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DEVELOPMENT OF AN INNOVATIVE COMPUTER-INFORMATION APPARATUS FOR DESIGNING AND IMPLEMENTING AN INTEGRATED MODEL OF TRAINING AND ACTIVITY OF A SPECIALIST IN MEDICAL UNIVERSITIES

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ABSTRACT

It is proposed to develop an integrated model of training a future specialist based on the construction and implementation of: an integrated conceptual and theoretical apparatus for the activities of a teacher and a student, a functionally task-oriented hierarchical system of an educational and methodological knowledge base and a database for training a specialist, department computer and information technology for managing the training of a future specialist. Computer-information technology of the integrated apparatus of conceptual and theoretical activity of the teacher and student, based on the disclosure of the content and structure of methodological knowledge of the teacher associated with the design of cognitive activity of students. Development and creation of a model of innovative information technology educational process of the department, the information bases of their management, the environment of educational information technology interaction as a working environment.

Key words: computer-information apparatus, design, implementation, integrated model of training and activity of a specialist, medical university.

INTRODUCTION

Improving the quality of education is one of the urgent problems of the university. As experience shows, the solution of this problem, among other things, is connected with the modernization of the content of education, optimization of

the methods and technologies of the organization of the educational process, effective implementation of the ideas of the competence approach, which is characterized by a shift of emphasis on the student and on the result of education (student-oriented approach). Trends in the development of educational technologies are directly related to the humanization of education, which promotes self-actualization and self-realization of the individual [19]. One of the fundamental tasks of education is to ensure the quality of the educational process of the department. Today, we are dealing with the solution of a number of technological and social problems. Technological problems are methodological, theoretical, and organizational in nature. Social problems are associated with contradictions reflected in the professional activities of teachers. Without detracting from the advantages of the approaches, methods, and ways of implementing these problems used today, it should be noted that they are mostly developed and implemented autonomously, not united into a single interconnected complex. In our opinion, this is due to the lack of an appropriate information and technological base that ensures such unity. Therefore, the definition of the leading scientific approaches to the management of the sustainable development of the educational process of the faculty is of particular relevance. In our approach, the purpose of the research is to develop innovative methodological and theoretical support for the information technology educational process of the department, the information basis of its management, the environment of educational information technology interaction as a working environment [11,12,13,15].

Modern technology of teaching basic, general professional and special disciplines involves:

- optimality and content of cognitive actions of the student;
- universality of knowledge and skills in the subject;
- comprehensive methodological support;
- comprehensive development of mental qualities of a person (thinking, memory, observation) and education of moral qualities on the basis of a meaningful educational material;
- solving the problem of self-organization in teaching, taking into account individual capabilities based on methodological support.

In this regard, the content and structure of the teacher's methodological knowledge and examples of their relevance in solving particular methodological problems related to the design of students' cognitive activity should be disclosed.

At the same time, it is important to develop a design apparatus for the conceptual and theoretical activities of a teacher and a student. This is a time-consuming methodical work of a teacher, which involves:

- identification of a system of cognitive tasks (general and particular problems), the solution of which will create favorable conditions for the activation of the student's cognitive activity;
- designing a detailed model of the conceptual content of the educational material in the form of connections and relationships between concepts and judgments, which should be established as a result of the teaching;
- designing a system of learning situations that would ensure the successful solution of learning tasks leading to the achievement of the main didactic goal;
- selection of the specific content of educational information as a basis for the education and development of the student's intellect;
- development of a system of teacher actions - organizing and directing, controlling and correcting students' actions.

Thus, the main methodological activity of the teacher at this stage is aimed at creating a project for the functioning of the student's cognitive activity (with a given quality of assimilation) and means of controlling this process.

METHODS

Informatization and technologization of education presupposes the mandatory introduction of scientifically based and experimentally proven didactic innovations into the educational process, which represent an important source of learning progress. One of the main provisions of the modern didactic system is that teaching is effective when students show cognitive activity, are subjects of activity. The condition for the realization of this position is the use in the educational process of modern information technologies used in the projected professional activity.

With this in mind, we propose a methodological and theoretical provision for modeling the training and professional activity of a specialist based on the construction and implementation of a logical and semantic model of training and activity of a specialist, the apparatus of integrated design of a model of training and activity of a specialist and the conceptual and theoretical activities of a teacher and a student, a departmental computer and information system for training a specialist.

At the same time, the core of the logical and semantic model of training and activity of a specialist is his educational and productive activities. The apparatus of conceptual and theoretical activity of a teacher and a student consists of two main sections. The first one consistently includes: a system of integrated implementation of the constituent elements of activity, an operational and practical component and the main functions of professional activity; objects of assimilation during training, the content of professional activity, typical tasks of professional activity, functions of professional activity; the formation of tasks comprehensively covering all educational and industrial activities; determining the place of these tasks in the

content of training; definition of forms and methods of training; creation of educational algorithms and planning of the didactic process.

The second one consistently includes: the formation of a structural and logical system of educational and methodological knowledge base and a database for training a specialist; the selection of training content adequate to the educational goal, structuring of educational material, modeling of educational material; a structural and functional scheme for the formation of training content; modules - actions, building a system of educational task systems; skills and knowledge, building a system of cognitive tasks. The department computer-information system for training a specialist makes a methodological justification for the use of information technologies in the activities of departments of the higher education system. The rationale is built within the framework of an integrated model of educational and industrial training of a future specialist. The model displays hierarchical relationships between curricula and teaching materials used in the educational process. An integrated assessment of the quality of students' education is considered as a target indicator, the controlled parameters are the level of scientific and methodological training of teachers and the presence of a modern educational and technical base.

RESULTS and DISCUSSION

The level of education and qualification of specialists are among the most important factors of socio-economic and cultural development of society. The system of higher education (HE) is successfully functioning in the Republic, which requires constant development. One of the ways of HE development is the technologization and informatization of the departments' activities. According to the existing experience [13, 2-5, 14 -19, 22, etc.] and as it seems to us [8-15], the successful implementation of this development way. HE should be based on the integrated development and application of technologies: modeling of training and professional activity of a specialist; formation and evaluation of educational and behavioral awareness and personal characteristics of students; information technology educational process of basic, general professional, specialized and profiling departments. The search for ways to improve the training of future specialists has shown that one of the solutions to the problem under consideration is the modeling of their training and professional activity. In our approach, the aim of the research is to develop an integrated model of training a future specialist in his educational and industrial activities, based on the construction and implementation of the apparatus of designing a theoretical model of training and activity of a specialist projected into the form of his logical and semantic model, conceptual and theoretical apparatus of the activity of a teacher and a student, a

functionally task-oriented hierarchical system of educational and methodological knowledge base and database for training a specialist, The department of computer and information technology for the management of the training of a future specialist [12-15, etc.].

It should be noted that for the successful construction of systems of educational problem situations and cognitive tasks, the structure of the formation of the content of education is important. It should be noted that the functional map for the profession (specialty) is determined by the main key goal and the list of main functions [23].

In this regard, when forming the content of training for the training of a specialist, the following normative sequence must be maintained [8]: (1) - determination of the main key goal of the profession (specialty) according to the qualification requirements of the bachelor's degree educational direction - «Medical and biological education» - 5510900 [2, 3, 23]; (2) - based on (1) determination of the list of main functions according to the qualification requirements of the bachelor's degree educational direction - « Medical and biological education» - 5510900 [2, 3, 23]; (3) - based on (2) definition of a set of modules (actions) for each of the functions; (4) - based on (3) the definition of a set of skills for each of the modules; (5) - based on (4) the definition of a set of knowledge for each of the skills; (6) - based on (5) the definition of a set of subject areas for each of the knowledge.

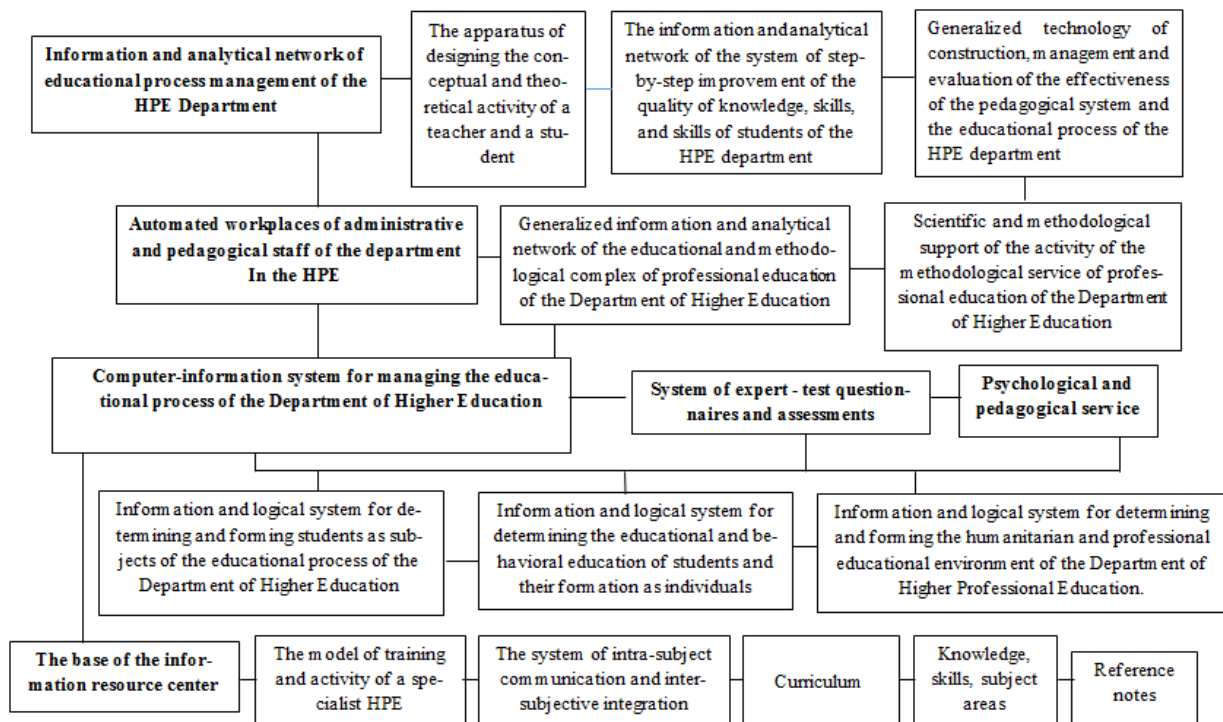
With this in mind, it is possible to form the content of training for the training of a specialist.

According to the qualification requirements of the educational direction bachelor's degree - «Medical and biological education» - 5510900 [2, 3, 23], the general structural and functional scheme of the formation of an educational and methodological knowledge base and a database for the training of specialists of a medical university can be presented in the form of a scheme including three main tables: A B and C. Table A consists of typical functions of professional activity in organizational and managerial activities; medical and social activities; scientific and research activities; scientific and pedagogical activity; medical and preventive activities. Table B consists of dark knowledge by blocks of subjects: humanitarian and socio-economic subjects; mathematical and medical-scientific subjects; general professional subjects; special items; additional items; optional items. Table C consists of typical functions of professional activity in: healthcare system organizations; clinical practice; experimental activities; medical statistics and forecasting.

The task is, firstly, to build a scheme of correspondence of dark knowledge in the blocks of subjects of the curriculum (Table B) with the corresponding sections of Tables A and C. Secondly, in the definition of № lectures, № laboratory work, № practical classes and other types of classes on the relevant subjects. It should be noted that educational departments are focused mainly on teaching relevant subjects, achieving their knowledge. The departments do not have an explicit system of differentiated orientation of the topics of the blocks of subjects of Tables B for the implementation of typical functions and tasks according to Tables A and C. The information basis of the department's educational process management is the system-technical layout of object-oriented computer complexes and the system typology of educational, methodological, organizational and managerial functions (see Scheme No. 1).

Scheme № 1.

The general structural and functional scheme of the computer-information system for managing the educational process of the Department of Higher Professional Education



The following criteria are used for conducting and evaluating the effectiveness of the pedagogical system:

- the degree of translation of the socially significant goal of the EE into the motive of pedagogical and educational activities;
- adequacy of the content of the goal;
- the level of collective management;

- the degree of teachers' mastery of the technology of goal internalization, the content of educational material and pedagogical communications;
- compliance of pedagogical communications with the studied material;
- the level of professionalism of teachers; - compliance of the quality of knowledge and the level of education of students with the requirements of the state educational standard (SSE) [23];
- the focus of energy resources on search and practical activities;
- compliance of students' psychophysiological states with the requirements of the pedagogical system, purposeful and efficient (they know who they want to become, know the methods of educational activity, self-training, self-education, self-control, identify deviations from the goal, adjust the structure of activity).

On the basis of building connections of the studied basic, general professional, humanitarian, social, economic subjects with the corresponding criteria - characteristics of educational and behavioral educational education, coordinate components of the logical and semantic model of personality, the structural and logical scheme of the specialist's activity, criteria for evaluating the effectiveness of the pedagogical system, the humanitarian and professional educational environment is formed [8-15].

The subjectivity of students in the educational process is based on the construction and implementation of a system for ensuring and assessing the compliance of the quality of knowledge and the level of education of students with the requirements of the state standard of education (SSE) [23], determining the direction of energy resources for search and practical activities, compliance of psychophysiological states of students with the requirements of the pedagogical system;

The subjectivity of teachers in the formation of the educational environment is based on the construction of: a system for determining and analyzing teachers' own states as subjects of the formation of the educational environment; a system for ensuring and evaluating the degree of teachers' mastery of the technology of goal internalization, the content of educational material and pedagogical communications, the correspondence of pedagogical communications to the studied material, the level of professionalism of teachers; a system for ensuring and evaluating the level of collective management, pedagogical skills of teachers;

CONCLUSION

The main results of the proposed development are determined by the solution of the scientific and methodological problem - the technologization and informatization of the activities of basic, general professional, profiling universities. An integrated model of the preparation of the future specialist in his

educational and industrial activities has been developed, based on the construction and implementation of: the design apparatus of the theoretical model of training and activity of a specialist, projected into the form of his logical and semantic model, an integrated conceptual and theoretical apparatus of the activity of a teacher and a student, a hierarchical system for the formation of an educational and methodological knowledge base and a database for training a specialist, a department based computer and information technology for managing the preparation of a future specialist.

The technology (educational and methodological complex) of assessment and formation of educational and behavioral education (BE) and personal characteristics of students has been developed, which implements the management of the development of students' interest in BE and their formation as personalities, the definition of conditions and the construction of the process of formation of students as subjects of the educational process and the process of personality formation, the formation of a system of description and evaluation of the humanitarian educational environment and the educational environment as a whole of the university. The fundamental difference between the ideas of the approach and the existing ones lies in the integrated technologization of the educational process and the pedagogical system, the assessment of its quality, the formation of personal and professional characteristics of medical students.

The importance and necessity of the claimed research, the social demand for its development, among other things, is determined by the need to implement state and government regulations in the field of informatization of education [24,25].

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