

THEORETICAL BASIS OF DEVELOPMENT OF CONSTRUCTION SKILLS IN PRIMARY CLASS STUDENTS

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Abstract. *The article reveals the theoretical and practical aspects of the activities of a technology teacher at school in the context of updating the standards of basic general education, starting with the analysis of regulatory documents and ending with planning the methodological work of the teacher. To consolidate the acquired knowledge and develop methodological skills, the manual presents plans for laboratory work and methodological recommendations for them.*

The materials contained in the manual can be used to organize practical, including independent, work of students, their teaching practice at school when drawing up reporting documents, preparing for lessons, and in the process of preparing schoolchildren for professional self-determination.

Keywords: *technology, teaching methodology, design, training, professional training, competence*

A teaching method is an ordered activity of the teacher and students aimed at achieving a given learning goal. Teaching methods (didactic) are often understood as a set of paths, methods of achieving goals, and solving educational problems².

There are a large number of classifications of teaching methods. Not one of the classifications claims to completely take into account all factors, so the teacher in his work has, as shown, to use several classifications.

One of the most common is the classification of methods according to the type (nature) of cognitive activity. The nature of cognitive activity reflects the level of independent activity of students [1].

This classification is characterized by the following methods³: Explanatory and illustrative, or informational onto-receptive method. The teacher communicates ready-made information through various means, and students perceive it, understand it and record it in memory. This includes techniques such as story, lecture, explanation, working with a textbook, demonstration.

Reproductive method. Student playback educational actions according to a predetermined algorithm. Used to help students acquire skills and abilities.

A problematic presentation of the material being studied (I ask and answer). When working using this method, the teacher poses a problem to the students and himself shows the way to solve it, revealing the contradictions that arise. The purpose of this method is to show an example of the process of scientific knowledge. At the same time, students follow the logic of solving a problem, become familiar with the method and technique of scientific thinking, and an example of a culture of deploying cognitive actions [5].

Partial search (heuristic) method (I ask and they answer). Its essence is that the teacher divides a problematic problem into subproblems, and students carry out individual steps to find a solution to this problem. Each step involves creative activity, but there is no holistic solution to the problem yet.

Research method (ask and answer). In this case, students are presented with a cognitive task, which they solve independently, selecting the necessary techniques for this. This method is designed to ensure that students develop the ability to creatively apply knowledge. At the same time, they master the methods of scientific knowledge and accumulate experience in research and creative activities.

Sometimes it is more convenient to use a classification based on the source of knowledge. This classification distinguishes five methods: practical, visual, verbal, working with a book, video method. The classification today can be supplemented by a group of methods “working with a computer” [5].

The choice depends on a number of factors:

- on the objectives of the lesson;
- features of the content and methods of this science, subject, topic being studied;
- features of the teaching methodology no academic discipline;
- time allocated for studying this or that material;
- age and individual characteristics students, the level of their real cognitive capabilities, their preparation;
- external conditions (geographical, industrial environment);
- material equipment of the educational institution, availability of equipment, visual aids, technical means;
- capabilities and characteristics of the teacher, level of theoretical and practical preparedness, methodological skills, his personal qualities.

When choosing teaching methods in a technology lesson, you should remember a number of rules:

- Up to 70% of the total time when studying the subject “Technology” is devoted to practical work. It is possible to develop skills and abilities only by using practical teaching methods.

- Working with natural samples, direct execution of work should be preferred to their virtual demonstration or testing on simulators, where possible.

- Any method you choose must achieve the triune goal. This means that in the classroom there are no methods that work only for teaching, or education, or development. Each teaching method carries a developmental and educational load. Therefore, when choosing which methods to form knowledge and skills, take into account what educational and developmental goals should be achieved in this lesson.

- Give preference to active, activity-based teaching methods. The higher the activity and independence of students within the chosen method, the higher the degree of awareness of knowledge acquisition and the strength of its assimilation. Active learning methods also have higher developmental potential. However, it should be remembered that such methods require more time and effort from students, so this must be taken into account when determining the lesson regulations.

- A variety of methods will avoid routine, expand the range of educational and developmental goals that can be achieved, and reduce student fatigue. Remember that any educational goal can be achieved through different methods, each of which has its own advantages. Therefore, determine which tasks will be a priority for a given lesson, and choose methods based on this (Table 1).

Table 1 Comparative analysis of some methods presentation of new material

Method	Advantages Disadvantages	Explanation
	Opportunity to consider large amount of information for a limited time. Records made into explanations subsequently used in preparation for the controlling activities	
Explanation with visualization (multimedia presentation, visual aids, samples)	Quite time-efficient, it uses the visual channel of perception, which increases the degree of assimilation and memorization. If certain conditions are met, it allows you to develop spatial thinking, aesthetic taste, and influence the emotional sphere by creating vivid images	Low activity of students, predominance of perception over thinking. Requires more thorough preparation, certain skills in working with visual material, and technical equipment
Heuristic conversation	Develops thinking, generates interest, increases the level of awareness of the material. Ensures high student activity and builds positive self-esteem. Teaches you to answer questions with reason and formulate questions correctly	It takes a lot of time to prepare and carry out. Difficulty of preparation: the teacher is required to have a high level of problem thinking, predictive skills, and knowledge of the students' level of preparation. Managing the conversation involves class engagement, which is not always achievable.
Individual independent work with the source	Independence develops; ability to search and analyze information, self-education; discipline	Time-consuming, requires appropriate didactic support, weak feedback, difficulty in managing students' attention and the pace of their work
Working with sources in a group and then presentation	Independence develops; ability to search and analyze information, self-education;	It takes a lot of time, it is difficult to manage the activity of individual

	discipline. Mutual learning increases the strength of knowledge acquisition and develops communication skills	students, there is a risk that the material will not be analyzed in the required volume, intra-group conflicts are possible
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An approximate idea of the effectiveness of teaching methods depending on the degree of activity of students is provided by the “Learning Pyramid”, developed by the US National Training Laboratory based on an analysis of the influence of teaching methods on the degree of mastery of the material. Despite the fact that the numerical data in the pyramid is approximate, in general it quite accurately reflects the dependence of the quality of knowledge acquisition on the degree of activity [7].

In fact, there are no methods that are ideal for solving specific problems. In each specific case, we are talking about choosing from a variety of options, taking into account many parameters.

At the first stage of planning, the type of lesson is determined. Depending on the type of lesson, didactic goals are selected.

The priority objectives of the theoretical training lesson include:

- 1) formation of technological concepts;
- 2) formation of experience with technological information;
- 3) formation of technological knowledge and skills in accordance with the topic of the lesson.

During operational work, the teacher must:

- 1) teach how to prepare tools, materials, equipment;
- 2) teach how to perform techniques, the operation as a whole;
- 3) teach quality control;
- 4) teach how to organize a workplace and perform. Follow the safety rules.

For complex work, the teacher must:

- 1) teach how to plan a technological process;
- 2) teach how to perform the technological process;
- 3) teach self-control techniques;
- 4) teach how to organize the workplace and observe give safety rules.

When planning a lesson, you need to pay attention to mania for the implementation of cross-cutting educational lines:

- 1) technological production culture;
- 2) common technologies of modern production
- 3) culture, ergonomics and aesthetics of work;
- 4) receiving, processing, storing and using technical and technological information;
- 5) the basics of drawing, graphics, design;
- 6) elements of home and applied economics, entrepreneurship;
- 7) getting to know the world of professions, choosing a life, professional plans by students;
- 8) the influence of technological processes on the environment; living environment and human health;
- 9) methods of technical, creative, project activities;

10) history, prospects and social consequences pits of technology and engineering development.

The lesson is constructed from separate stages. Depending on the type of lesson, the set of stages, their duration and sequence may vary. The most common form of technology lesson is a combined lesson. Let's look at the structure of lessons in this form in more detail.

In the pedagogical literature, there are a large number of different approaches to structuring lessons, which in one way or another rely on the classical four-tier structure proposed in the works of Comenius and Herbart: 1) preparation for mastering new knowledge; 2) mastering new knowledge and skills; 3) their consolidation and systematization; 4) application in practice. For example, Yu.A. Konarzhevsky identifies the following stages of a combined lesson⁶:

- 1) organizational;
- 2) checking homework;
- 3) comprehensive knowledge testing;
- 4) preparing students for active and conscious to master new material;
- 5) assimilation of new knowledge;
- 6) checking students' understanding of new material;
- 7) consolidation of new material;
- 8) informing students about homework, instructions for its implementation.

M.I. Djumaev proposes the following structure:

- 1) organizational stage;
- 2) checking homework and surveying students;
- 3) learning new material;
- 4) primary test of assimilation;
- 5) consolidation of new knowledge during training exercises;
- 6) repetition of previously studied in the form of a conversation;
- 7) testing and assessing students' knowledge;
- 8) homework;
- 9) summing up the lesson [5].

Thus, despite differences in the number and the names of the stages, the main four links mentioned earlier are invariably traced. In this regard, when planning technology lessons, you can rely on the following structure:

1. Organizational stage. The goal of the stage is to prepare students to work in lesson. Contents of the stage: greeting, checking attendance bridges, filling out a journal, checking readiness for a lesson, communicating a lesson plan, getting ready to work.

2. Checking homework completion. The objectives of the stage are to establish the correctness and awareness the ability of all students to complete homework, identify gaps and correct them. Contents of the stage: assessment of homework completion, demonstration of the most successful samples, analysis of errors. Depending on the nature of the homework, this stage can be placed differently in the structure of the lesson. If it was necessary to learn theoretical material, checking homework is combined with updating. If it was necessary to do preparatory practical work, it is advisable to check it before practical work in class.

3. Setting the goals and objectives of the lesson. Motivation for students' learning activities.

The task of the stage is to ensure students' motivation and acceptance of the goal of educational and cognitive activity, and to form an idea of the goals of the lesson. Content of the stage: message or joint "discovery" of the topic of the lesson. Creating a positive attitude towards studying the topic. The main means by which this can be achieved are:

- Problematic questions that create a cognitive contradiction, a difficulty that the student can resolve by mastering the lesson material. The method becomes more effective if the problem is presented in the structure of a specific situation that requires analysis and solution.

- Visualization, that is, demonstration of bright, emotional images related to the topic, display of products that the student can make, or that were made by other students before him.

- Reliance on the personal experience of students, encouragement to analyze how the objects and phenomena being studied manifest themselves in the child's life, what he can gain for himself by studying this topic.

As additional means of motivation that allow you to create a positive attitude towards studying the topic, you can offer:

- Game elements. Charades, puzzles, riddles, etc. do not arouse interest in the topic itself, but they allow you to attract the attention of students and get them ready to work.

- Surprise. This emotion is a good way to attract attention. In order to evoke it in children, you can use entertaining facts and experiments related to the topic.

4. Updating knowledge. The task of the stage is to update the knowledge required. We are going to study a new topic.

Contents of the stage: repetition and consolidation of knowledge necessary to master a new topic. This could be knowledge gained in a previous lesson, while studying this topic last year, while studying other subjects and courses; everyday knowledge available to students. Updating can be carried out in the form of surveys (individual, frontal, group), conversations, shift work, game forms, etc. The main thing to remember is that the main task of this stage is not to check your mastery, but to remember the necessary material. Depending on the logic of the lesson, this stage may precede the stage of setting goals and objectives, smoothly flowing into it, or follow immediately after it.

5. Assimilation of new knowledge and methods of action. The objectives of the stage are to provide perception, comprehension and primary memorization of knowledge and methods of action, connections and relationships in the object of study.

Contents of the stage: providing students with new information, organizing a discussion. If the lesson is practice-oriented in nature, then at this stage it is also possible to demonstrate working methods, as, for example, when studying methods for constructing drawings.

Possible options for organizing this stage include: in which the assimilation of new knowledge is organized through mutual learning, working with sources, etc. It is important at this stage to control the attention of students - the maximum time during which students are capable of actively assimilating information is 15 minutes, the optimal is 10, after which it is necessary to switch attention. It is also necessary to maintain constant feedback, for which it is worth asking questions to the trainees and encouraging them to ask questions.

Determine which material you present is the main one and will be included in subsequent control activities. This material must be available to the student: it can be given on record, either in the textbook (then indicate exactly where this material is presented), or in the form of printouts (electronic notes). Note-taking, in addition to allowing the student to have the necessary

information “at hand,” increases the degree of memorization, focuses attention on the main thing, but takes a lot of time, and given the fact that modern students more often use a keyboard than a pen, it is very tiring. Therefore, choose the most important thing for your notes.

6. Initial check of understanding. The task of the stage: to establish the correctness and awareness the ability to master new educational material; identify gaps and misconceptions and correct them.

Contents of the stage: the same forms of work as for updating are applicable. At this stage, you can track whether all the information was correctly perceived by the student and correct misunderstandings.

7. Consolidation of knowledge and methods of action. The task of the stage: to ensure the assimilation of new knowledge and methods of action at the level of application in a changed situation.

Contents of the stage: at this stage, activities are organized aimed at reproducing information, as well as mastering and consolidating methods of activity based on it. This problem can be solved by solving problems, exercises, and practical work of a reproductive or creative nature. Before starting practical work, students must repeat the basic safety rules. If this type of work is performed for the first time, students are instructed and sign a safety log. During the work, the teacher monitors and controls[8-10].

8. Control of assimilation, discussion of mistakes made and their correction.

The task of the stage: to identify the quality and level of mastery of knowledge and methods of action, to ensure their correction.

Contents of the stage: assessment, mutual assessment and self-assessment of the results of practical work are carried out, additional surveys are carried out, the most successful completion of the task is noted, errors made and their causes are analyzed.

9. Reflection (summarizing the lesson).The task of the stage: to mobilize students for reflection their behavior (motivation, methods of activity, communication), ensure the assimilation of the principles of self-regulation and cooperation.

Contents of the stage: students evaluate the results of their work, make judgments about the degree of implementation of goals, and the relevance of the knowledge gained.

10. Report of homework, instructions on how to complete it.

Objective of the stage: ensure understanding of the purpose, content and methods of completing homework, check the corresponding records

Contents of this task: students are informed of their homework, given the necessary explanations for its implementation, as well as the method and method of control. The task is recorded in the diary.

If practical work takes up more than 40% of the lesson time, it is convenient to use a slightly different structure, including a system of instructions. In this case, the lesson will have the following stages:

1. Organizational stage.
2. Checking homework completion.
3. Introductory briefing:
 - setting the goals and objectives of the lesson. motivation to study student activities;
 - updating knowledge;
 - assimilation of new knowledge and methods of action;

- initial check of understanding;
- clarification of the tasks and content of practical work;
- safety briefing;

11. Current briefing. It is carried out as students complete independent work. The teacher observes the students' work, provides the necessary explanations, and monitors the correctness of the work. If errors are detected in the execution of work, the work is interrupted and corrected. You can invite the student to find the error himself, ask the class for help, or show the correct example of performing the action.

If several students make the same mistake, it is advisable to interrupt the work of the whole class and re-examine the problematic element

12. Final briefing.

- control of assimilation, discussion of admitted errors and their correction;
- reflection (summarizing the lesson);
- notification of homework, instructions on how to complete it;
- cleaning the workplace.

The lesson plan can be presented in the form of notes that or technological map. A lesson note is a script that details the teacher's words and expected student responses. This format can be convenient for a novice teacher or when conducting lessons in a non-traditional format. In other cases, it is more convenient to use a technological lesson map, in which the lesson plan is presented in the form of a table. The required components of the table are the names of the stages, the teacher's activities and the students' activities. It is also advisable to write down the tasks and/or planned results of each stage. The remaining columns are added at the discretion of the teacher. You can write practical tasks, additional tasks, control tools, etc. in a separate column [7].

The main, meaning-forming moment of a teacher's professional activity was and remains the moment of direct interaction with students: in lessons, in extracurricular activities, during individual work with students. However, in order for this interaction to be productive, a lot of preparatory work needs to be done. There will probably never come a moment in a teacher's life when the knowledge that he already has will be enough for his professional activities. Being a teacher means constantly learning. Analyzing new regulatory documents, studying your students, tracking new trends, scientific discoveries in the field of your discipline, mastering new methods and techniques of teaching, education and development - this is what a teacher is constantly doing. But this is not enough. Everything new must be processed, connected with existing systems in the teacher's activities, and woven into the pedagogical process.

The work of a teacher is an endless path of knowledge and creativity. We hope that this manual will allow young technology teachers to confidently stand on this path and move forward in search of their own style, their own solutions. The materials presented here are only the basis, the base on which, upon coming to school, a technology teacher will be able to build his own building of professional excellence.

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