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SPECIFIC FEATURES OF THE USE OF MODULAR LEARNING TECHNOLOGY IN HIGHER EDUCATION

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Abstract:

The content of modular educational technology, the use of modular educational technology to ensure effective results, the principles of modular educational technology, the development of students' learning activities and creative abilities and opportunities to study the material logically, the modules of modern pedagogical technologies The modules of educational content - the units that make up the content of the information being taught, the modules of educational tools - the units of these tools, the modules of teaching methods - the units that make up the actions performed during the implementation of these methods, as well as modular learning technology It is important to optimize the training of specialists in the education system, to meet the educational needs of the individual and society to the maximum, to differentiate vocational training. issues of application as a factor are interpreted.

Keywords: university, education, teaching, process, system, unit, structure, content, module, part, component, tool, factor, technology, design.

INTRODUCTION. In the process of implementing the reforms in the education system, a wide range of opportunities are being created for the full development of the individual and the effective education of young people [12]. In modern society, the level of development of a country is determined not only by its technical condition, but also by the professional competence of specialists trained in higher education institutions. In modern conditions, an important direction in the system of higher education is the optimization of training, maximum satisfaction of educational needs of the individual and society, differentiation of vocational training. The main feature of continuing professional training is the adherence to the principle of continuity, reliance on tradition in achieving educational goals. Analysis of the activities of teachers of vocational education in higher education institutions shows that they need to develop professional competence in their subject and the education of a harmoniously developed generation and the ability to consistently apply them in their future careers.

Ensuring the development and prospects of our country is associated with great changes in the economic, social, political and cultural spheres [13]. At present, the level of knowledge, scientific-innovative thinking and effective use of complex man-made devices in production is increasing in each of the members of society, which is rapidly developing in all directions. This, in turn, is due to the fact that the population is deeply educated. That is why we need to expand the opportunities for our young people, who are oriented to a particular profession in all sectors and industries of our economy, to gain in-depth knowledge at every stage of education.

Modernization of the education system, changes in the system of vocational education make it necessary to develop the professional competence of the staff of the educational institution. At present, the state educational standards of higher professional education are being introduced, and innovations are being widely introduced in the content and technology of education aimed at improving the quality of training of future vocational education teachers.

The content of the credit-modular education system used in higher education institutions as an experiment is a module that helps to develop personal qualities and core competencies. This module is a relatively independent unit of the curriculum aimed at shaping the competencies of a particular professional group.

One of the main tasks of educational institutions is to provide students with knowledge created throughout the history of mankind, to create appropriate conditions for regular learning in the basics of science, to meet the needs and interest in learning by selecting the necessary information and teaching independent reading. These tasks cannot be solved using traditional learning technology, so there is a need to use modular learning technology in the educational process.

MAIN PART. The development of science is the field of activity of specialists with higher education. The content and requirements of the higher education system also require the development of students' learning activities [14]. Therefore, the system of training highly educated specialists should allow them to master the modern flow of

information, develop research skills, individual and independent work skills, work creatively with scientific and technical information and educational and scientific literature.

The preparation of the module involves four main steps.

At the initial stage, the analysis of the training material is carried out in terms of the methodological feasibility of its presentation in the modular version.

The second step is to identify goals that reflect the achievement of these goals and to determine the planned learning outcomes.

The content of the third stage of the developer's activity includes the development of educational materials in the form of modules, the design of educational activities that meet the learning abilities of students.

The final, fourth stage consists of an experimental examination of the created module program, in which deficiencies are identified and the content of the modules is corrected.

It uses the concepts of sub-module, module set, primary module and module level. They are described as follows:

The small module represents the smallest unit in the structure of modern pedagogical technologies. In practice, it is considered that such a small module cannot be divided into other sub-modules.

The primary module is a set of modules that are selected as the first module in the description of modern pedagogical technologies from one of its levels and include one or more sub-modules.

A module set is a set of several modules that are considered as a single module in order to describe modern pedagogical technologies from one level to another.

Module level is an indicator of how many modules the primary modules actually have in their composition, selected in accordance with the scale of description of modern pedagogical technologies.

Modules of modern pedagogical technologies can be divided into the following levels [9]:

1. Modules that make up the technology of conducting a training session.

2. Modules that form one subject, one section, part or all of the subject and the teaching technology. They are also called blocks.

3. Modules (blocks) that make up the components of several related disciplines, as well as the technology of teaching certain disciplines.

4. Modules that make up the components of the state education standard and the technology to ensure their implementation.

5. Modules that make up the components of curricula and programs and the technology to ensure their implementation.

6. Modules that make up teaching aids.

7. Modules that form the methods used in the process of modern pedagogical technologies.

Among these modules, the modules that make up a single teaching technology are also important as they form a key link in the process of modern pedagogical technology. They are divided into the following types [10]:

- The basic concepts that make up the content of the lesson;
- components of the process of explaining these concepts to students;
- educational tools and methods used in each of these components;
- modules that organize the activities of the teacher during the lesson;
- modules that organize the activities of teachers from the beginning to the end of the lesson;
- Modules that organize the control of student learning, etc.

From the above, it is clear that the modules in the process of modern pedagogical technologies form the relevant elements of each of the content, tools and methods of education. In this case, the modules of educational content - the units that make up the content of the information being taught; modules of educational tools - units of these tools; modules of teaching methods - represent the units that make up the actions performed during the implementation of these methods.

Effective capabilities of modular learning technology [16].

- optimization of educational content;
- systematization of educational materials in a certain order;
- adaptation of teaching materials and assignments to the capabilities of students;
- individualization of education;
- activation of the educational process;
- full realization of educational opportunities of students;
- Development of students' skills of independent learning;
- to teach students to effectively and actively use theoretical knowledge in practice;
- Objective assessment of students' activities on the basis of real observable actions
- Consistent monitoring of the effectiveness of education

Basic principles of module technology. It is known that the educational process includes three interrelated trinities - education and personal development. Simultaneous application of this trio in the educational process facilitates the use of modular technologies. Indeed, one of the advantages of modular technologies is the regulation of educational content.

The principle of an active approach. This means that the modules are formed in accordance with the content of

pedagogical activity. In principle, the modules are formed on the basis of an active approach aimed at teaching the relevant subject or serving to illuminate the essence of the whole pedagogical system. An active approach to teaching the relevant science allows the modules to be formed as a result of the analysis of the content of the curriculum and science programs. An active approach that illuminates the essence of an integrated pedagogical system ensures that the modules are formed on the basis of a block of modules, an analysis of the content of the professional activity of the teacher.

The principle of mutual equality. This principle means that in the educational process the teacher and the student have mutual equality (equal rights). The relationship between them is of a subjective nature. This means that self-modular education adapts the teaching environment to the individual psychological characteristics of the student. That is, the educator is not only a transmitter of knowledge, supervisor and evaluator of student activities, but also a person who guides students, advises where necessary, corrects mistakes in the work, encourages. In the educational process, the educator should not focus on criticizing the activities of students, but to encourage them as much as possible, to create conditions for success in all situations.

The principle of modularity. The principle is that the training material is based on several sets of modules (blocks). According to it, educational information is divided into modules on the basis of logical completion, logically, ideologically interconnected, and related modules into sets (blocks). The knowledge, skills and competencies provided for in the syllabus are acquired on the basis of a thorough study of the modules, which are arranged in a certain order. In short, modularity allows for the gradual acquisition of knowledge, skills, and competencies in teaching (from simple to complex, from easy to difficult). The dynamic structure of the module according to the rules of foreign countries depends on the content of the subject: 1) complete; 2) abbreviated; 3) provides illumination in deepened views. The learner has the right to choose one of them.

The principle of systemic quantization. This principle serves to systematize the module materials on the basis of the integration of educational information, the possible narrowing of large topics (identification of basic concepts and coverage of their essence). Consequently, when large amounts of information are difficult to memorize, compact learning information is effectively assimilated; and the elucidation of the essence of the basic concepts on the basis of the interpretation of the concepts makes it possible to have a clear idea of the subject and to keep this idea in mind for a long time.

The principle of motivation. This principle means that the educational material is aimed at creating interest in students to master the basics of science, the development of their learning activities. The educator should be able to achieve educational information, as well as interesting assignments, based on their skills, professional experience, creative approach to the teaching material. The teacher's effective use of various interactive technologies in the teaching process guarantees the achievement of the goal. This applies to each learning module within a particular discipline, as well as to the basics of the sciences as a whole. In addition, the modularity allows for regular updating of the training material.

The principle of problem. This principle means that the learning process is based on problem situations. In the process of education, the educator does not give students ready knowledge, but directs them to the thorough study of the material on the basis of independent thinking by confronting them with problematic situations on the topic. According to the principle of problem-solving, a scientific hypothesis (hypothesis) about the teaching material is put forward in the educational process, it is substantiated and a solution to the problem is found. Initially, this process is organized by the educator, and at a later stage, with the participation of the pedagogical student body, the students themselves acquire the skills to independently implement the process of "scientific hypothesis - justification - finding a solution."

Cognitive-visual principle. From a psychological point of view, the perception of information through the eyes (sight) is considered effective. Accordingly, from time immemorial in the educational process, special attention has been paid to the visualization of information transmitted on the basis of the teacher's speech. The use of visual aids in the teaching process enhances the impact of verbally transmitted information, making it possible to receive it through specific visual forms. In modern conditions, cognitive graphics (a block of computer images that illuminate the essence of educational information) is developing on a large scale in foreign countries. The main element of the module is the coverage of the essence of educational information on the basis of pictures, graphics, images, tables, diagrams, schemes, models, various symbols, conditional (mathematical, physical, geometric) symbols. Cognitive graphics activate the right hemisphere of the brain, resulting in students developing the ability to think visually. The use of visual aids, computer images and visual aids in the educational process accelerates the formation of students' perception of educational information by 5-6 times. Visually assimilated information is easier to recall.

The principle of relying on errors. A person usually learns most of the knowledge about existence, social relations, professional activity effectively based on the mistakes he has made. Therefore, the experience of finding and correcting mistakes in the educational process is being mastered. This principle requires a consistent focus on creating situations in the teaching process that direct students to look for mistakes. The priority of this principle in the educational process develops students' ability to think critically.

The principle of saving training time. The principle expresses the need to create a time reserve that allows students to study individually and independently. If the modular training is methodically, technologically correct, effective, then it will save enough training time.

Technological principle. This principle serves to emphasize the importance of ensuring consistency, structure, coherence in the educational process, which guarantees the achievement of educational results by students. The priority of the principle in the learning process is ensured on the basis of: achieving a clear definition of educational goals, determining their objective, full expression of the essence of the educational material and the selection of evaluation criteria; develop and clearly describe a model of the learning process aimed at achieving the learning objectives; focusing the integrated learning process on achieving learning outcomes in accordance with the learning objectives; rapid assessment of learning outcomes and adjustments to teaching content; final evaluation of learning outcomes.

The principle of membership. This principle implies the need for a consistent, systematic approach to the development of curricula and programs in order to ensure the achievement of learning objectives. According to him, the amount of materials covering the basics of academic subjects should correspond to the number of hours allocated for their teaching in the curriculum.

The essence of modular technology is to design the educational process on the basis of modules (regulation of the content of the subject and its sections, the division of professional activity into logically completed parts that are not divided from a certain stage of education). Then, for each allocated module, the content and scope of activities specific to that module are determined. The module is implemented step by step to achieve the goal of the module technology. Every action that takes place in this process is seen as a learning element.

RESULTS AND DISCUSSIONS. The module should not be considered as a fixed, fixed object. In fact, each module represents its own sub-objective. In order to achieve this goal, it is necessary to use the ways, methods and means that are most suitable for the relevant conditions. This means that different ways, methods and tools can be used to ensure the full implementation of the goal without changing the goal set in the module.

The process of dividing the materials of modern pedagogical technologies into modules in the above order is called modulation. It is advisable to implement the modulation in the process of preparing the relevant materials. However, modulation can also be performed on the basis of previously prepared materials.

Modules are not always specified in order of order numbers and levels. But in this case it will be difficult to reasonably guarantee that the pedagogical technologies are fully described.

State educational standards, curricula and programs can also be modulated in the above order, if necessary. According to the educational institutions that have started implementing competency-based modular programs, the advantages of these programs are:

- opportunities to clearly and vividly express the goals and objectives of the curriculum;
- increase the productivity of students;
- individualization of the educational process;
- increase the level of interaction between students and teachers;
- in the actual preparation of students for work;
- increasing the flexibility of curricula;
- formation of standard, objective, independent conditions for assessing the quality of curricula.

Teaching aids can be modulated for each session according to the level of need for a particular topic, section, section, and a subject in general. It is also possible to model the methods used in the educational process, as well as the activities of teachers and students, if necessary.

When using modular learning technologies in the educational process, the topic used in the lesson is divided into logically complete thought parts, ie modules, and each part is created learning tasks for students to master independently. Based on these learning tasks, a question and answer session is held at the end of each module and a conclusion is made.

The essence of modular education is that students achieve the set goal through learning activities based on independent work using modular programs [15].

The teacher should use individual module programs before these modules, making sure that students have developed the skills of independent and creative mastering of educational materials.

In recent years, research has been conducted on the use of modular learning technology in institutions of higher and vocational education, and the results have been put into practice. Research and experiments are still being conducted in this area.

According to the pedagogical scientist N.A.Muslimov, teaching using modular educational technology ensures effective results, as it is best adapted to the system of developing students' knowledge and creative abilities [8]. Modular educational technology provides an opportunity to comprehensively address modern issues of vocational education. To do this, it is necessary to solve the problem of developing modular learning technology in an optimized and simple way.

The concept of "module" (Latin "modulus") [2]:

1) a node consisting of closely interconnected elements within the system;
2) a term denoting the components that make up a particular technology;
3) logically complete unit of study material

According to N.H.Avliyokulov [1], the term "modular learning" is associated with the international concept module, which has one meaning - a node consisting of closely interconnected elements that can function. In this sense, it is understood as a basic tool of modular learning, as a completed information block.

The modular system of education was first officially mentioned in 1972, in the UNESCO World Concept in Tokyo. Modular learning technology is derived from the general theory of functional systems, neurophysiology of thinking, pedagogical psychology [4].

According to V.P. Bespalko [3], a module includes fundamental concepts of science - a specific event or law, or section, or a specific major topic or group of interrelated concepts. A module is a logically complete unit of study material that focuses on the study of one or more fundamental concepts of the subject matter.

O.K. Tolipov [17] commented on the advantages of modular technology: "One of the advantages of modular education technology is the regulation of educational content, which should be carefully and diligently selected from the available information so that they meet the requirements of state educational standards. should be able to do so successfully. "

The difference between modular learning technology and other technologies is that at each stage, students move to the final stage only after they have acquired sufficient knowledge, skills and competencies in the learning material [6].

Modular learning is one of the most promising systems of learning because it is best adapted to the assimilation system of the human brain [7]. The basis of modular learning is based on the modular organization of human brain tissue. In this context, the module is considered as a cell of the learning process [5].

This cell will be composed of different elements that simultaneously have informational generality, specific integrity and structure. According to research in these areas, the human brain, which consists of a modular tissue, is best able to receive information in quantum form (in other words, in the form of known portions) [11].

The acceleration of the development of science leads to the rapid growth and frequent updating of scientific and technical information. As can be seen, the current growth rate and volume of science and information are drastically different from their state in the past 15-30 years.

CONCLUSION. At the substantive stage of application of modular technology in the field of education, the principles of selection of the content of subjects in a particular block system, individual elements, ie clear curriculum identification should be reflected in major topics that illuminate the essence of the subject.

At the process stage of practical application of modular technology, the tasks of the teacher, as well as the type of education, teaching methods aimed at the organization of educational activities by students are reflected. In this process, special emphasis is placed on the choice of democratic principles, effective methods, organizational forms and means of education in the interaction between teacher and student.

Based on the concept of approach from the point of view of activity, the following logical sequence of organization of the teaching process can be substantiated: first, a description of the content of the training material, the purpose of its study (levels of mastery), as well as the conditions of pedagogical task.

If the teaching of students on the basis of modular technology is properly organized, at each stage of education they will master new teaching materials, improve their skills and competencies.

The pre-designed modular learning technology of the educational process includes a set of educational goals, content, form, methods and tools, opportunities for teachers and students to work together and achieve the end result.

As the teaching of subjects in higher education on the basis of modular educational technology is aimed at increasing the knowledge of students, the development of creative abilities, it is necessary to pay attention to the following:

- extensive use of modular educational technology in teaching based on the interest of students in the profession;
- pay attention to the organizational, technical and pedagogical conditions in the design of modular educational technology in the educational process;
- preparation of educational-methodical and information materials on disciplines based on the principles of modular educational technology;
- in modular learning technology, it is advisable to creatively use different forms and methods of teaching, such as problem solving, creative dialogues, learning games, projects, reference texts and heuristic conversations.

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