goals of the pedagogical process "[1].

One of the most successful definitions of educational technology is:
• with the help of pedagogical technology, there is a preliminary design of the educational process;
• pedagogical technology offers a project of the educational process that determines the structure and content of the educational and cognitive activity of the student himself;
• in pedagogical technology, purposeful education is the central problem, considered in two aspects: the first is diagnostic goal-formation and objective control of the quality of mastering by students of educational material, the second is the development of the personality as a whole;
• the principle of integrity - the development and practical implementation of pedagogical technology.

Thus, pedagogical technology is aimed at the formation of personality.

Pedagogical technology brings pedagogy closer to the exact sciences, and pedagogical practice, including the creativity of teachers, makes it a completely organized, controlled process with a predictable positive result.

2. Theoretical Consideration

Classifying pedagogical technologies, the following classes are distinguished [7]:
- According to the level of application, general pedagogical, particular methodological (subject) and local (modular) technologies are distinguished.

- On a philosophical basis: materialistic and idealistic, dialectical and metaphysical, scientific (scientist) and religious, humanistic and antihuman, anthroposophical and theosophical, pragmatic and existentialist, free education and coercion and other varieties.

- According to the leading factor of mental development: biogenic, sociogenic, psychogenic and idealistic concepts. Today it is generally accepted that the personality is the result of the combined influence of biogenic, sociogenic and psychogenic factors, but a specific technology can take into account or bet on any of them, consider it the main one. Pedagogical technology is always complex.

- According to the scientific concept of assimilation of experience, the following are distinguished: associative-reflex, behavioristic, gestalt technologies, interiorization, developmental. We can also mention the less common technologies of neuro-linguistic programming and suggestive ones.

- By focusing on personal structures: information technology (the formation of school knowledge, abilities, skills in subjects); operating rooms (the formation of methods of mental action); emotional-artistic and emotional-moral (the formation of the sphere of aesthetic and moral relations), the technology of self-development (the formation of self-governing personality mechanisms); heuristic (development of creative abilities) and applied (formation of an effective and practical sphere).

- By the nature of the content and structure, technologies are called: teaching and upbringing, secular and religious, general educational and professionally oriented humanitarian and technocratic, various industry-specific, subject-specific, as well as mono-technologies, complex (polytechnologies) and penetrating technologies. Technologies, the elements of which are most often included in other technologies and play the role of catalysts, activators for them, are called penetrating technologies.

Innovative pedagogical technologies are non-traditional pedagogical technologies developed in connection with the emergence of new information technologies, new methods and techniques of teaching, in order to create the most favorable psychological and pedagogical conditions for activating and realizing the best properties and self-development of the student's personality and increasing the effectiveness of the educational process.
Modular teaching emerged as an alternative to traditional teaching, integrating all that is progressive that has been accumulated in the pedagogical theory and practice of our time.
The essence of modular learning is that the student fully independently (or with a certain dose of assistance) achieves specific learning goals in the process of working with the module.
A module is a target functional unit that combines educational content and technology of mastering it [2].
For the effectiveness of the educational process in modular training, you can use the Cluster technology [8].
"Clusters" is a technology that originated in the United States. American educators believe: before learning something, you must first build your own model based on known ideas, and then improve this model as you acquire new information.
The name of the technology comes from the English word "clustery" - growing in bunches, brushes or bunches.
Let's look at the "cluster" technology using a specific example.
Imagine that a student has to study some academic discipline or section of this discipline. For example, let it be the section "Cell Biology".
First step:
• Before studying this section, the student writes the title of the section under study in the middle of the top line on a blank sheet of paper.

• Then, on the second line, the student writes down words that come to mind in relation to the title of that section.

• On the next line (or lines), he writes the words associated with the words of the second line, and so on. All this work is done in a limited time, for example, within 10 minutes.

• The student is then given several books for the area under study and asked to carefully study their table of contents and indexes.
The result of this work should be the underlining among the student's written words of those that he met in books.
Second phase:

• Then the teacher reads the introductory part of the lecture, and then proceeds to the study of specific topics of the studied section. Suppose the first of these is the topic "Chemical composition of a cell".

• The student again writes the title of the topic on the first line on a blank sheet of paper, and on the second line the words that come to mind in relation to the title of the topic. Then, on the next line, he writes the words associated with the written words of the second line, etc.

• Then the teacher reads part of the lecture on this topic.

• After that, the student underlines those of the written words that sounded in the lecture fragment read, and adds the missing words in a different color. A cluster of terms is presented in a finished form on a sheet of paper.

• Then the teacher reads the next part of the lecture and everything is repeated.

This technology can be used not only in a lecture, but also in the course of students' independent study of the educational material of a particular section.
The process of humanization and humanization of education, having taken on an extensive form, did not lead to a complete solution to the problem of introducing the concept of "educational technology" into pedagogical science: "One of the reasons is seen in the technological lack of support of the process." Therefore, an integral educational technology is needed, which is "based on the ideology of enlarging didactic units, three-level planning of learning outcomes in the form of task systems, designing the educational process based on psychological and cybernetic patterns and using an integral complex of teaching aids with a special role of computers, using the entire set of teaching methods. and a wide range of organizational forms of lessons.The technological process consists of the stages of introductory repetition (updating the corresponding brain system, the main form is a conversation), the study of new material in the main volume (the

predominant form is a lecture, in the future - a workshop-seminar), a minimum training (bringing to automatism of the ability to solve problems that meet the requirements of the educational standard; forms consistently change from conversation through a workshop to independent work), the study of new material of additional volume in the form of a seminar that develops a differential Enhanced consolidation (for which a special form of a workshop was designed) with continuous monitoring of success, generalized repetition of the topic in the form of consultation, thematic control (usually in the form of credit) and individual correction of learning outcomes "[6].

To give an emotional color to the new material, as well as to better assimilate it, the method of compiling syncwines is used.

Translated from French, the word "cinquain" means a poem consisting of five lines, which is written according to certain rules. Composing a syncwine requires the student to be able to find the most essential learning elements in the educational material, to draw a conclusion and express all this in short terms. Syncwine writing is a form of free creativity, which is carried out according to certain rules.

The restructuring of the education system makes new demands on the personality of the teacher, methods and technology of teaching. A new situation of interaction between the teacher and the audience is being formed in all types of educational and cognitive activities, primarily in the lecture. The teacher at all times was a person not only transmitting information, but also influencing people with the content and power of his word.

For a long time, the transmission of educational information was carried out mainly in the form of a traditional lecture. Psychological and pedagogical research has established that a traditional lecture is a process of transferring knowledge in a finished form.

What contributes to the success of the lecture form of the lesson?

Use of modern technical teaching aids (filmstrips, films, video materials, displays, flexible automated systems, etc.).

Application of test control of knowledge. Tests can be used as input control of knowledge - to determine the initial knowledge before presenting the lecture material, and final control of knowledge - to identify the degree of assimilation of the content of the educational material at the end of the lecture.

Problematic lecture. The essence of a problem lecture lies in the fact that at the beginning and during the presentation of the educational material, the teacher creates problem situations and involves the listeners in their analysis. By resolving the contradictions inherent in problem situations, students can independently come to the conclusions that the teacher must communicate as new knowledge. At the same time, the teacher, using certain methodological techniques of involving students in communication, as it were, compels,

"pushes" them to search for the correct solution to the problem. At a problem lecture, the student is in a socially active position, especially when it is in the form of a live dialogue.

He expresses his position, asks questions, finds answers and presents them to the court of the entire audience. When the audience gets used to working in dialogical positions, the teacher's efforts pay off handsomely - joint creativity begins.

If the traditional lecture does not allow us to immediately establish the presence of feedback between the audience and the teacher, then dialogical forms of interaction with listeners allow us to control such a connection [10].

When conducting lectures of a problematic nature, the process of students' cognition approaches the search, research activity. The main task of the lecturer is not so much in the transmission of information, but in the familiarization of students with the objective contradictions of the development of scientific knowledge and ways to overcome them.

This forms the mental activity of the trainees, gives rise to their cognitive activity.

In contrast to the content of an informational lecture, which is introduced by the teacher as from the very beginning material that is known to be memorized, in a problematic lecture, new knowledge is introduced as unknown for the learners.

The inclusion of the thinking of students is carried out by the teacher by creating a problem situation, even before they receive all the necessary information that constitutes new knowledge for them. In traditional teaching, they do the opposite - first they give knowledge, a method or an algorithm for solving, and then examples on which you can practice using this method.

The means of controlling the thinking of trainees in the educational-problem dialogical lecture is a system of problematic and informational questions prepared in advance by the teacher.

Lecture with planned errors (lecture-provocation). At such a lecture, a special place is occupied by the ability of listeners to quickly analyze information, navigate in it and evaluate it [9].

After the announcement of the topic of the lecture, unexpectedly for the audience, the teacher announces that a certain number of errors of various types will be made in it: substantive, methodological, behavioral, etc. In this case, the teacher must have a list of these errors on paper, which he, at the request of the listeners, must present at the end of the lecture. Only in this case is full confidence of the audience in the teacher ensured. It is best to conduct a provocative lecture in an audience with the same level of training of students on the topic under study. The average number of mistakes per 1.5 hours of a lecture is 7-9. At the end of the lecture, the listeners should name the mistakes, together with the teacher or independently give the correct versions of the solution to the problems. For this, the teacher leaves 10-15 minutes (the time depends on the total length of the lecture and the complexity of the topic). The initial situation creates conditions, as it were,

forcing the listeners to be active: it is necessary not only to perceive information in order to remember, but to perceive in order to analyze and evaluate. The personal aspect is also important: it is interesting to find a mistake with the teacher and at the same time to check myself: can I do this? All this creates a motive that activates the listener's mental activity. After the introductory information, the teacher reads a lecture on the announced topic. It is possible that at the end, when the error analysis is carried out, the audience will find more of them than was planned. The teacher must honestly admit this (and the list of mistakes will be the confirmation). However, the teacher's art lies in the fact that he uses these unplanned mistakes to realize the learning goals. The behavior of students is characterized by a two-dimensionality: on the one hand, the perception and comprehension of educational information, and on the other - a kind of "game" with the teacher. Such a lecture performs not only stimulating, but also control functions, since it allows the teacher to assess the quality of mastering the previous material, and the listeners - to test themselves and demonstrate their knowledge of the discipline, the ability to navigate the content. It is advisable to conduct such a lecture as a final lesson on a topic or section after the students have acquired basic knowledge and skills. If they were unable to find all the planned mistakes or suggest the correct answer options, this should serve as an alarming signal for the teacher, since it indicates that he could not achieve didactic goals, and the students did not have critical thinking and practical skills.

Lecture for two. This is the work of two teachers giving a lecture on the same topic and interacting on problem-organized material, both among themselves and with the audience [8]. In the dialogue between the teacher and the audience, the problem is posed and the problem situation is analyzed, hypotheses are put forward, their refutation or proof, the resolution of emerging contradictions and the search for solutions. Such a lecture contains a conflict, which manifests itself both in the unexpectedness of the form itself and in the structure of the presentation of the material, which is based on the collision of opposing points of view, on the combination of theory and practice. The interaction reveals the psychological qualities of people. External dialogue takes place in the form of dialogical communication between two lecturers and listeners, internal dialogue - independent thinking is formed with the experience of active participation in various forms of external dialogue. The lecture creates polyphony, an emotionally positive atmosphere, a high degree of motivation and engages the audience in an active dialogue. Listeners get a visual idea of the ways of conducting a dialogue, as well as the opportunity to participate in it directly. The method of reading such a lecture suggests, first of all: the choice of an appropriate topic, in the content of which there are contradictions, different points of view or a high degree of complexity;

• selection of two teachers compatible both in terms of the style of thinking and the way of communication;
• development of a script for reading a lecture (content blocks, time distribution).

The script is necessary at the first stages of work. After gaining experience, the written script can be replaced with an oral agreement - a rehearsal.
This lecture is a mini-game, "theater of two actors". It presupposes a high degree of improvisation in the behavior of lecturers, whose performance should be natural and unconstrained. As one of the methodological methods for achieving this goal, one teacher is invited to introduce into the lecture unexpected information that is new for another, to which he must react.
Lecture-visualization. Its application is associated, on the one hand, with the implementation of the principle of problematicity, and on the other hand, with the development of the principle of visibility [7]. In a lecture-visualization, the transmission of audio information is accompanied by the display of various drawings, structural and logical diagrams, reference notes, diagrams, a pedagogical sans-serif using TSS and computers (slides, filmstrips, video recordings, code-positives, displays, films, etc.). Such clarity compensates for the lack of entertainment in the educational process. The main emphasis in this lecture is made on a more active inclusion of visual images in the thinking process, that is, the development of visual thinking. Reliance on visual thinking can significantly increase the efficiency of presentation, perception, understanding and assimilation of information, its transformation into knowledge.
Based on the achievements of psychological and pedagogical sciences in the field of the problem of visual thinking, it is advisable to convey a significant part of the information in a lecture in a visual form, to develop students' skills and abilities to transform oral and written information into a visual form. This should affect the quality of assimilation of the material, stimulation of thinking and the achievement of professional goals. A large amount of information transmitted at lectures blocks its perception and understanding. The way out of these difficulties can be considered the use of visual materials with the help of technical means. This method allows you to increase the amount of transmitted information due to its systematization, concentration and highlighting the most significant elements. As you know, in the perception of material, the difficulty is caused by the representation of abstract (not existing in visible form) concepts, processes, phenomena, especially of a theoretical nature. Visualization allows you to largely overcome this difficulty and give abstract concepts a visual, concrete character. The process of visualizing lecture material, as well as decoding it by listeners, always generates a problematic situation, the solution of which is associated with the analysis, synthesis, generalization, expansion and folding of information, that is, with the operations of active mental activity.

Lecture "press conference". The content is drawn up at the request (on questions) of the audience with the involvement of several teachers [13].

The teacher asks the listeners in writing within 2-3 minutes to ask him a question of interest to each of them on the announced topic of the lecture. Further, the teacher, within 3-5 minutes, systematizes these questions according to their content and begins to give a lecture.

Listeners can ask provocative questions. Such a lecture has the character of a "blitz game", in which the listeners play the role of participants in the press conference, and the teacher plays the role of the presenter of the press conference, demonstrating how to organize such an event.

The main tasks of the teacher are the obligatory answer to any question and the assessment of the types of questions depending on their content. The structure of the lecture can be of two types: a whole, connected presentation of the problem; briefing, that is, all questions asked by the audience are given short answers.

Consultation lecture. In type, it is close to the previous one, the difference is that the invited specialist has little command of the methods of pedagogical activity. Consulting by giving a lecture allows you to activate the attention of listeners and use the professionalism of the invited specialist.

Lecture-dialogue. The content is presented through a series of questions that the listener must answer directly during the lecture. This type is adjoined by a lecture using the feedback technique, as well as a programmed lecture-consultation [13].

Conclusions

Renewal of education is possible only through scientifically grounded improvement of pedagogical technology. Any pedagogical technology takes into account the level and characteristics of the development of students, the requirements for structuring the content and organization of subject material; organizational forms and methods of providing the educational process; criteria for evaluating the effectiveness of pedagogical technology.

There are different definitions of educational technology.

Pedagogical technology is a specific system implemented in practice. The system-activity approach is the methodological basis for the study, design and application of pedagogical technology.

The technological approach is embodied in the construction of learning systems in the past and in the present.

Each pedagogical technology has its own advantages and disadvantages. Under certain conditions, the implementation of this technique gives the most effective results, but under other conditions it can be ineffective and it is advisable to replace it with another technology. The issues of the relationship between learning technologies, the development

of criteria for the selection of learning technologies are today one of the most difficult problems of didactics.

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