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PROBLEMS OF USING MODERN TEACHING METHODS IN TEACHING COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES

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ПРОБЛЕМЫ ИСПОЛЬЗОВАНИЯ СОВРЕМЕННЫХ МЕТОДОВ ОБУЧЕНИЯ В ПРЕПОДАВАНИИ ИНФОРМАТИКИ И ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ

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INFORMATIKA VA AXBOROT TEXNOLOGIYALARI FANLARINI O‘QITISHDA ZAMONAVIY TA’LIM METODLARIDAN FOYDALANISH MUAMMOLARI

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Annotation: In this article, the continuous education system in our country in the process of training future personnel in informatics and information technologies, the problems of using modern educational methods in the teaching of informatics and information technologies, in the teaching of informatics and information technologies researches of our country and foreign scientists, present-day problems in the teaching of informatics and information technologies and methodical aspects of their elimination are studied. Modern methods and their

effectiveness were analyzed in the process of teaching informatics and information technologies in higher educational institutions today. Effective methods of teaching informatics and information technologies were methodically analyzed on the basis of "Data base" science. Proposals and recommendations on the use of effective educational methods based on the teaching of database science have been developed.

Key words: informatics, information technologies, project-oriented learning, blended learning, modular teaching, boomerang.

Аннотация: В данной статье рассматривается система непрерывного образования в нашей стране в процессе подготовки будущих кадров в области информатики и информационных технологий, проблемы использования современных образовательных методов в преподавании информатики и информационных технологий, в преподавании информатики и информационных технологий. изучены исследования наших отечественных и зарубежных ученых, современные проблемы преподавания информатики и информационных технологий и методические аспекты их устранения. Проанализированы современные методы и их эффективность в процессе преподавания информатики и информационных технологий в высших учебных заведениях сегодня. На основе науки «Базы данных» методически проанализированы эффективные методы обучения информатике и информационным технологиям. Разработаны предложения и рекомендации по использованию эффективных образовательных методов, основанных на преподавании науки о базах данных.

Ключевые слова: информатика, информационные технологии, проектно-ориентированное обучение, смешанное обучение, модульное обучение, бумеранг.

Annotatsiya: Ushbu maqolada yurtimizda uzluksiz ta’lim tizimi informatika va axborot texnologiyalari bo‘yicha bo‘lajak kadrlarni tayyorlash jarayonida informatika va axborot texnologiyalari fanlarini o‘qitishda zamonaviy ta’lim metodlaridan foydalanish muammolari, informatika va axborot texnologiyalari

fanlarini o‘qitish bo‘yicha tadqiqot olib brogan yurtimiz va horijiy olimlarning tadqiqotlari, informatika va axborot texnologiyalari fanlarini o‘qitishdagi bugungi kundagi muammolar va ularni bartaraf etishning metodik jihatlari o‘rganilgan. Bugungi kunda Oliy ta’lim muassasalarida o‘qitilayotgan jarayonida informatika va axborot texnologiyalari fanlari ularni o‘qitishdagi foydalanilayotgan zamonaviy metodlar va ularning samaradorligi taxlil qilingan. Informatika va axborot texnologiyalari fanlarini o‘qitishdagi samaraliy metodlar “Ma’lumotlar bazasi” fani negizida metodik taxlil qilingan. Ma’lumotlar bazasi fanini o‘qitish asosida samaraliy ta’lim metodlaridan foydalanish bo‘yicha taklif va tavsiyalar ishlab chiqilgan.

Kalit so‘zlar: informatika, axborot texnologiyalari, project-oriented learning, blended learning, modulli o‘qitish, bumerang.

Introduction.

The continuing education system is considered the main support of training future personnel in our country, and the effectiveness of training informatics teachers depends primarily on the knowledge and skills they should have. is increased. These knowledge and skills are, first of all, specialized subjects taught to them, the content of educational literature, educational and methodological complexes (educational standards, curriculum and programs, teaching textbooks tools, didactic materials, etc.). The preparation of the future informatics teacher in general professional subjects, the ability to feel and understand social existence, to acquire the necessary basic knowledge in the future professional activity, to independently choose the path of life, to organize the future activity related to clear goal setting and decision-making skills or outlook. It shows that the training in the specialty subjects consists of elements of logical thinking, methodological and social activity of the future informatics teacher related to specific objects related to the specialty. Future informatics teachers are trained in "Information security", "Database", "Computer graphics", "Web design", "Network technologies", "Computer technical and such subjects as "modern software" are being taught in depth. Modern educational methods and technologies are used effectively in the

teaching of these subjects. But research in this regard is constantly developing. We conducted our research on the example of "Database" science.

Objects and research methods

The subject of database is included in the department of specialty subjects in the curriculum of training courses in informatics and information technologies. The knowledge acquired from these disciplines complements the knowledge of the database by mutual integration and serves as a basis for their acquisition. It is one of the main regulatory documents of this science in the science program of the science of "Data base" for the training courses of personnel in informatics and information technologies. The purpose of teaching the science of "data base" is, first of all, to provide future informatics teachers with knowledge about the database and its creation technologies [1]. At this point, we found it appropriate to provide information about the database. A database is a set of systems or programs used to store, produce, and identify data. A database allows users to search and retrieve and edit data.

The researches of Kadyrov Bobur Kadyrovych [2] can be mentioned among the scientists of our republic who have worked on the competence of database training and database creation. His main work is related to the work carried out on the methodology of using digital educational technology to improve students' competence in creating a database.

Internationally, many studies have been conducted on interactive teaching methods and their integration. In particular, Royce Kimmons, associate professor of educational psychology and technology at Brigham Young University, UT, USA, researches social media, open learning, and the use of digital technologies in educational activities. it is distinguished by covering directions [3].

Royce Kimmons examines the factors and threats to students in the process of working with information from the Internet and other sources in education. Also, the researcher studied 10 prestigious higher education institutions located in the USA, Great Britain and Switzerland. As a result of research, negative psychological threats affecting students during their studies have been identified

[4].

Results and its discussion

The application of competence-based educational technologies in the higher education system is, first of all, the readiness of future qualified specialists to act effectively and independently in their professional field. characterized by

Table 1.1 presents a comparative analysis of didactic principles of competence-based organization and adaptation of traditional educational technologies that are widely used today.

Table 1.1.

Comparative analysis of traditional and competency-based approaches to the educational process

Traditional approach	**A competency-based approach**
During the learning process, the teacher presents the basic concepts of the studied subject, including the main content and theoretical knowledge of the studied subject.	During the educational process, the teacher should define general (strategic) tasks with the students, describe the expected results for the future activities. It is determined by the development of the level of analysis of motivational and interesting topics and materials through mutual cooperation and independent activities of the student and the teacher.
The learning content and key concepts are directly adopted by the learners, based on the topic in the program.	Learners search for solutions to a pre-prepared task or problem, similar to the process of solving life problems, by sorting out important information to solve a given problem.
Knowledge is researched and mastered based on established scientific laws.	Academic and professional knowledge is based on research within the framework of problem solving.

Practical training and laboratory work are aimed at learning the planned knowledge and achieving the planned results.	Practical exercises and laboratory exercises allow you to compare the results and independently choose the paths leading to the solution.
Independent work is organized on the basis of subjects determined by students, and topics are determined according to the content of the subject.	Independent work is organized on the basis of topics set by researching life problems, and the knowledge acquired through the main content of the subject is used to solve the problem.

In the higher education system of a number of developed countries (USA, Great Britain, Switzerland, etc.) is using project-oriented educational technologies.

Blended learning is one of the widely used educational technologies, which shows the high efficiency of education. Blended learning technology is characterized by its flexibility, individual orientation and integration of traditional and non-traditional educational elements. Opportunities of modern educational tools and technologies, especially information technologies, new forms of education are being created in modular teaching, team approach is being strengthened. The main principle of mixed education technology is based on the pedagogue's ability to effectively use the experience he has gained during his professional activity. In addition, they will have the opportunity to use many elements of both forms in the educational process with the help of information technologies individually or in groups in the traditional form. Effective use of the methods and technologies chosen by the teacher and their mutual harmonization is the main issue. Different forms of education can be used, such as blended learning - distance learning, online, independent learning, etc.

Modular training. The possibility of step-by-step training is created through completely reduced and in-depth classification of modular training and

educational programs. That is, training can be organized individually. In traditional education, educational goals are expressed through the activity of the teacher, that is, aimed at imparting knowledge, in modular education, they are expressed through the activity of students and are related to professional activity. will be directed. Modular education requires problem-oriented and focused lectures that provide general information about the main problems of science. The lecture should be aimed at developing students' creative abilities. Module practical and laboratory classes should be created together with lectures and supplemented with new materials to study the content of the lectures.

Project-oriented educational technologies - "Project-oriented education". It was created in the USA in the second half of the 19th century, and its theoretical foundations were formed by the views of John Dewey. Project education is aimed at the organization of activities based on knowledge acquisition, oriented to life and practical projects. Designing this place involves creating a well-defined activity model, creating and evaluating existing conditions, and identifying means and methods to achieve the goal. In this place, more attention is paid to practical training. Harvard Graduate School of Design Professor Anne Forsyz said: "I try to organize all student activities, even from simple question and answer, based on real practical projects" [5]. Project-based education is based on the project method. Project-oriented education develops students' qualities such as creativity and independent research.

Information text is a method created in the form of independent educational software tools equipped with audio and visual presentations. In the information text method, 6 stages are defined, which alternate in circular movements: gathering information, planning, decision-making, implementation, verification, conclusion. All these steps are done by the student. The development of this method was caused by organizational problems related to project work, because it was difficult to find a convenient time to train the whole group, as the trainees worked at different speeds. The anchor text method can help you do this effectively.

The project method is related to the reference text method. Because the reason for creating the manual text method was to eliminate the problems that arise when working on projects. The project method was developed in order to learn to work with projects, improve knowledge and apply it in practice. The project method can be used as part of the tasks and activities of the entire process of practical education. For this, the necessary methodical and technological tools, practical projects and problems should be available. The projects to be implemented should be as follows:

1) improve the effectiveness of a model or process from planning to quality control or optimization of existing development;

2) it is desirable that the given assignment is oriented to the solution of practical tasks in complexity and requires students to apply the acquired knowledge and skills in other situations. Students can overcome various difficulties and gain additional knowledge and skills.

3) preparation of the project should serve learning, connect theory and practice, be related to the work process encountered in practice, should be done independently by students as much as possible should be planned and independently organized and performed by students within a limited framework.

In practical training, three different organizational forms are used to implement the project method. These are: individually planned independent work, planned independent work in a group, group work. Organizing in such forms helps students to develop individual and team work skills.

Various methods and technologies can be used in practical lesson processes using the project method:

The use of this technology in the practical training of the FSMU database can be used to solve controversial issues, conduct discussions on the given task, this technology helps students helps to defend their thoughts, free thinking, teaches students to transfer their thoughts to other members. Open discussion of the team, as well as analysis of the knowledge gained during the educational process, serves to evaluate the level of their assimilation and to form a culture of debate.

"Step-by-step" is usually effective when working in small groups. Leaders are chosen for each small group, they answer questions on the topic and give them to students one by one. If the group consists of 6 students, each student must answer the question. The questions are monitored by group leaders for student responses. Students can earn one point for each correct answer up to a total of 5 points. Then the teacher regroups the students according to their scores. He gives different tasks to each group depending on their capabilities. After students complete these tasks, they ask questions and each group explains their tasks based on visual aids. Winners are identified and encouraged in small groups that have performed the task perfectly.

"BUMERANG" helps students to work with various literature, texts, electronic resources, to remember the learned material, to speak, to express their opinion freely, to get a lot of information in a short time and allows the teacher to evaluate everything during the lesson.

"BBB" allows students to develop their creative work to strengthen their knowledge on the subject.

One of the effective educational technologies today is virtual educational technologies. Such educational technologies are effectively used in the teaching of fields such as robotics, medicine, programming, architecture and modeling.

Technically, computers and other information technologies are effectively used. These include VR glasses, 3D printers, blockchain technologies, projectors, interactive whiteboards, and smart boards that provide a visual experience. All this makes it possible to visualize efficiency in the process of education and to understand more clearly the real characteristics of the studied object.

In our republic, in higher educational institutions that train future specialists in the field of information technologies, in-depth knowledge on the database and its creation is given on the basis of the "Database" science. Database science is taught on the basis of various educational technologies and methods.

In the educational system of many countries of the world, especially in higher educational institutions, knowledge about the database is studied based on

the subject "Database". In particular, in the research of Dr. Bernhard Standl, professor of the German Institute of Computer Science and Digital Education, issues of a new approach to the educational process were studied. According to his approach, it works in a three-step process, namely conceptualizing the research domain as a taxonomy, transforming the taxonomy into a graphical database, and selecting candidate parts for training models [6].

In the study conducted by the Indonesian scientist Muhammad Lutfi Hamza, the importance of teaching and learning of the database, increasing the volume of personnel training, and the use of modern educational technologies was studied. Muhammad Lutfiy Hamza works as a doctor at Riau State Islamic University named after Sultan Sarif Qasim. In his research, the problems in the process of teaching database in prestigious universities of the world were studied. In his conclusions, Muhammad Lutfiy Hamza recommended teaching on the basis of "Project-oriented education", that is, a practical approach aimed at increasing the effectiveness of learning in the process of teaching the database and forming practical skills in students. directed projects [7].

In studies conducted at several universities in China, students encountered the following problems in the process of imparting knowledge about databases:

- in the process of training students, more attention is paid to theory than to practical activities, as a result of which they face difficulties in applying the acquired knowledge in practical activities;

- although various methods and information technologies are used in the educational process, sometimes in many cases, learning is organized in an outdated way, encouraging and developing students' initiatives in educational activities, their needs There are many problems in the development of taste;

- they mentioned that the practical assignments and tasks in training the database are limited to a very simple narrow range of programming and organizational work, which is far from real practice.

Research by Bilal Shebaro, a researcher at St. Edward's University and the University of New Mexico, has scientifically proven the use of active learning

strategies in database training [8].

Research by Ai-Dong Fang, a researcher at Suzhou University in China, has explored effective learning technologies and database learning methods. During his training, the Blended Learning technology was found to be effective in teaching the database, and a method for using Blended Learning in Flipped Classrooms was developed [9].

In the research conducted by Titovskaya Nataliya Viktorovna, associate professor of the Department of Information Technologies and Software for Information Systems, Krasnoyarsk State Agrarian University of Russia, the methodology of using interactive approaches in the formation of knowledge about the database of future specialists, their design and scientific study developments have been developed. During their studies, students deal with the design of information systems focused on real practice, that is, the use of real data of a particular enterprise and the solving of issues necessary for the work process. At least 50% of students in the process of preparing a graduate thesis choose topics related to the development of information systems for specific enterprises that make up the database [10].

In the research conducted by Professor Joao Carneiro of ISTEC School of Commerce and Marketing, one of the prestigious higher education institutions located in Paris, France, methods to increase students' attitude and interest in learning, methods of encouraging students' educational initiatives, e-learning Overcoming problems of connection between motivation, practice and theory by means of lim tools and online learning technologies has been studied scientifically [11].

Based on the systematization of the organizational and pedagogical functions of developing the competence of creating a database in future informatics teachers, it is necessary to manage the pedagogical and ergonomic conditions by facilitating the adaptation of students to the conditions in the process of creating a database. When organizing the process of creating a database, it is necessary to design, apply flexibility of technological and methodical pedagogical functions, to

control, to use the necessary electronic didactic tools to increase literacy, and to coordinate them in a systematic, content, and program-methodical way.

Conclusion

Based on the modern technical, methodological and technological analysis of such various educational activities used in our country and abroad, the following conclusions can be drawn to increase the effectiveness of database training:

- it is appropriate to use methodologically effective methods of introducing modern technologies and improving the database training process;
- introduction of project-oriented educational technologies in improving the educational process of the database on the training of qualified personnel in our country;
- the use of technical and modern software tools, as well as the use of new didactic tools, is recommended in the training of the database and its creation.
- when organizing the independent activities of students, it is necessary to increase their interest in science, to give them the opportunity to choose independent educational topics and projects in the direction they are interested in.

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