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Choosing Appropriate Forms, Methods, and Study Aids

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Abstract

The article represented the problem of choice and application of pedagogically valid forms, means, and methods of education. The ability to choose enables a teacher to take the initiative, develop and adopt a curriculum, teaching, and upbringing methods within the framework of an academic subject, a course, or a discipline. It ensures teaching the subject at a high professional level, following the approved curriculum, application of pedagogically valid and proper forms, and educational methods. The author analyzed the sequence of methods and techniques combinations in the course of making a choice, which is based on understanding their applicability in the educational process. The authors outlined the possibilities of using the problem study method to form the activity of a child's personality. A comparative analysis of teaching methods was presented, and the main criteria for their selection were given. The methods capabilities were assessed, using the approach of the students' educational skills in choosing instructional methods, including a preliminary study of the willingness level for search and research activities. The combination of techniques allows us to take into account the specifics of the content of the educational material and helps students reveal their educational and cognitive abilities.

Contents

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1 Introduction

According to Federal Law №273 of 29 December 2012 "On Education in the Russian Federation" pedagogical workers have certain rights and liberties, one of which is the right of choice and application of educational forms, tools, and educational methods in line with the given curriculum or a specific school subject, course or discipline (module). Essential assumptions of the law are as follows: To carry out the educational activity at a high professional level, to ensure teaching the subject, a course, a discipline (module) following the approved curriculum, to apply teaching and upbringing methods which are pedagogically valid and provide high-quality education.

The choice of teaching methods depends on training goals and objectives, the level of complexity, novelty, and significance of the educational content, as well as students' age and personality, learning environment, and teacher expertise. The main factors complicating the choice of educational methods are: firstly, limited information about the methods; secondly, the educational methods have insufficient ideas about their developing and educational opportunities and their specific focus (for example, to focus on the independence development or on raising interest in the subject, and the like); thirdly, specialized literature does not describe the potential of various methods in solving a particular didactic problem.

Its practicability conditions the application of a particular method. For example, the most effective methods for developing students' memory are visual methods associated with observation, allocation of essential features, and memorization. If the aim is to form knowledge about nature and society, the best options are verbal teaching methods, independent working methods, and reproductive methods.

2 Materials and Methods

The paper uses the method of thought experiment, which consists of obtaining new or checking existing knowledge by constructing idealized objects and manipulating them in artificially (conditionally) set situations.

According to I. Ya. Lerner, to choose the right method and techniques combinations it is recommended to:

1) Determine the learning objectives following the educational material and its relation to the topic or section (target aspect).
2) Highlight the types of educational content in the educational material at the level of the general didactic (theoretical) presentation (substantive aspect).
3) Select the corresponding didactic educational method for each type of content following the method of its assimilation (gnostic and psychological aspects).
4) Determine the sequence of didactic educational methods following the logical structuring of the educational material content and alternation of types of its content (logical aspect).
5) Choose the source for each method - substantive, practical, or intellectual following the training material (material-source aspect).
6) Select educational methods and their combinations in line with the methods and their sequence, taking into account the students' emotional sphere and (management and educational aspects) (Lerner, 1981).

Yu. K. Babansky believes that to explain the criteria for the choice of optimal educational methods, it is essential to relate the selection procedure to the structure of the educational process (Babansky, 1981).

When planning the learning process, it is essential to:

1) Determine the aims of studying the topic and methodological instructions of the topic (tasks to generate knowledge, general scientific and engineering skills, educational and cognitive practices).
2) Study the educational material on the topic in the textbook and highlight basic scientific and educational ideas, concepts, laws, abilities, and skills that students should develop according to the task.
3) Prove the logic of exploring the topic based on the laws of knowledge acquisition, the principles of continuity, consistency, connection to real life, theory and practice, scientific character, and

accessibility; determine the right type of activities required for efficient study of the topic and assign tasks for self-study.

4) Specify the number and sequence of the lessons aimed at covering the topic considering the time allotted by the curriculum for its study.
5) Determine the topic of each lesson and its main tasks, which contribute to solving the general aim.
6) Specify the objectives of the lesson considering students' characteristics.
7) Select the most effective training content in the lesson and highlight the primary and essential topics.
8) Choose the most suitable teaching methods and tools combination for implementing the lesson content and the intended educational tasks.
9) Choose the types of work activities at the lesson - team, group, or individual.
10) Determine the best learning pace, content, and methods of students' homework.

The teacher's choice of educational methods is one of the most critical aspects of the problem of efficient pedagogical activity. These methods are interconnected and can be applied in certain combinations. The method of the oral presentation is often combined with a discussion and a presentation, the exercise - with a demonstration, the demonstration - with an explanation (presentation).

It is essential to discover the possibilities of using various educational methods during a child's activity forming. For example, the method of problem teaching can be the most effective way to develop not only cognitive but also the social activity of a person. There is no unified definition of problem teaching in psychological and pedagogical literature. According to the most theoretically substantiated approach problem learning is as a specific type of developmental education, which combines regular independent search activity of a person with the assimilation of ready-made scientific conclusions, and where the system of methods is developed considering goal-setting and the principle of problematization. Teaching and learning interaction is focused on the organization of the students' mindset, their cognitive independence, sustainable motivation for learning, and development of mental abilities (including creative), in the course of mastering scientific concepts and methods of activity, which is determined by the frame of problem situations.

First of all, a problem situation should be specified as a central element of problem education. In practice, it is supposed that each problematic situation should, on the one hand, ensure updating of the social motives of learning, on the other hand, stimulate perseverance in goals achieving. Moreover, it should provide applicability of knowledge and activities, obtained both independently or with a teacher's assistance. Of particular importance is the emotional nature of the problem situation, since emotions give specific energy potential to motivation, help students engage in the activities at the lesson. Therefore, any problematic situation should solve a wide range of tasks, aimed at developing individual characteristics of a person's social activity:

Firstly, it should arouse students' interests in the tasks in terms of social content, so that., the life of society, adults, class, and school.

Secondly, it should motivate students stressing applicability of the acquired knowledge (for example, the information obtained at a Math class can be used at arts and crafts or design classes).

Thirdly, it should foreground the personal-prestigious motivation, the desire to excel, to get approval and praise in socially significant activities through displaying initiative and responsible attitude.

Fourthly, in several cases, it is possible to create a real-life situation.

Finally, each problematic situation should enhance confidence between teachers and students. Only in this case, is it possible to complicate the tasks gradually, to develop cognitive interests and social aspects of education. We can achieve the most significant effect in training only if we combine several teaching methods (at the same time) and take into account that we can use different methods to solve specific problems. The comparative capabilities of various teaching methods to represent what educational tasks are more convenient to solve using research methods will be given.

A. V. Zankov marked out the main criteria for choosing teaching methods (Zankov, 1990):

Patterns and principles of learning.

The goals and objectives of training in general and at a particular level.

The content and methods of science in general and in the subject in particular.

Students' educational opportunities:

age (physical, mental);
level of expertise (educational and upbringing);
features of the class group.

Features of external conditions (geographical, industrial, and the like).

Teachers' opportunities: their previous knowledge experience in typical learning process situations (where the specific combinations of methods were most effective), the level of their theoretical and practical qualifications, their ability to use certain methods, means and choose the best option, and their personal qualities.

The same requirements are determined by a holistic systems approach to the learning process, where they are applied to all main educational system elements: students, teachers, external conditions. Also, they are applied to the components of the learning process itself - objectives, content, methods, and forms, means, and expected to learn outcomes. The choice of teaching methods should be subject to the laws and the principles of learning. It implies methods aimed at solving complex problems of education, upbringing, and development, the scientific nature of methods and their accessibility for students, the focus on the activity development and independence in learning, ensuring knowledge, competencies, skills stability.

If the teacher is aware of the possibility of each teaching method, it can help him avoid routine, lead to the choice of rational methods. As long as the learning objective is implemented through specific content, the teaching methods should completely take into account the specific features of the learning material, the nature of the learners' actions, which will be required to master the content. One content can be better revealed through an inductive method of teaching, the other one - through a deductive method. Thus, it is necessary to have a specific assessment of the possibility of using unique methods. The teacher should study in advance the level of students' willingness for the search, research, deductive understanding of the material, independent practice, ability to learn, the degree of development of self-control in the learning process and the state of performance, which will help him see the criterion of students' learning abilities and choose methods of learning.

In this study, it is essential to find out the main reasons why some students fall behind in their studies. In modern pedagogy, G.I. Shchukina and Z.I. Kalmykova identified the main groups of possible reasons for students' failure (Shchukina, 1981; Kalmykova, 1975).

Internal:

Lack of the person's upbringing (in the development of moral qualities; in relationships with teachers, peers, family or as a part of labor education);

Limits of the person's mental development (law level of development of intelligence, will, emotional sphere; lack of proper cognitive interests, needs);

Limits of the person's biological development (defects of sense organs; peculiarities of higher nervous activity which harm the students; psychopathological deviations);

The personal learning experience (gaps in knowledge, gaps in specific and learning skills).

External:

The lack of school influence (learning process, individual approach; the educational influence of school - teachers, the student community);

The out-of-school environment influences deficit (families, peers, children, and other adults).

If the teachers are aware of the possible causes of failures, they can better identify and prevent these causes. The teacher should not only adapt to the changing level of opportunities but also strive to expand these students' opportunities gradually using learning methods that enhance their autonomy.

Here is an approximate generalized scheme that represents the comparative effectiveness of pedagogical methods in the same group to identify the advantages and disadvantages of research teaching methods. Vertically we will arrange the main methods heading inwards all methods subgroups that we have identified. Horizontally we will arrange some of the main types of education and tasks of students' development: organization of theoretical knowledge, actual knowledge, practical and working skills; development of verbal and logical thinking, visual thinking, independent thinking, memory, speech, cognitive interests, academic skills, volitional abilities, emotions. Furthermore, in the end, we will show which method requires less time for its application.

3 Results and Discussions

Table 1
Comparative possibilities of various teaching methods

	Main educational tasks which are solved during the study												
	Organization			Development of									
	Theoretic knowledge	Actual knowledge	Practical and working skills	Verbal and logical thinking	Visual thinking	Independent thinking	Memory	Speech	Cognitive interest	Academic skill	Volitional abilities	Emotions	Learning pace
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Verbal	+!	+!	-	+!	-	-	+	+!	+	+	+	+	Fast
Visual	-	+	+	_	+!	+	+!	_	+!	+	+	+!	Medium
Practical	-	+	+!	_	+	+!	+	_	+	+!	+!	+	Medium
Reproductive	+	+!	+!	+	+!	_	+!	+	+	+!	+	+	Fast
Problem searching	+!	+	_	+!	_	+!	+	+!	+!	+	+!	+!	Slow
Inductive	+	+	+!	+	+!	+	+	+	+	+!	+!	+!	Slow
Deductive	+!	+!	_	+!	+	+	+	+	+	_	+!	+	Fast
Teaching methods with teacher's leadership	+!	+!	+	+	+	+	+	+	+	+	+	+	Fast
Self-study methods	+	+	+!	+	+	+!	+!	+	+!	+!	+!	+!	Medium
Cognitive games	+	+	+	+	+!	+!	+!	+	+!	+	+!	+!	Slow
Training discussions	+!	+!	_	+!	+	+!	+	+!	+!	+!	+!	+!	Slow
Oral control	+!	+!	_	+!	_	+	+	+!	+	+	+	+	Medium
Written control	+	+	_	+	+	+	+	+	+	+!	+!	+	Medium
Laboratory works	_	_	+!	_	_	+	_	_	+	+!	+	+!	Slow

Legend:
(+!) – the particular problem is solved more successfully than other methods of this group;
(+) – this problem is solved;
(-) – this problem is solved less successfully than other methods of this group.
Research methods are most effective in solving the majority of educational problems, but they require more time and effort from teachers and students.
It is especially useful to use practical methods related to logical exercises, problem-solving, essays, poems, and the like for the development of independent thinking. Also, problem-searching methods are instrumental in studying educational material. Methods of independent work are preferable in their various forms.
Cognitive interests are successfully formed by using the full range of educational methods. However, it is known from the experience that interest in teaching can be significantly increased by including visual

methods, problem-searching methods, methods of independent work which were provided with preliminary training of students under the guidance of a teacher. Methods of cognitive games included in the learning process, as well as in learning discussions, play a considerable role. In the process of forming academic skills (working with a book, performing experiments, ability to rationally memorize material, ability to solve educational problems independently, work at the proper pace, ability to highlight the main issue, plan your work, and the like), we should apply all methods.

Table 2
Rational application of teaching methods

Teaching methods	Where is this method more effective?	At what content of educational material is this method particularly rationally applicable?	Under what features of students is it rational to apply this method?	What abilities should the teacher have to be able to use this method?
Oral	In the formation of theoretical and practical knowledge and learning problems solutions.	When the material has primarily theoretical informational type	When the students are ready to absorb information on these types of verbal methods.	When the teacher masters the verbal method.
Visual	Invisibility development, attention to learning issues is increasing.	When it can be presented for the audience	When visual aids are available to students.	When the teacher has the necessary teaching aids.
Practical	In practical skills development	When the content also has the practical aspect	When the student is ready to do some practical tasks	When the teacher has necessary teaching aids and didactic materials
Reproductive	In knowledge and skills organization	When the content is too complicated or too ordinary	Students are not ready for a problematic study of the topic.	When there is no time for a problematic study of the topic
Searching	In independent thinking, research skills, and creative business approach development.	When the content has medium difficulty	Students are ready for a problematic study of the topic.	When there is enough time for the problematic study of the topic
Inductive	In the ability to summarize development, and inductive conclusions development.	When the content is inductively outlined	When the student is ready to hold an inductive discussion	When the teacher is more skillful in using inductive teaching methods.
Deductive	In developing the ability to build deductive inferences and the ability to analyze phenomena.	When the content is deductively outlined	When the student is ready to hold a deductive discussion	When the teacher is more skillful in using deductive teaching methods.
Independent work	In developing independence in learning activities, the organization of academic work skills.	When the content can be learned independently	When the student is ready to learn the theme himself	When there is didactic material for the independent work of students.

4 Conclusion

This scheme represents that teaching methods are interchangeable, compensatory, and some of them can compensate for the shortcomings of others. The possibilities of various teaching methods that we have considered also lead to the conclusion that it is necessary to combine them in the learning process. With a variety of methods, active perception of learning material is provided with various types of memory and mental activity. Due to the novelty effect, a variety of methods enhances the students' cognitive activity, causes, and keeps their cognitive interest. The combination of methods allows taking into account the specific features of the learning material, and help students reveal their learning and cognitive abilities to choose the most rational techniques for mastering knowledge.

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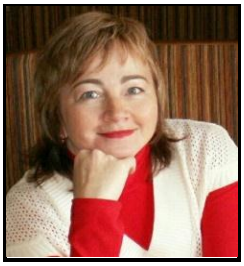
Biography of Author



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