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THE PROBLEM OF SELECTING AND STRUCTURING OF EDUCATIONAL MATERIAL IN ENGLISH WHEN TEACHING STUDENTS OF TECHNICAL SPECIALITIES

The article deals with the scientifically substantiated methods of selecting and organizing educational material based on its didactic significance, taking into account the characteristics of perception, preservation and forgetting of educational information by students of technical specialties, the peculiarities of the educational process of higher education from the point of view of the influence of educational material on the formation of professional qualities of a future specialist.

This article considers such theoretical and methodological issues of selecting and structuring of educational material in English for developing students' educational activities in the technical university in the practice of teaching a foreign language, as well as the basic requirements for mastering the knowledge in technical subjects, like Mathematics in which the language of teaching is English. The activities of future specialists, when introducing the academic mobility, depend on the content and nature of the knowledge that higher education should provide them with. A serious reason for many disadvantages in the training of specialists is the lack of scientific substantiation for the selection of the content of education at the university.

The general provisions on analysis of various options for solving this problem are given and it is estimated that the cybernetic approach is the most optimal, since it allows you to build a technology for selecting educational material that ensures the continuity of learning. It is advisable to consider the presentation of the process of selection and structuring of educational material as a pedagogical technology for constructing an educational thesaurus through a description of its information-semantic structure. This approach reveals the interaction between didactic principles and parameters that characterize the semantic content of the descriptor of educational material. Analysis from the position of didactics of information-semantic structuring of educational material allows us to make a conclusion about the necessity of research in this area.

The article analyzes scientists' views on the process of selecting and structuring of educational material as a process of an educational thesaurus. The structuring of educational material depends primarily on the specifics of the subject, on the functions that the latter performs in education, and on the general idea of the construction of the content of education. Practical recommendations are provided for selecting and structuring of educational material.

The approaches have been developed for structuring educational material that cannot be mechanically transferred to all academic subjects in the same completeness and a further study of the theory and methodology for selecting and structuring of educational material was proposed.

Keywords: *educational material, methodological issues, selecting and structuring, didactic issues, curricular, efficiency of methods, technical subjects.*

Problem statement. The problem of the content of higher professional education is associated with many aspects of the political, economic, cultural life of society. The innovation process in the system of education, which is currently unfolding, aims to prepare future specialists to solve many problems. It looks forward to ensuring the most comfortable human existence in a rapidly changing society; at the same time, a university graduate of technical specialties himself should be in demand on the labor market. The problem of relevance, competitiveness is directly related to the problem of the content of education, which is necessary and sufficient for its integration into the modern society. In the era of information technologies, education has become one of the most important areas of progressive and sustainable development of society. The subject of research in this work is scientifically substantiated methods of selecting and organizing educational material based on its didactic significance, taking into account the characteristics of perception, preservation and forgetting of educational

information by students of technical specialties, the peculiarities of the educational process of higher education from the point of view of the influence of educational material on the formation of professional qualities of a future specialist. This article considers such theoretical and methodological issues of selecting and structuring of educational material in English for developing students' educational activities in the technical university in the practice of teaching a foreign language, as well as the basic requirements for mastering the knowledge in technical subjects, like Mathematics in which the language of teaching is English.

Ukraine's participation in different European programs like Erasmus+ requires from domestic higher education a comprehensive solution to the problems of improving the quality of education, updating pedagogical methods and technologies as well as means of monitoring the effectiveness of training. A serious reason for many disadvantages in the training of specialists is the lack of scientific justification for the selection of the content of education at the university. An analysis of the pedagogical literature on the problems of higher education shows that at present the problem of the content of education is one of the least developed sections. The activities of future specialists to enlarge the academic mobility determine the content and nature of the knowledge that higher education should form.

Actual scientific researches and issues analysis. Analysis of research carried out within the framework of this problem has shown the existence of two approaches to its solution.

In the works of V.V. Kraevsky, I. Ya. Lerner, S.V. Ledneva, M.N. Skatkin the principles of recruiting academic subjects were formulated, didactic issues and the recommendations for drawing up curricular were presented. However, didactic criteria, suitable for analyzing content, do not always work effectively in the process of selecting and structuring educational material. The cybernetic approach is unconventional. With this approach, the task of selecting and structuring educational material is presented as the task of constructing an educational thesaurus, and the learning process - as an extension of the personality thesaurus at the expense of an educational thesaurus. The work of L.T. Turbovich, G.I. Baturina, V.I. Zhuravlev, V.S. Gershunsky, V.M. Berezovsky, A.M. Sokhor, V. Dimova, V. Chalypov, D. Malamov, A.A. Miroshnichenko, V.S. Cherepanova were considered.

A review of these works allows us to conclude that the consideration of the process of selecting and structuring of educational material as a process of an educational thesaurus is promising. However, in order to use educational thesaurus in didactics, a more detailed study of a number of issues is necessary. The idea of constructing educational thesaurus can be used to solve a number of problems related to the continuity of education.

A dual role of educational material and the development of the personality is the subject of numerous discussions. The development of critical thinking will contribute to the development of all the skills and abilities that influence the effectiveness of the assimilation of educational material. Today, we can research a number of interesting developments that are devoted to various aspects of selecting and structuring of educational material based on the modern advances in science and computer technology.

Research objective. The purpose of the article is to study the reason for many disadvantages in the training of specialists as a lack of scientific substantiation for the selection of the content of education material at the university. An analysis of the pedagogical literature on the problems of higher education shows that at present the problem of the content of education material is one of the least developed sections. The activities of future specialists determine the content and nature of the knowledge that higher education should form.

Presentation of the material. In modern conditions when the changes in culture, economy, entertaining the society influence the society it becomes necessary to choose an adequate socio-cultural model of education. People encounter the devaluation of the values of classical education, based on the trinity of knowledge, theoretical skills and practical skills. A contradiction arose between the integrity of culture and the technology of its fragmentary reproduction through the knowledge-based type of education. In this situation, the contradictions between the continuously increasing volume of knowledge necessary for a person and the limited (within the framework of traditional educational systems) conditions for mastering them are increasing. The solution to this contradiction is a proper process of selecting and structuring of educational material.

Lifelong education should be understood not as a mechanical movement of a personality from preschool to general secondary, professional (primary, secondary, higher), postgraduate education, but a harmonious process of cyclical renewal of a personality at each of the indicated stages of development. In this regard, the problem of selection and structuring of educational material becomes even more urgent. New requirements the teacher should add to it to ensure the continuity of education for the students of technical specialties.

As the experience of developed countries shows, in a multi-structured economy, the implementation of the principles of continuity and differentiation of the educational process is a necessary condition. One of the main problems of lifelong education is the effective adjustment of educational curricular in the transition from one level to another. An analysis of various options for solving this problem shows that the cybernetic approach is the most optimal, since it allows you to build a technology for selecting educational material that ensures the continuity of learning.

It is advisable to consider the presentation of the process of selection and structuring of educational material as a pedagogical technology for constructing an educational thesaurus through a description of its information-semantic structure. This approach reveals the relationship between didactic principles and parameters that characterize the semantic content of the descriptor of educational material. Analysis from the position of didactics of information-semantic structuring of educational material allows us to make a conclusion about the necessity of research in this area. These studies require the usage of pedagogical qualimetry methods. The content of education structured in this way makes it possible to consider the ideas of its continuity and to determine scientifically grounded principles of the transition from one stage of education to another.

The main goals of structuring educational material can be as follows:

- 1) To develop such a structure of educational material that would be the most rational and economical from the point of view of its assimilation and storage in long-term memory
- 2) To find and put into the structure a method of compression of the material, its folding and unfolding, and thus free students from the necessity to keep a large amount of factual material in their memory;
- 3) To group and arrange the educational material so that it can be introduced as a necessary element of educational and cognitive activity;
- 4) To search for the material given in the most modern way, which is aimed at the developing the practical skills of the future specialists.

The transition of learning outcomes into the language of specific actions in our study is based on the taxonomy of B. Bloom's pedagogical goals in the cognitive (cognitive) area, which includes six categories of learning goals: knowledge, understanding, application, analysis, synthesis and assessment.

If we consider knowledge, that is memorizing the content of educational material, then the student reacts, perceives, remembers, recognizes.

If we consider understanding, that is realizing the content of the training material independently of other material, then the student transforms, translates, explains, expounds, suggests, describes, shows, interprets.

If we consider application, that is using teaching material in new situations, and then the student solves new problems, demonstrates the correct usage of knowledge, designs.

If we consider analysis, that is insertion of information into its constituent elements, then the student highlights, reveals, enumerates, discusses, distinguishes, and tracks logical connections.

If we consider synthesis, that is composing a whole from separate elements, then the student combines, thinks, composes, systematizes, structures, develops, creates.

If we consider grade, that is determination of the value of the content of educational material, based on the goals, standards, signs, measures of judgment, then the student evaluates, compares, discusses.

The structuring of educational material, if it is carried out from a pedagogical position, depends primarily on the specifics of the subject, on the functions that the latter performs in education, and finally, on the general idea of the composition of the content of education as a pedagogically transformed content of social experience. Being included in the content of textbooks, collections of problems, teaching aids, etc., educational material plays a double role in teaching. On the one hand, it is a means of direct learning activity, on the other hand, it contains the norms of such activity.

Naturally, such a dual role can be played by educational material only under the peculiar condition. When selecting the material of science for the academic subject, the significance of the material in the system of science, the significance in social practice, the necessity for the formation of a worldview for general orientation in reality and the all-round development of the individual is taken into account.

It should be noted that, indicating a general approach to the selection of knowledge, these principles, however, are too general in nature: they cannot be used as a working tool to determine the comparative significance of certain knowledge in science, in social practice, for the formation of a worldview, etc. In addition to each principle, a specific methodology for its use is also necessary.

Any branch of scientific knowledge like Mathematics, considered as a science, is a certain established system of knowledge. Moreover, as a system, it naturally has an internal structure that includes a set of some elements closely related to each other. So, in any science, you can isolate a certain set of theories (in Mathematics this is the theory of probability, the theory of rational inequalities, etc.), each of which can be understood as a substructure.

In turn, any theory can also be divided into essential elements, such as concepts, laws, ideas and principles. In science, with the help of these structural elements, the corresponding phenomena, processes are described; the way they interact with each other is explained. Concepts, laws, ideas, principles, rules reflect the most essential general and distinctive features and properties of phenomena, their stable connections, relationships and dependencies, the total amount of those generalized logical operations with the help of which the phenomenon is transformed. These elements are included in the structure of each science and in the content of

the corresponding academic subject. Therefore, the education material for this purpose can be searched for and put into practice both in English and in the native language.

Of course, the basis of science do not constitute its main content in all academic subjects. For example, in such a subject as a foreign language, the knowledge of linguistics has the ground basis, and the main attention is paid to the skills necessary for practical use. The approach we are considering to structure educational material cannot be mechanically transferred to all academic subjects in the same completeness, as, for example, in relation to academic disciplines of the scientific-mathematical cycle and some disciplines of the humanitarian cycle in the content of which theoretical material also prevails. In accordance with the current program in English for non-linguistic specialties, at the end of the course of study, the student must be able to read and understand special literature in his speciality, have the skills of emotionally colored speech of everyday and business communication, monologue skills, etiquette of speech, as well as initial business writing skills. In this regard, the selection of vocabulary material sufficient to achieve the learning goals is relevant. Without mastering the vocabulary, it is impossible either to understand the speech of other people, or to express one's own thoughts. Therefore, at all stages of teaching a foreign language, an important place is given to work on the vocabulary. These are the rational issues for the necessity and possibility of structuring educational material as the basis for organizing the creative activity of students of technical specialties.

Conclusions. Meanwhile, in any case, the didactic structuring of the educational material, on the one hand, to a certain extent determines the student's activity in studying it, and on the other hand, it is determined by the peculiarities of the activity that the educational material can evoke in students. The functions of the educational material are aimed at the formation of the personality. To hold the performance certain elements of specific educational materials should be included in the teaching process of a certain subject. This means that the content of the educational material cannot exist outside the learning process, and while selecting it, of course, the existing methods, patterns, principles of learning should be taken into account. In addition, in the content of the educational material itself, the levels of the acquisition of this material and the actions of students should be indicated explicitly.

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ПРОБЛЕМА ВІДБОРУ ТА СТРУКТУРИЗУВАННЯ НАВЧАЛЬНОГО МАТЕРІАЛУ АНГЛІЙСЬКОЮ МОВОЮ ПРИ НАВЧАННІ СТУДЕНТІВ ТЕХНІЧНИХ СПЕЦІАЛЬНОСТЕЙ

У статті розглядаються науково обґрунтовані методи відбору та організації навчального матеріалу, враховуючи його дидактичну важливість, з урахуванням особливостей сприйняття, збереження та забування навчальної інформації студентами технічних спеціальностей, особливостей освітнього процесу вищої школи з точки зору впливу навчального матеріалу на формування професійних якостей майбутнього спеціаліста. У цій статті розглядаються такі теоретико-методичні питання відбору та структурування навчального матеріалу англійською мовою для розвитку навчальної діяльності студентів технічного ВНЗ у практиці викладання іноземної мови, а також основні вимоги до засвоєння знань з таких технічних предметів, як математика, коли мова викладання англійська. Діяльність майбутніх фахівців під час впровадження академічної мобільності залежить від змісту та характеру знань, які має надати їм вища школа. Серйозною причиною багатьох недоліків у підготовці фахівців є відсутність наукового обґрунтування вибору змісту освіти у ВНЗ. Наводяться загальні положення щодо аналізу різних варіантів розв'язання цієї задачі та робиться висновок, що кібернетичний підхід є найбільш оптимальним, оскільки дозволяє побудувати технологію підбору навчального матеріалу, що забезпечує безперервність навчання. Виклад процесу відбору та структурування навчального матеріалу доцільно розглядати як педагогічну технологію побудови навчального тезаурусу через опис його інформаційно-сислової структури. Такий підхід виявляє взаємодію між дидактичними принципами та параметрами, що характеризують смислове наповнення дескриптора навчального матеріалу. Аналіз з позицій дидактики інформаційно-сислового структурування навчального матеріалу дозволяє зробити висновок щодо необхідності досліджень у цій галузі. У статті аналізуються погляди вчених на процес відбору та структурування навчального матеріалу як процес створення навчального тезаурусу. Структурування навчального матеріалу залежить насамперед від специфіки предмета, від функцій, які останній виконує в освіті, та від загального уявлення про побудову змісту освіти. Дано практичні рекомендації щодо відбору та структурування навчального матеріалу. Розроблено підходи до структурування навчального матеріалу, які не можуть бути механічно перенесені на всі навчальні предмети в однаковій повноті, та запропоновано подальше вивчення теорії та методики відбору та структурування навчального матеріалу.

Ключові слова: навчальний матеріал, методичні принципи, відбір і структурування, дидактичні принципи, навчальний план, ефективність методів, технічні предмети

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