

MODULAR TEACHING AS A PEDAGOGIC PROBLEM

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<https://doi.org/10.5281/zenodo.7979514>

Abstract. *The article discusses various approaches to the concept of “modular teaching”, analyzes the opinions of foreign and domestic researchers on this problem. The views of researchers on the organization of the modular principle of structuring the teaching content are analyzed. This article identifies a number of issues to be further developed. The author of this study sees the purpose of modular training in creating the most favorable conditions for personal development by ensuring the flexibility of the content of training, adaptation to the individual needs of the individual and the level of its basic training through the organization of educational and cognitive activities according to an individual curriculum.*

Keywords: *modular teaching, approach, degree, individual, condition, implementation, pedagogics, system, level.*

Modular teaching (MT) originated in the late 60s and spread rapidly in English-speaking countries such as the USA, England, and Canada. During this period, the formation of the conceptual base of the MT took place, various approaches to the allocation of the module, the construction of modular programs were investigated, as well as the search for the scope and effectiveness of the MT was conducted. Uzbek researchers soon became interested in MT. MT began to be introduced into pedagogical practice soon. MT at this time became widespread in various educational institutions. The methodological foundations of MT can be considered such disciplines as psychology of education, general and professional pedagogy, a systematic approach and programmed learning.

Interest in the modular approach in teaching was growing and was conditioned by the desire to achieve various goals. Some researchers sought to flexibly construct the content of training and the formed units of training (V.B. Zakoryukin, V.M. Panchenko, etc.), others tried to allow the student to work at a good pace for him, to choose the appropriate method of teaching (S.N. Postlethwait), others - to integrate various forms and types of training (V.M. Gareev, S.I. Kulikov and others), the fourth - to achieve a high level of preparation of students for professional activity (I. Prokopenko, P.A. Yutsevichene, A.A. Verbitsky) [24].

After analyzing the literature on MT, we can say that different authors put different concepts into the modular principle of structuring the content of training. Let's consider some well-known signs of the allocation of modules: functional, elementary, organizational, technological, etc.

A module allocated on a functional basis is often associated with multi-stage professional training. Each stage is a module or a group of modules. For the first time such an approach was used at the University of Budapest, where specialization took place in economic modules, and the system was supplemented by a pedagogical module and a module of international relations.

The technological approach was considered at technical universities in the USA. The module here is technological in nature and is understood as a closed unit of the educational process.

A.A. Verbitsky introduces the concept of “activity module” as a unit that makes the transition from professional activity to educational. A module is not just a set of knowledge, skills and abilities, but also a certain systemic quality of a specialist that allows him to successfully solve professional tasks and problems of a certain circle [23].

Let’s analyze the very concept of a module.

Thus, in the initial period of the introduction of the MT into the educational system of the USA and England, the concept of the module includes a certain set of educational materials. P.A. Yutsevichene identifies it with the method of teaching “package” [1].

A.A. Gutsinsky in the concept of the module includes “the expression of an independent group of ideas that are transmitted through didactic channels corresponding to the nature of knowledge.”

B. Goldschmid and M. Goldschmid understand the module as the formation of an independent planned unit of educational activity [1].

V.M. Garaev, S.I. Kulikov, E.M. Durko consider the module as a general topic of the training course or an actual scientific problem [2].

Further, the concept of a module becomes more specific. Y.Y. Timofeeva formulates the concept of a module as a relatively independent part of a certain system carrying a functional load, which corresponds to a "dose" of information in training [3]. S.I. Samygin writes that the module is a logically completed part of the educational material [4].

P.A. Yutsevichene characterizes the module as a functional node, which is the main means of modular learning, i.e. a complete block of information [1].

A.I. Aleksyuk, S.A. Kashin believe that the module is autonomous portions of educational material [5].

It is also possible to consider such a concept of a module as a training module, which is a logically completed form of a part of the content of an academic discipline, including cognitive and progressive aspects, the assimilation of which should be completed by an appropriate form of control of knowledge, skills and abilities formed as a result of mastering this module by trainees.

The module contains cognitive and professional characteristics, in connection with which we can talk about the cognitive (informational) and educational-professional (activity) parts of the module.

The task of the first is the formation of theoretical knowledge, the function of the second is the formation of professional skills and abilities based on acquired knowledge.

It can be noted that the concept of a module includes certain parts of the curriculum of courses, without specifying. Analyzing the points of view of the authors under study, it can be seen that the concept of a module is multifaceted.

A number of questions arise. What is included in the module? What is its content?

Y.A. Ustinyuk, specifying the characteristics of the content of the module, suggests defining it as an independent topic or section of the course, in which one fundamental concept or a group of related concepts is considered [6].

N.V. Shumyakova similarly suggests that each module should correspond to a chapter or section of a textbook [7].

O.A. Orchakova, P.F. Kobrushko characterize the module with integrity, relative independence, logical completeness, flexibility of the structure of the content of the educational material. The authors consider the division of the module into submodules, i.e. an integral

independent part of the content, which covers the knowledge and skills necessary to perform a specific professional task [8].

Subsequently, there was an expansion of the scope of application. N.V. Shumakova considers MT a new form of work in the audience [7].

P.A. Yutsevichene notes that the essence of MT is that the student can work more independently with the individual program proposed to him, which includes a target action plan, an information bank and a methodological guide for achieving the set didactic goals. The functions of a teacher can vary from information-controlling to advisory-coordinating [1].

M.A. Choshanov proposed a new approach to MT. He integrated problem-based and modular learning. The technology he developed is aimed at developing students' creative thinking. The general structure consists of an invariant structure and a variable part, including introductory and applied modules.

P.I. Tretyakov and I.B. Sennovsky believe that MT forms self-education skills: "Each student achieves his goals and can independently work with the individual curriculum proposed to him, which includes a target action plan, an information bank and a methodological guide for achieving the set didactic goals" [9. p. 31].

E.I. Popov similarly characterizes the rating intensive technology of MT (RITM) as a technology that activates the work of students during the semester and the organization of individual work during regular group classes, provides intensification and activation of independent work of students [10].

V.J. Kuklin and V.G. Navodny believe that this system for students provides constant stimulation and self-diagnosis of work [11].

J. Russell writes that flexibility is the ability to group small units of material (modules) into different sets. The student is given the opportunity to choose a certain set of modules and the order of their assimilation [13].

M.A. Choshanov represents flexibility as the "core of MT". M.A. Choshanov distinguishes between structural, substantive and technological flexibility. It permeates the entire MT technology [12].

The content of the module is selected for individual training of a student or a group of students. There are also alternative modules in which the material is presented from a different point of view. This allows you to choose to learn any module and study it at a convenient time and at a pace, that best suits his personal abilities.

K.K. Platonov speaks about an individual approach to learning, i.e. here we take into account the individual characteristics of a person and his knowledge.

Y.N. Kulyutkin, G.S. Sukhobskaya [20] understand taking into account the individual characteristics of a student as creating conditions that best meet the complex of human characteristics.

The principle of structuring the content into separate elements in problem-based learning sounds like the principle of system quantization and is based on the theory of P.M. Erdniev by the enlargement of didactic units. According to "an enlarged didactic unit is a cell of the educational process, consisting of logically separate elements that at the same time have an informational community. The enlarged didactic unit has the quality of consistency and integrity, stability to preservation in time and rapid appearance in memory" [22]. The organization of MT in developed countries, such as the USA, France, England, Sweden and others, in higher education institutions

is based on the principles of cyclicity, individualization of training and the use of “credit units”.

A.I. Aleksyuk, S.A. Kashina believe that during the transition to the modular organization of training, the importance of independent work is increased, which in turn requires a significant increase in the independence, initiative, creativity, and activity of the student. This necessitates the use of newer methodological approaches to stimulating educational activity [5].

P.I. Tretyakov, I.B. Sennovsky single out as a significant goal the formation of self-education skills in a student and the construction of an educational course with a hierarchy of near, medium (general educational skills and abilities) and promising (development of personal abilities) goals [9].

V.V. Rodina calls the purpose of the modular-block system the systematization of the process of studying the discipline and the control of knowledge, as well as the possibility of ranking students according to the degree of mastering the program [13].

V.A. Khalyutkin believes that the purpose of modular-block teaching is aimed at solid assimilation of knowledge, formation and development of professional thinking [14].

P.S. Petkov writes that the modular training system makes it possible to radically improve the quality of training of future specialists [15].

Many researchers emphasize the importance of methodological support of MT. For example, V.P. Lapchinskaya notes that the constructed model of the educational material provides the student with the achievement of the set didactic goals, and also has the completeness of the content of the educational material in the module and the integration of types and forms of learning [16].

P.I. Tretyakov, M.B. Sennovsky hold a similar opinion, arguing that any student, thanks to an individual curriculum, achieves the set goal. In turn, this program “includes a target action plan, an information bank and a methodological guide for achieving the set didactic goals” [9, p. 31].

The modular construction of courses based on modular programs is given a special role, but this requires preparatory work on educational and methodological support.

The principle of the subject approach to the construction of the learning content determines the correspondence of the module content to a specific subject or part of it, covering a large section (course topic). In the practice of applying modular training at US universities, the cognitive type module examines “one basic fundamental concept of the discipline (phenomenon, law, structural type, etc.) or a group of related interrelated concepts.” Usually a semester lecture course (40-50 lecture hours) is divided into 10-12 modules, such structuring is related to the structuring adopted in higher schools of our country on a number of topics on which colloquiums are held. This approach can be evaluated as a special case of choosing the volume of the module content. The general principle of building modular programs, aimed at a combination of complex, integrating and particular goals, allows for a variety of approaches to choosing the volume of educational material of the module. The integrating learning goal, which determines the scope of the module, may include a different number of private (autonomous and interrelated) goals. Too narrow an integrating learning goal is fraught with the danger of acquiring fragmentary knowledge, and too extensive can cause difficulties in implementing the principle of modularity.

The principle of the subject approach to the construction of educational content is specified by the following rules: 1) first of all, it is necessary to construct a graph of the logical structure of the integrating didactic goal, consisting of based on the particular goals; 2) guided by the constructed graph, the educational content of the module should be formed; 3) when forming the

content of the module, it is necessary to use specific methods of system analysis of the content of training.

Two techniques can be distinguished: logical diagrams and simulation modeling. The latter can be widely used in conducting psychological, pedagogical and didactic studies of modular learning. In the pedagogical practice of creating modular programs, it is advisable to use the method of graphs of logical structures.

In the cognitive type modules constructed in this way, a logical and compact grouping of the material is provided, repetition within one course and, if necessary, in related disciplines or courses are avoided. "Without prejudice to the completeness of the presentation and the depth of development, modular construction, according to American experts, allows you to reduce the course by 30 percent or more."

In accordance with the principle of the fundamental nature of educational content in cognitive modules, special attention is paid to the presentation of basic concepts, laws, etc. Therefore, the assimilation of fundamental knowledge should be displayed for private didactic purposes.

When constructing modular operational-type programs, it is necessary to be guided by the principle of an activity-based approach to the formation of a complex didactic goal and the principle of the functionality of the training content. The first requires that the complex didactic goal, which determines the structure and content of the entire modular program, is to prepare a person for a specific field of activity. The second determines the orientation of the integrating didactic goal on the development of skills and abilities to implement a specific function of a person's practical activity (in the professional activity of a specialist).

After analyzing modular programs, one can identify its components. They are: a didactic goal and a set of modules. Each modular program has a name, usually it is a major topic or section. Next, a comprehensive didactic goal is formed, which includes issues affecting the content of the educational material and the ability to apply the acquired knowledge in practice. Then, private didactic goals are identified and the content of the educational elements that make up the module is formed. After that, the teacher defines a system of goals, works on the formulation of an integrating didactic goal, which is an educational element. Then the student is offered tasks for entrance control. Next, the parts of the didactic goal are determined and educational elements are created, including algorithms for student actions and control tasks.

The next element of the module assumes a generalization of completed tasks, which turned out to be difficult, which topics were not completely mastered. The final element of the module is the output control, which determines the degree of mastery of the module content.

The modular formation of the course makes it possible to redistribute the time allocated by the curriculum for its study according to certain types of the educational process, expands the share of practical and laboratory classes, as well as independent work of students. There is a need for new forms of lectures, in which, along with fundamental training, the student would receive the necessary skills and knowledge in the field of general methodology for the design and operation of equipment, the development of modern progressive technologies.

With a comprehensive review of the content of the training modules, duplication in the study of the subject is eliminated, there is an opportunity for the reasonable introduction of elements of scientific research and research laboratory work into the educational process.

The interrelation of various forms of education with the modular organization of the

educational process allows purposefully managing the scientific and methodological work of the teacher and determining the “bottlenecks” of the methodological or software, laboratory base of the department. In addition, the visibility of the course structure shows promising areas for their improvement and allows for scientifically sound planning of the work of the entire teaching staff.

A modular approach to teaching will allow to more fully satisfy the needs of a creative person in educational activities, since there will be a conscious interest in obtaining certain knowledge; the ability to change specialization or receive several specializations; change the levels of claims (bachelor, master), form or extend the term of study as a whole with a known end goal; quickly respond to market conditions, to individualize the learning process, to carry out co-creation with the teacher, to reduce the factor of dissatisfaction of the individual in education.

The introduction of the new system will automatically cancel the traditional test weeks and inter-semester exams, since the student will work according to an individual schedule and he will have the opportunity to integrate information on a fundamentally new system in which basic, special, professional knowledge and skills will be combined. At the same time, the unreasonable overload of disciplines will disappear.

The modular structure is due to the increased motivation of learning, since the student is interested in obtaining information, attending lectures and laboratory practical classes. He decides the issue of step-by-step control himself, moreover, he is interested in it as a certain step on the way to the final goal. The assessment of knowledge is usually rated according to an individual integral index. As a result of such an assessment of knowledge, students' interest in learning increases, it becomes possible to force the study of the discipline, which will immediately give the learning process an individual character. There will be no stressful situations inherent in the examination system; the process of knowledge control will turn into interesting conversations, discussions on pressing problems of science.

Thus, the modular system of higher education and the intensification of the information and activity learning process associated with its introduction, the system of knowledge control and professional aptitude can significantly increase the efficiency and quality of training specialists, ensure the purposefulness of creative activity of the individual.

Undoubtedly, the introduction of modular training will require a certain organizational restructuring of the educational process. It will concern the planning of teachers' work, the preparation of the laboratory base for front-line work, the formation of a contingent of students taking into account the capacity of laboratories, the development of appropriate methodological support, the organization of control checks of knowledge. But the emergence of these problems should not deter the introduction of a new form of education in universities.

The analysis of the development of MT can say that MT has been successfully introduced into the field of education, while MT has acquired various content and organizational forms.

V.J. Kuklin and V.G. Navodny note that MT provides constant self-diagnosis and stimulation of students' work, and for the teacher - continuous monitoring of the educational process, diagnostics of the current state of academic performance using a rating scale of assessments.

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