

REQUIREMENTS FOR SELECTING THE CONTENT OF TECHNOLOGICAL TRAINING OF STUDENTS

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ABSTRACT

Due to significant changes in the content of labor training of schoolchildren and the transition from labor training to technology education, there is a need to develop new content for training students to teach technology. Technological training is one of the major aspects of vocational training. So far, there are no scientifically grounded approaches to defining the content of technological training of students and its implementation in the process of their training and practical activities. The content part of the technological training should be based on the general didactic requirements to the content selection in the context of the contemporary developing educational paradigm and the requirements of the state educational standard of higher professional education, as well as requirements due to the specifics of the "Technology" subject. We will consider them by our structure of technological training of students.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

Designing the content of higher professional education providing conditions for the development of creative independence is the strategic direction of renewal and strengthening of general scientific, general professional and special training of future specialists.

The Law "On Education" defines general requirements to the content of education:

1. 1. The content of education is one of the factors of economic and the social progress of society and should be oriented:
 - Ensuring self-determination of the individual, creating conditions for its self-realization;
 - The development of society;
 - Strengthening and improving the rule of law.
 2. 2. The content of education should provide:
 - Adequate world level of the general and professional culture of society;
 - Formation of a picture of the world for a student adequate to the modern level of knowledge and level of educational program (level of education);
 - Integration of a personality into national and world culture;
 - Formation of a person and citizen, integrated into modern society and aimed at improving this society;
 - Reproduction and development of personnel potential of the society.
- Professional and pedagogical training of primary school teachers

Following the state educational standard of higher professional education includes, in particular, the following tasks: the readiness of the graduate to provide training and education of students taking into account the specifics of the subject taught, the formation of a common culture of personality; the use of a variety of techniques, methods and means of education; ensuring a level of training of students that meets the requirements of the state educational standard, systematic improvement of their professional skills. A graduate should know pedagogy, psychology, methods of teaching the subject and educational work; programs and textbooks; requirements for equipping and equipping training rooms; teaching aids and their didactic

capabilities; main directions and prospects of education and pedagogical science development; basics of law; scientific organization of labor; rules and norms of labor protection, safety engineering.

In didactics, there are various approaches to the content of education. In the domestic concepts the content of education is understood: 1) pedagogically adapted bases of sciences; 2) system of knowledge, skills and abilities, as well as experience of creative activity and emotional and volitional attitude to the world (M.A. Danilov, B.P. Esipov, etc.); 3) pedagogically adapted social experience of humanity, which is identical in structure to human culture (I.A. Danilov, B.P. Esipov, etc.). Lerner, M.N. Skatkin, V.V. Kraevsky); 4) content and the result of the process of progressive changes of personality properties and qualities (B.C. Lednev); 5) educational environment (A.V. Khutorov) [30, 33, 64, 129, 140, 154].

The theory of the content of general education developed by V.V. is the most widespread. Kraevsky, I.Ya. Lerner, and M.N. Skatkin, who also found recognition in didactics of higher education. According to this theory, the content of education is based on the principle of unity of the content and procedural aspects of learning. The content of education cannot be reduced only to the list of knowledge, skills and abilities in academic subjects and should include such elements of social experience as:

- experience of cognitive activity, fixed in the form of its results - knowledge;
- experience of reproductive activity, fixed in the form of means of its realization (skills and abilities);
- experience of creative activity, fixed in the form of problem situations, cognitive tasks, etc.;
- experience in implementing emotional and value relations.

General principles determining the approach to content construction serve as the basis for content selection:

- correspondence of content to the level of modern science;
- possibility to form a scientific worldview through this content;
- the possibility of forming a system of humanistic moral and aesthetic values;
- formation of a creative personality;
- compliance with the polytechnic principle;
- providing with the means of content readiness for different types of work;
- formation of a physically fit personality+.

Besides, I.J. Lerner and M.N. Skatkin provide the following private grounds:

- education content includes the foundations of all sciences that define the contemporary scientific and social picture of the world;
- everything that is of general educational importance, i.e., relevant to all or many fields of activity, is included in the content of education;
- The optimally accessible and economic logic of deployment of the basic knowledge is necessary for the presentation of information about theories, processes and their mechanisms, principles of action;
- in the basics of science it is necessary to reveal the main areas of the practical application of theoretical knowledge;
- the consciousness of learning and development of scientific thinking requires the inclusion of methodological knowledge, disclosure of the process and history of learning, the movement of ideas in the content of education;
- the content of education for acquaintance includes accessible and unsolved social and scientific problems, which have a long-term development perspective and are important for social development in general;

- it is necessary to implement inter-subject links.

V.A. Slastenin develops the provisions of this theory in the didactics of higher education. The following principles (according to V.A. Slastenin) should be used as a basis for developing the content of pedagogical education:

- universality (completeness of the set of humanitarian disciplines providing basic training in unity with professional and specialized educational programs);
- Integrity (interdisciplinary cooperation of scientific research and academic subjects, content and structural and functional unity of the educational process);
- the integrity of the picture of the world recreated by a complex of basic disciplines based on the unity of purpose, the complementarity of content and unity of requirements;
- fundamentality (scientific substantiality and high quality of psychological and pedagogical, socio-humanitarian and general cultural training);
- Professionalism (a flexible combination of compulsory courses and additional disciplines of choice with a wide range of specialized academic subjects of psychological and pedagogical, humanitarian and cultural profiles, a variety of learning algorithms in accordance with the individual capabilities of students, a free choice of the volume, pace and forms of education);
- Multilevel (preparation at the general, basic (bachelor's and master's) and complete (master's) levels of higher education, postgraduate studies and various forms of postgraduate professional development).

Proceeding from these principles, VAA Slastenin identified the following tasks of pedagogical education: first, to offer a student systematic knowledge about the natural relationships of man with nature, culture and society about the processes of personality formation of developing values in the world in relations to another and himself; second, to equip the student with a system of modern scientific knowledge about man's formation-development in real socio-cultural creativity; third, to ensure the formation of the personal and professional culture of the pediatrician.

In the content of the pedagogical education V.A. Slastenin includes the optimal corpus of ideas, values, ideas, ways of cognition and thinking that allow a teacher to become a subject of professional activity. In the structure of the content of the pedagogical education, along with the components of theoretical and practical readiness, it is necessary to highlight the experience of creative activity, as well as the experience of the motivational and value attitude to the pedagogical reality.

This component of the content of teacher education is determined by the need to form a social and professional position of the teacher, in particular, the system of his emotional and evaluative relations as a source of activity of the future teacher. This system of relations is determined, on the one hand, by the requirements of society and the opportunities it has provided and, on the other hand, by the internal, personal sources of activity - the teacher's attractions and feelings, motives and goals, his values, outlook and ideals.

V.A. Slastenin correlates the selected elements of the model of pedagogical education content with the theoretical, practical, psychophysiological and psychological readiness of a teacher for professional activity. The interrelation of these elements is expressed in that mastering one of them influences the level and quality of mastering others. At the same time, mastering knowledge (accumulation of information resources) is not an end in itself, but a necessary condition for the development of "knowledge in action," i.e. skills and abilities - the main criterion of professional training, because the success of pedagogical activity depends on the level of their formation. Increasing skills to the level of their creative use is achieved through

special exercises involving their application in non-standard situations. And the experience of motivational-value attitude is formed not so much as a result of bringing new knowledge but through appropriate tools of pedagogical activity of teachers and students.

Thus, V.A. Slastenin considers the content of teacher's professional training more broadly. It accumulates a set of universal ideas and values, professional and humanistic orientations and qualities of personality, universal methods of cognition and humanistic technologies of pedagogical activity. It should be oriented to spiritual and cognitive and value activity of a student's personality, deployment of its ability for social action, the formation of an integral personality of a teacher-professional. It is inseparable from the totality of professionally conditioned knowledge, skills, as its organic components are also the experience of creative activity and experience of motivational-value attitude to the pedagogical reality [131].

V.A. Slastenin has developed a model of a modern teacher on which we will rely in the future:

1. Properties and characteristics of the teacher's personality. Social orientation: scientific and humanistic worldview; social needs; moral and value orientations; consciousness of public duty and civic responsibility; social activity. Professional and pedagogical orientation: interest and love for children, enthusiasm for pedagogical work; psychological and pedagogical wit and observation; pedagogical tact; pedagogical imagination; organizational skills; justice; sociability; exactingness, perseverance, purposefulness; balance, stamina, self-esteem; professional performance. The cognitive orientation: scientific erudition; spiritual, first of all cognitive, needs and interests; intellectual activity; feeling of new; readiness for pedagogical self-education.

2. Requirements for the psychological and pedagogical training of a teacher. Knowledge. Knowledge of methodological bases and categories of pedagogy; knowledge of regularities of development and social formation of personality; understanding of essence, aims, tasks, forms and methods of education; knowledge of basic regularities of age anatomical and physiological development of children, teenagers and young men; knowledge of theoretical and natural science bases and means of hygienic education of pupils; knowledge of regularities of mental development of a child, individual and psychological features of personality at different age stages. Skills. Analysis of the pedagogical situation, design of the result and planning of pedagogical influences: the ability to analyze and evaluate the state of real social and pedagogical phenomena, causes, conditions and nature of their emergence and development; the ability to identify the level of education and upbringing of students; the ability to design the development of personality and team; the ability to predict the results of education and upbringing, possible difficulties and mistakes of students; the ability to identify and accurately formulate a specific pedagogical task for students.

3. The scope and composition of special training. The knowledge of the object of the subject and its connection with science as a whole possesses a definite structure of scientific knowledge of the methodology and logic of scientific research understanding of the theoretical, cognitive and practical importance of scientific knowledge of the laws of the history of the modern state and the main directions of further development of scientific understanding of the propaedeutical nature of the school course of basic science in-depth knowledge of one of the areas of science initial skills of independent scientific research ability to use the bibliography of science. Within each specialty, the general scientific training of students receives further specification and detail.

4. Content of methodological training by specialty. Knowledge of the goals and objectives of teaching the subject at the modern stage of the development of a general education school; deep and comprehensive knowledge of existing school curricula, textbooks and basic teaching aids; awareness of what course issues cause difficulties for schoolchildren, understanding the nature

of these difficulties (in terms of content, psychological or methodological order, etc.), knowledge of methods for overcoming them; knowledge of the theoretical foundations of teaching methods; the ability, based on the basic provisions of didactics, age and pedagogical psychology, to choose the optimal option of training in certain conditions, the ability at the right time to replace one job with another; ability to identify basic didactic units (concepts, laws; abilities, skills), possession of a technique of their formation; the ability to awaken and develop interest in the subject in students; the ability to organize at the level of modern didactic, psychological, pedagogical and technological requirements all forms of educational work in the specialty; the ability to practically carry out the education and development of schoolchildren in the process of education, as well as prepare them for socially useful work and conscious choice of profession; ability to produce simple visual aids; Know how to handle audiovisual learning tools and how to use them; willingness to conduct at least two optional courses at school; skills of management of extracurricular and extracurricular work in specialty, etc. [131].

The theory of the content of higher education and the model of a modern teacher V.A. Slavenin are taken by us as a basis for the development of a working model for the formation of the content of technological training of future primary school teachers (Chap. 2) because, in our opinion, this theory is the most consistent with modern trends in higher education. V.A. Slavenin also highlights the psychological and pedagogical conditions that contribute to the formation of creative, heuristic thinking in students: 1) students assimilate not separate, scattered knowledge, but their systems that reflect the structure of modern scientific knowledge and are organized based on scientific theories, ideas, principles; 2) the assimilated systems are in constant motion, correlate with other systems, are rebuilt in accordance with the tasks of cognition and specific conditions of knowledge application.

Thus there is not a simple transition from one system to another, but there is a wide generalization, creation of new systems, and also a wide transfer of the received knowledge in the diversified life conditions; 3) students assimilate not only knowledge, but also ways of operation with this knowledge and extraction of new knowledge [131].

Now let us turn to the analysis of existing approaches to the selection of content in technological training. This area is poorly researched concerning general education and hardly explored in higher teacher education. To determine the requirements for the selection of the content of technological training itself at a university, we must be based on the principles of content selection in the educational field "Technology" of schoolchildren, as there are no special developments in the technological training of students - future teachers of primary schools.

There are studies by P.R. Atutov, V.A. Polyakov, V.M. Kazakevich and other authors in the field of technological training of schoolchildren [7, 8, 34, 35, 45, 106, 107, 139]. Let us consider the main provisions of these studies concerning the principles of selecting the content of the technological training of schoolchildren.

P.R. Atutov [34] suggests the following as general principles for the selection of content in technological training of schoolchildren:

- a value-based approach to the selection of learning content, which implies the selection of the content of technological training programs for schoolchildren in such a way as to orient students towards the priority mode of activity. The implementation of the value-based approach

is assumed in the process of technological training by cross-lines of content (general and professional culture, information technology, economy, ecology);

- the problem-oriented nature of learning content; - the fundamental general didactic principles, which are:

complex solution of problems of education, upbringing and development, science and availability, a connection of learning with life, systematization and consistency; visibility in learning, consciousness and activity of pupils; optimal combination of methods, forms and means of learning, strength of learning results.

V.M. Kazakevich [45], based on B.C. Lednev's concept on the classification of sciences, identified the types of technologies to be studied by students: technologies for obtaining and/or transforming substances, technologies for obtaining and/or transforming fields, technologies for obtaining and/or transforming energy and technologies for obtaining and/or transforming information. According to V.M. Kazakevich, the selection of specific technological processes should be based on the following principles:

- The technological processes carried out should meet the requirements of school sanitation and hygiene;

- instrumental and technological processes should be provided with material and technical capabilities of a modern school and not require significant additional equipment.

- Technological processes should be applied, ensuring that students create or restore consumer values in the subject environment;

- technology should be intellectually and functionally relevant to the development of students of appropriate age;

- technological processes should represent five main spheres of human activity (according to E.A. Klimov): human - technique, human-human, human - sign system, human - nature, human - artistic image.

V.A. Polyakov recommends the following criteria in selection and systematization of knowledge of polytechnic character: a generalization of concepts and practical actions, the possibility of their transfer to other types of activity; availability of material for learning by students; selected material should provide an opportunity for the establishment of interrelations with the bases of sciences and provide a saturation of activity of a worker with various production functions, the possibility of rational combination of mental and physical work, a combination of creative and execution of the work, and the ability of the worker to work in the best way.

As A.M. Novikov notes, human transformational activity is carried out based on two kinds of knowledge: knowledge about the surrounding reality (knowledge about the object) and knowledge about its activities, goals, process, ways, means and conditions of activity [93]. The first includes, for example, knowledge of physical, chemical laws, the device and principles of operation of machines, apparatuses, properties of materials and others. The second kind of knowledge should include knowledge of technologies, rules of performing actions and operations, safety rules, life activity, etc. This knowledge in didactics has also been neglected for a long time. Since it is impossible to form labor and other skills without such knowledge, they were formed by pupils, students in the process of practical (labor, industrial, etc.) training in the performance of training and practical work in the instruction, in the process of showing the performance of labor activities, etc. At the same time, knowledge about actions was formed, as a rule, at the level of specific notions only, but not theory. Knowledge about actions, in this case, was not logically connected and often could not be fundamentally connected with

knowledge about the object of the highest levels of generalization, with theoretical knowledge - concepts, laws, principles, etc. The skills formed based on such a knowledge system could not have a sufficient breadth of application in various conditions of activity. Meanwhile, there are large reserves for increasing the effectiveness of training aimed at forming pupils and students' knowledge of higher levels of generalization about actions and activities in general: general principles of technology in general and technologies of this or that production, general psychological algorithms of building the content and sequence of activities and actions, etc.

The possibility of wide transfer is one of the basic requirements for work skills. The analysis of researches devoted to the issue of skills transfer (D.N. Bogoyavlensky [17], M.I. Lisina [74], N.A. Menchinskaya [84], and also V.M. Uvarov's dissertations [145], A.Y. Abubakarova [2]) concerning students shows that for its successful manifestation the following factors are necessary, which can be considered characteristic for labor skills in general:

- Increase in the level of generalizations formed in schoolchildren;
- knowledge of enough full circle of essential features of studied objects and ways of action with them;
- a clear idea of possible basic variations of insignificant features;
- activation of the educational activity of students.

In our opinion, the fundamental characteristic of technological preparation is the formation of generalized technological knowledge and skills. Therefore, the content of technological training of both schoolchildren and students should be built on increasing the level of generalizations of technological knowledge and skills. We have come to such a conclusion from our own experience of work in the university and analysis of the above mentioned researches in the field of technological training. The content of technological training of pedagogical institute students directly depends on the content of technological training of schoolchildren. Traditionally, the content of the practical part of the course of labor training methods in the pedagogical institute was constructed in such a way that students, as well as schoolchildren, were offered an object and methods of its processing, that is, the content was structured by types of materials per the existing program of labor training (which at that time was the only one). In this case, the skills are formed at the level of specific notions of performing operations and techniques in connection with each separately studied material without the necessary subsequent generalization. Technological training, one of the main tasks of which today is the formation of generalized skills (which is reflected in the mandatory minimum content of education in the educational field "Technology"), involves the study of schoolchildren and, consequently, students, the basics of technology and, unlike the existing methods of labor training, in our opinion, should be built on the mastery of generalized or unified technological operations: marking, getting details, shaping, assembly and finishing. (Unification - a rational reduction in the number of objects of the same functional purpose; one of the methods of standardization; the most common and effective method of standardization, which consists of bringing objects to uniformity based on a rational number of their varieties).

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