TRAINING OF FUTURE PROGRAMMERS FOR PROFESSIONAL ACTIVITY ON THE BASIS OF MODERN INFORMATION AND PEDAGOGICAL TECHNOLOGIES

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ABSTRACT

This article discusses the training of future programmers and engineers for professional activities based on modern information and pedagogical technologies. Recommendations and recommendations on how to train future programmers and engineers for organizational and management professional activities through the use of modern software and pedagogical technologies for teaching "Computer Engineering" students.

Keywords: Modernization, quality management, professional activities, graphical interface, intellectual learning, expert systems, competence, innovation, Case Study, motivation.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

Nowadays a number of positive works are being carried out to modernize the higher education system, introduce modern forms and technologies of teaching, improve the specialization fields by training specialists based on the real needs of the economy and social life in our country.

Modern requirements for the quality of training specialists in higher education institutions are considered actual issues such as revising the management system of educational institutions, strengthening incentives for quality education services, support the introduction of quality management systems, the formation of new principles based on quality management system in the education system [1].

The positive works is being carried out in order to create optimal forms of the educational process and its methodological support as a result of consistent reforms in the training of qualified specialists as an important capital of society. Together with this, there is a need to expand the opportunities for an informed education environment in the training of future programmers and engineers. Improving informed education environment which is directed to train managerial and professional career of specialists, to improve works by training future programmers on specialities which are suitable the needs of market economy and employers, as well as to supply graduate students with jobs, have important value.

The most important problems are considered that formation system of independent searchability and creativity skills of programmers-engineers who are taught in the higher education institutions do not systematically work, professors and teachers have not efficient skill to use modern information technology and pedagogical technologies. One of the main factors in improving the quality and efficiency of education is considered the widespread implementation of modern information and communication and innovative pedagogical technologies in the educational process [2].

The rapid development of information and communication technologies cause the problem of expanding advanced teaching practices and improving teaching methods in the education.

The diversity and constant and continuous updating of information and communication technologies, in particular, softwares require to proportionally change, adapt and develop teaching methods in teaching subjects [3].

The new methodological approach is always required in training of future programmers-engineers for organizational and managerial professional activities through using modern software in teaching students of "Computer Engineering" educational field which we are investigating.

The intensification of student creative activity, their mutual synthesis, leads to form stage of periods - a larger units of the process of student creative activity. The skills for professional activity begin to form at the end of knowledge and creative activity. As a result, students independently occupied with professional activity.

Practical and professional activity skills of students are formed through professional activity, listening to the teacher's explanations and comments in the educational process, performing laboratory and practical work as explained by the teacher. The practical work is focused on student's professional activity in the creation of software products for laboratory and practical work, it is constantly developing. Practically, using modern information and communication technologies in order to form professional activity of student in working with laboratory work, in particular, using the software in the process of laboratory classes have important significance as a teacher-student interaction [4].

The quality and effectiveness of the educational process in higher education institutions depend on the following main indicators:
1. Educational process, pedagogical activity;
2. Syllabus and curriculum;
3. Level of knowledge of students of higher educational institutions;
4. Capacity of scientific and pedagogical staff;
5. Modernity of material and technical base;
6. Wide implementation of information technologies in the educational process;
7. Research works and their application in practice;
8. Competitiveness of graduate students in the labor market;
9. Innovative environment and activity in higher education institutions;
10. Level of management of the educational process.

The implementation of automated teaching systems which are intellectual teaching expert systems, in the educational process will have impacted on improving the quality of teaching in all subjects without changing the composition of the teaching staff (professors and teachers) of higher education institutions. Computer programs and training systems in the form of e-textbooks, manuals, simulators, laboratory works, testing systems of knowledge and skills widely compensate for the lack of textbooks and provide each student with the necessary sources of taking information.

The educational process can be interpreted as a way to manage the acquisition of knowledge which does not contradict modern pedagogy. This process takes place in a closed system and it is characterized by purpose of management, the object of management (learner) has the management mechanism, and feedback channel (Figure 1).
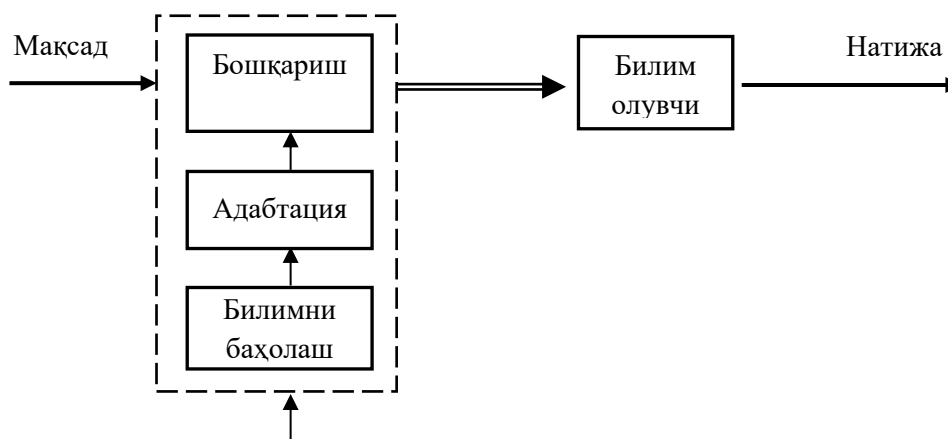
Figure 1. Generalized scheme of educational process.

We consider the professional competence of the future programmer-engineer in the field of computer engineering as the supply complex which do tasks of professional activity through adapting to professional situations and make appropriate decisions, work with certain software tools in the operating system environment, use programming languages for build logically correct and efficient programs, use databases, computer networks and other tools.

The formation of these skills in future specialists of the "Computer Engineering" educational field is carried out directly through the use of modern innovative pedagogical technologies, teaching general and specialty subjects in the Karshi branch of the Tashkent University of information technologies. Widespreadly attracting the innovative pedagogical technologies in the educational field is considered to achieve perfected assimilation of subject through effectively providing students with information in the situation of reducing the number of hours which separated for auditorium lessons, encouraging them to think independently, work as a team, make decisions, defend their views in public. Therefore, the role and importance of the assessment of knowledge, skills, abilities, namely, professional competencies which are formed in students through the use of advanced teaching technologies in the educational process, have being grown.

The subject "Database" is taught in accordance with the curriculum for the development of professional activity of students who study in computer engineering educational field and in the credit system of education. The gained knowledge on the basis of the study of this subject will serve to assimilate the general and specialty subjects such as "Introduction to Web programming", "Projecting algorithms", "Data recovery", "Windows Server management", "Operational systems", "Network security" which will teach in next courses.

In our opinion, using the "Case Study" method is considered effective in teaching the subject "Database" and controlling the knowledge and professional competencies which are acquired by students. The concepts such as the basic concepts of the database, the role of the database in all areas of professional activity, organizing the search for the necessary data, reprocessing data, the language of SQL queries which is neseccary for managing the database and programming languages which are used with them, general concepts of relational approach of organizing database, modifying database tables, in-query queries, constraints, presentations and transactions, protection of database and future prospects are delivered to students on the basis of theoretical and practical knowledge, and practical knowledge and professional skills of students are formed on the basis of these concepts.

Using description of real economic, social and business situations in teaching students to work with databases using the "Case method" develops specific professional skills in students. Students should analyze the situation, understand the essence of the problem, suggest possible solutions, and choose the best of them. Cases are based on materials which are close to the real situation [5].

1. Independent search for new information in projecting.
2. Development of skills in working with texts in construction.
3. Acquiring of the methods of searching and analyzing information in organizational activity.
4. Interaction of theoretical and practical knowledge in management activity.
5. Increasing the desire for professional activity in the educational process: actively perceiving interest in the educational process (motivation) and learning materials.
6. Forming skills and competencies such as development of well-grounded written and oral speech.

The educational goal of "case" teaches the student not only to know the theory, but also to solve tasks of professional activity. These tasks are given below:

The aim: to assimilate professional competencies, control of assimilated professional competencies.

The use of modern software interface in the development of databases and the solution of practical tasks leads to present infographic model, two- and three-dimensional objects and their data, to develop algorithms and revolutionary interface.

The advantages of developing a database using software tools are as follows:

➢ Convenience and simplicity of working in the program;
➢ Speed of calculation and obtaining results;
➢ Simplicity of entering formulas and dimensions;
➢ Less mistakes and high accuracy of dimensions;
➢ High capability and accuracy of graphic regime;
➢ Existing opportunity of observation of graphical change by changing dimensions [6].

The advantages of the following approach which is being used to teach database, can be shown as follows:

✓ Students will be oriented to practical aspects of effective use of database capabilities in real conditions;
✓ The students will be highly involved in the study of science;
✓ The attention of students will be oriented not only to the theoretical knowledge of the science, but also to the software tools of database management systems.

Thus, using the case technology gives opportunity to evaluate the results which are achieved by the same single methodology as in teaching in order to control the assessment of students' knowledge and skills in the teaching of database science. First of all, this motivates students to independently study the material; secondly, it gives opportunity that the students can demonstrate their acquired practical and theoretical skills, the teacher can individually note and correct the results of works which each student does, comprehensively develop and evaluate the professional competencies of future professionals.

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