представление их в логичной последовательности порядка изучения и усвоения материла, т. е. от простого к сложному, от частного к общему; 3) разработка поэтапных разъяснений, указаний и рекомендаций по выполнению работ, содержащихся в данной разрабатываемой инструкционно-технологической карте; 4) представление рационального алгоритма выполнения приемов и способов трудовых операций.

Так же при разработке инструкционно-технологических карт, следует учесть взаимосвязь вспомогательного материала (указаний, пояснений, объяснений), содержащегося в карте, с тем излагаемым материалом, который имеет место в вводном инструктировании обучающихся мастером производственного обучения.

Исходя из результатов педагогической практики применения инструкционно-технологических карт, являющиеся самостоятельным источником информации, возможно решение проблемы, которая связана с результативным инструктажем каждого из обучающихся и последующим повышением уровня их самостоятельности в процессе обучения.

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МЕТОДЫ И СРЕДСТВА НАУЧНО-МЕТОДИЧЕСКОЙ СИСТЕМЫ ОБУЧЕНИЯ СТУДЕНТОВ В УСЛОВИЯХ ПРОБЛЕМНОГО МОДЕЛИРОВАНИЯ
METHODS AND MEANS OF SCIENTIFIC AND METHODICAL SYSTEM OF TEACHING STUDENTS IN THE CONDITIONS OF PROBLEM MODELING

Аннотация. В данной статье раскрываются особенности выбора методов и средств при применении научно-методической системы в рамках проблемного моделирования при обучении студентов вузов.

Abstract. The features of the choice of methods and tools in the application of scientific-methodological system in the framework of problem modeling in the training of University students are suggested in this article.

Considering the choice of teaching methods, we will keep in mind that in any act of educational activity there are several methods at the same time; speaking about the use of a certain method, we mean its dominant role at each stage of the educational and cognitive process.

Methods.

Among traditional methods, the most commonly used in teaching at universities, it is necessary to distinguish the methods:

– *organization of educational and cognitive activity*: lecture, explanation, conversation, work with scientific and educational literature, demonstrational, practical, laboratory;

– *stimulation of learning and cognitive activity:* creative assignment, discussion, group work, method, appropriate chosen professionally significant tasks;

– *control over the effectiveness of educational and cognitive activity:* monitoring of educational activities, laboratory, test control, self-control, exam.

There are many different private methods included in one or several of general considered groups. For example, Khamov G.G. [1] considers 15 such methods. Including strengthening the motivation of educational activities; comprehensive presentation of the material; selection of basic material with the concentration of educational material around the basic theme; preparation and application of algorithms.

We consider the methods of methodical system of training in the context of problem-model approach:

1. *Heuristic conversation.* The method is called from the ascending to Socrates method of learning "heuristics" (looking for). The method in its ancient Greek version was a system of training based on the so-called Socratic conversations. During conversations by formulated leading questions and examples to answer the question. It is a question - answer form of education when the teacher instead of giving students ready knowledge forces them to come to new concepts and conclusions independently. It is realized by correctly posed questions from the teacher and the involvement of the student's experience, existing knowledge and observations. A characteristic feature of such a conversation is the nomination of a problem that needs to be solved. To do this, students should be asked a series of interrelated questions that follow from one another. Each of the sub-questions is a small problem, but together they lead to a solution of main problem posed by the teacher. The question here plays a very important productive and cognitive function.

2. *Heuristic discussion.* It is an extended heuristic conversation, a specially programmed free discussion of theoretical issues of the curriculum, which usually begins with a question and unfolds as a heuristic conversation. The fact that it is gradually transformed into a discussion – is the normal progress of the class. It should be used in group classes at seminars, discussions, workshops, interviews to discuss the results of the tasks, in practical and laboratory classes, when students need to speak. Sometimes lectures – discussions are also practiced when the lecturer during presentation appeals to the audience with some questions that require short and quick responses.

3. *The method of game simulation.* We consider modeling – as studying of any phenomena, processes or systems by building and studying their models; the use of models to determine the behavior and characteristics of real systems. Game modeling is a kind of game method, an important tool for the development of thinking, memory, attention of the student in the process of studying the content of academic disciplines. It is carried out through "immersion" in a specific situation, modeled for educational purposes, and involves the most active position of the students themselves. Also, game modeling is the process of reflecting

reality, or fantastic reality in the game. In the game the moral qualities are formed; team responsibility for the charged business, the sense of fellowship and friendship, the coordination of the actions in achieving the common goal, the ability to resolve controversial issues fairly. Here are some didactic possibilities of game modeling:

- development of the ability to Express ideas and suggestions;
- improvement of skills of interaction with different people;
- development of the ability to answer questions spontaneously and solve unusual situations;
- to visualize the collected ideas;
- development of pedagogical tact skills;
- the opportunity to develop your mind, because you need to build an intrigue and implement it;
- development of psychological plasticity;
- development of the ability to navigate in real life situations, losing them repeatedly and, as if, pretend in a fictional world;
- development of an active attitude to life and commitment to achieve this goal.

4. A variety of game simulation method can be business and simulation games.

Business game. The principle of method of business games as a method of training is to simulate the situation of the activities that must be shown to in order to teach future professionals on models, not on real objects to perform appropriate professional functions.

Imitation game. It is one of business games that allows participants to understand the principle of the processes in various fields, to assess their abilities to work in a team and to show analytical, leadership and other business qualities. The concept of simulation game spread as a general concept for numerous learning strategies that include game elements. This includes such concepts as role-playing games, conflict games, games for decision-making, business games, computer simulation based on business games, etc. A simulation game (or metaphorical business game) is a type of business games based on a metaphor that reflects the real process. Metaphor (from Greek metaphora – transference) – transference of properties of one object (phenomenon), on the basis of shared or similar for both compared members [2].Simulation games combine such elements of the game as competition, cooperation, reflecting the characteristics of reality.

5. *The method of "round table".* This method was borrowed into pedagogy from the field of politics and science. In education, this method is used to improve the efficiency of mastering theoretical problems by considering them in different scientific aspects with the involvement of teachers of other disciplines. The result of the round table is a common, agreed conclusion.

6. *Method of " brain storm".* This method as a method of teaching has not yet had time to settle down in the practice of university teaching. The name of the method by itself was born in the management system, as well as in the field of scientific researches. It is especially widely used in economy management and management. Its principle is to find the answer of experts to a complex problem by means of intensive statements of various ideas coming to mind, guesses, assumptions, random analogies, as well as spontaneously arising necessary and unnecessary associations.

7. *Problem-model training.* Training as a common concept is an intensive form of training that combines short theoretical seminars and practical skills development in a short period of time (one to five days). It is important to note that the classical pedagogical triad (stages of training) "knowledge and skills" works here too. Firstly, you explain something to a person (knowledge, information), then he trains, works out an obtained model (skills), and then fixes (takes the skill in the skill acquired by experience). The only question is, what is used most of all during the lesson: if 99% of knowledge, it is a lecture. If 99% - practicing

skills, it is – practical course. But in any case, all three components must be preserved, otherwise the models for which the training was started will not be fixed in the human psyche.

Thus, we will define problem-model training as an intensive method of training, in which problem situations are created in a short period of time and the activity of students is organized to solve learning and educational problems, providing an optimal combination of their independence, search activity with the assimilation of ready conclusions of science, ensuring the use of specialized knowledge in future professional activity; planning educational projects in the conditions of modeling of the studied phenomena [3].

Means of training.

We understand the means of training as the objects and processes (material and non-material), which serve as sources of educational information and tools (actually means) for the assimilation of the content of educational material, development and education [4].There are two groups of learning tools - sources of information and tools for capturing of educational material. Among the innovative teaching tools can be identified hardware, including: computer, interactive whiteboard, media projector, MFP; document camera, modular system of experiments and digital microscope, a system of control and monitoring of the quality of knowledge; software, including a pre-installed multi-user operating system and application software; and electronic educational resources. The modern system of learning tools in the context of the problem-model approach is a set of interrelated and interacting traditional and innovative learning tools that integrates and functionally provides all levels of information and educational environment.

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ОРГАНИЗАЦИЯ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА С ОПОРОЙ НА АДАПТИВНОЕ УПРАВЛЕНИЕ

ORGANIZATION OF EDUCATIONAL PROCESS BASED ON ADAPTIVE MANAGEMENT

Аннотация. Рассматривается организация образовательного процесса в техническом университете с опорой на адаптивное управление.

Annotation. We consider the organization of the educational process a technical university with the support of adaptive management.

Ключевые слова: качество подготовки, адаптивное управление, организационно-педагогические мероприятия, механизм обратной связи.

Keywords: quality of training, adaptive management, organizational and pedagogical activities, feedback mechanism.