PROBLEMS AND SOLUTIONS TO INCREASE THE EFFICIENCY OF DATABASE TEACHING

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ABSTRACT

The article examines the process of transferring knowledge on the database in the higher education system, the current state, the form of organization of training, methods used, tools, organizational work and their problems and shortcomings, and analyzes ways to overcome them. A survey of students from various higher education institutions was conducted to determine their views and attitudes towards the problems and shortcomings in the process of acquiring knowledge of the database on the basis of database science. The scientific researches of the world's leading scientists in this field were analyzed. The work done in recent years has been reviewed and their results studied. Taking all this into account, opportunities have been identified to increase the effectiveness of education through the effective use of modern educational technologies and their potential, their application on the basis of a competency-based approach. At the end of our research, an approach and recommendations for improving the efficiency of database transfer in the higher education system, a model of training were developed. The research was tested on the basis of database science among undergraduate students of 5110700-Informatics teaching methodology studying at Gulistan State University (Uzbekistan) and received positive results.

Keywords: Competent approach, Database training, Blended learning, Realworld projects, Active Learning Strategies.

INTRODUCTION

Today, the purpose of education is changing and students need to acquire knowledge as well as develop high competencies. At the heart of this process lies a competent approach to education. The role of students and teachers differs organizationally and purposefully. Many software and educational technologies are used to transfer database knowledge. In the system of continuous education, consistently formed basic knowledge is the basis for acquiring knowledge from the database. To do this, it is advisable to use the necessary educational technologies.

Improving the teaching of databases in the education system. It uses competency-based learning technologies. Along with the knowledge, skills and competencies that students must apply in their professional activities, the necessary competencies are being formed in their professional activities.

The necessary didactic means of organizing training in the educational process are selected taking into account such factors as the goal, content, type of training, type of training. It is important to identify the factors to be considered in this process and to use the right tools. Throughout the study, methods of observation, comparison, experiment and generalization were used. Educational technologies based on a competency-based approach should be determined based on the following requirements:

- with such characteristics of educational technology as personality-oriented, selected taking into account the interests and needs of students, encouraging students to be active in the learning process, increase their curiosity, focus on independent learning;
- with a focus on organizing activities to address socially significant issues and tasks of future professional life;
- with a focus on independent activity, self-development and real self-esteem.

LITERATURE REVIEW

Competency-based learning is seen as an approach to change and transform traditional ideas about what, when, where, how a student learns and acquires academic knowledge and skills.[1] In the course of our research, we got acquainted with the scientific research of many scientists. For example, Alexandra Takaberry of Kent State University, in Competency-based education models: an emerging taxonomy, describes competency-based education in her study entitled The New Taxonomy: Competency-based learning is a model of education that relies on the demonstration of skills and knowledge as a criterion for success and development, regardless of the time spent learning. [2]

Based on many years of research and accumulated experience of world higher education systems, depending on the individual characteristics of students, the use of the following educational technologies gives effective results: problem-based learning, modular learning, student-centered learning, developmental learning, individual learning, group work.

In many countries of the world, especially in the higher education system, database knowledge is provided on the basis of database sciences. In the course of our research, we examined research in this area in many higher education systems around the world. Among them is Dr. Bernhard Shtandl, professor at the German Institute for Computer Science and Digital Education [3], Dr. Muhammad Lutfi Hamza, PhD of the State Islamic University of Riau named after Sultan Sharif Qasim in Indonesia [4], Bilal Shebaro, researcher at the University of Texas “St. Edward's” and “Nyu-Meksiko” University [5], Ai-Dun Fang, researcher at Suzhou University in China [6], Krasnoyarsk State Agrarian University, Information Technology and software for information systems” Natalya Viktorovna Titovskaya [7], associate professor of the School of Trade and Marketing “ISTEC - Ecole Supérieure de Commerce et Marketing” Joao Carneiro [8].

Research Question

Database science is taught through a variety of educational technologies and methods. When interviewing students of the Gulistan State University of the Republic of Uzbekistan, the Jizzakh State Pedagogical Institute and the Chirchik State Pedagogical Institute of the Tashkent region, students noted that they face the following problems in the process of providing knowledge on the database:

- in training, more attention is paid to theory than to practice, which leads to the formation of practical skills in students and the problems of applying knowledge in practice;
- although a variety of modern methods, information and multimedia technologies are used in the educational process, the old pedagogical technologies remain the same and there are many problems in developing the educational initiative of students, fully demonstrating their talents;
- Database training is limited to a very narrow range of practical tasks and tasks, relatively old software and organizational work, far from real practice.

Methodology

Classes in the subject "Databases" are organized in the form of lectures, practical classes, laboratory classes and independent work. Taking into account the analyzed considerations, the

mechanism of teaching the subject "Database" in higher educational institutions has been studied.

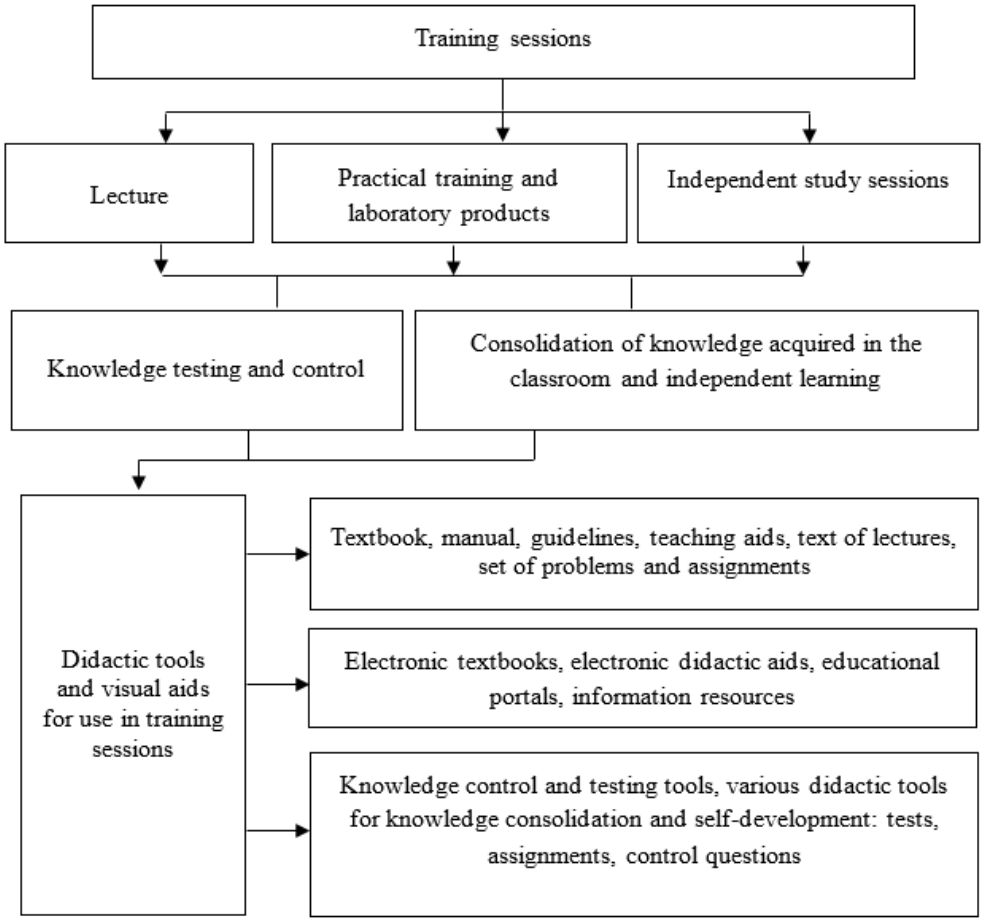

Figure 1. The current state of the structure of the organization and conduct of training in the subject "Database".

RESULTS

To increase its effectiveness, we considered it expedient to use practice-oriented learning technologies in the classroom. The organization of students' work with real problems arising in the course of practical activities gives them the opportunity to apply their theoretical knowledge directly in practice and theoretically discuss problems that arise in practical activities. Working with practical projects in the learning process serves to form students' competencies in the practical application of knowledge [4] [5].

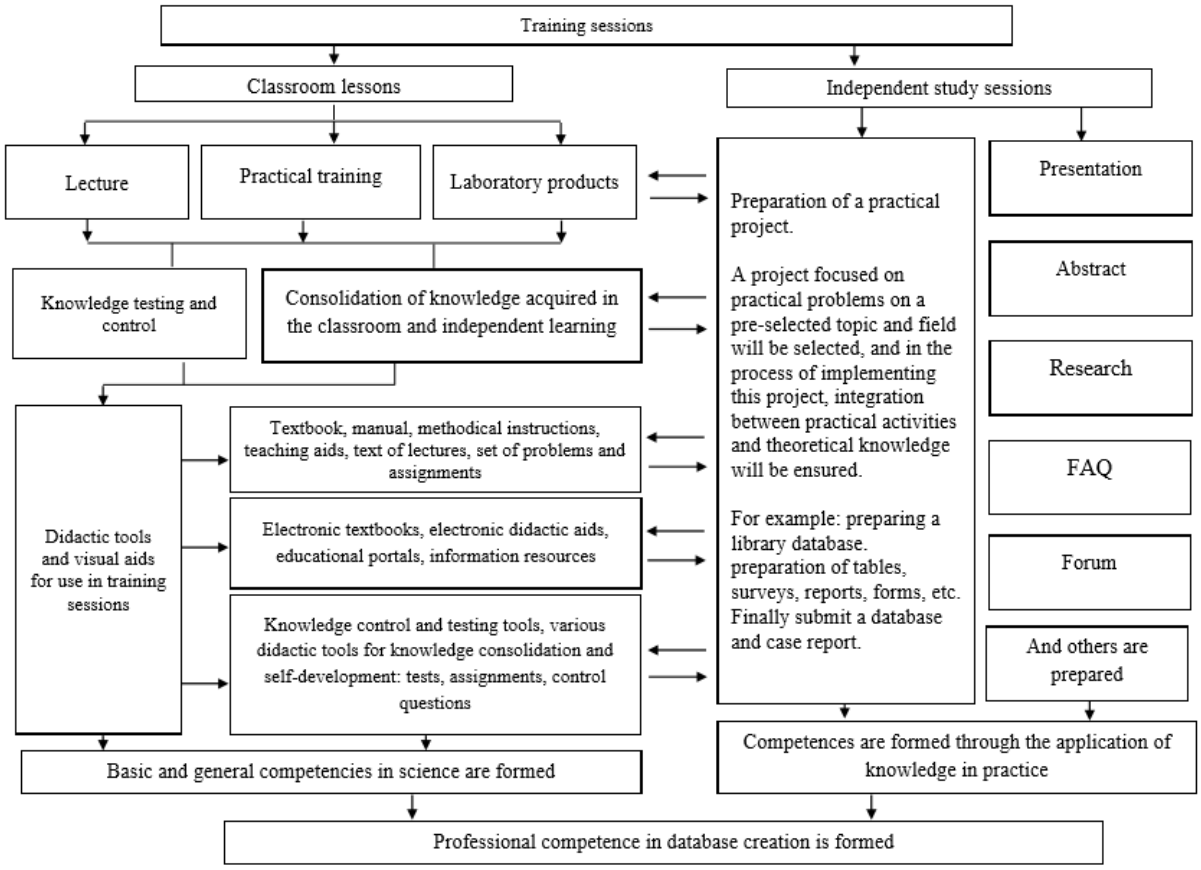

Figure 2. The structure of the organization and conduct of training in the subject "Databases" has been improved.

As a result of the use of practice-oriented educational technologies in teaching the subject "Database", in particular, during lectures, practical, laboratory and self-study, the following results will be achieved:

- mutual integration between theory and practice;
- as a result of the work of students on a specific project, their interest in science and education increases;
- student educational initiative is encouraged;
- as a result of a project focused on a real problem, practical problems will be scientifically studied;
- basic, practical, scientific and professional competencies of students are formed;
- The exact trajectory of the knowledge that science has to transfer on the basis of modern software and theoretical knowledge will be improved.

In the course of our study, when organizing training sessions, such educational technologies as "Blended learning", "Realworld projects", "Active Learning Strategies" were used. If we analyze the results, let us turn to the example of Gulistan State University.

Table 1. Results obtained by task types

the name of the institution		Gulistan State University (Uzbekistan)	
Groups		Experimental group	Control group
job types	Number of students / Grade	17	20
classified by theoretical topics tasks	5	5	3
	4	7	7
	3	5	9
	2	0	1
stratified by practical topics tasks	5	8	3
	4	5	8
	3	4	7
	2	0	2
independent work assignments	5	6	3
	4	7	7
	3	4	10
	2	0	0
test tasks by topic	5	5	3
	4	6	7
	3	5	7
	2	1	3
the final grade is a general test tasks	5	5	4
	4	6	6
	3	6	9
	2	0	1
final rating	5	5	3
	4	6	7
	3	5	9
	2	1	1

Table 2. Results obtained are percentage analysis

Experience group (experiment)					
Experimental group	Number of students	5 average %	4 average %	3 average %	2 average %
7-19	17	33,3%	36,2%	28,4%	2%
Control group					
8-19	20	15,8%	35%	42%	6,6%

CONCLUSION

We can say that the constant improvement and enrichment of education is, above all, an important condition and factor in training personnel in accordance with modern requirements. An accurate analysis of the problems is a priority in the study of world experience in this area. As a result of our research, we analyze educational technologies that serve the development of individual characteristics, which is one of the main requirements of a competency-based approach to learning. On this basis, the efficiency of database training was chosen and practical results are shown.

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