Methodology of Using Pedagogical Software Tools in Teaching Database Science

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Abstract:

In this article, the methods of increasing the effectiveness of teaching using CoursLab, Autoplay, Ispring programs in the teaching of "Data base" educational subject are analyzed. Efficiency was evaluated based on mathematical statistical analysis methods.

Keywords: database, CoursLab, MS Access, electronic textbook, educational module.

Introduction

One of the main tasks of education today is to teach students to use the ever-increasing flow of information wisely, to create a favorable environment and conditions for continuous learning. For this, the teacher himself should regularly work on himself, continuously improve his pedagogical skills, improve the educational process by creatively using the world and national pedagogical heritage and scientific and technical achievements.

Today, the main task of the education system is to educate young people who can think independently, appreciate our national heritage, are creative, moral, and mature in all aspects. In the implementation of these tasks, a teacher of today requires constant creative research, a new attitude to teaching and self-sacrifice.

Based on the current demand, the database and its use form the basis of any industry. Based on this need, working with programs that create a database is becoming a need for a representative of any field. Similarly, MS Access is the most widely used tool for creating databases. Since the MS Access program is a relational database, it is based on tables. Creating tables in MS Access is the main part of it. Taking into account this aspect, it is no exaggeration to say that creating a table is the basis of creating a database. Therefore, creating tables in MS Access means building the

foundation of the database. Because the more thorough the foundation, the stronger the part that is built on it.

One of the practical software tools created for the organization of the educational module is the CourseLab program. CourseLab is a powerful and easy-to-use tool for creating interactive learning materials (e-textbooks, training modules) for use on the Internet, distance learning systems, CD-ROM or any other storage device. is a software tool. CourseLab software was developed by WebSoft. WebSoft is a company that produces modern information systems and software packages.

Main part

Currently, CourseLab 2.7 and CourseLab 3.1 versions of the CourseLab program are widely used. This program has the following options:

Creating and editing educational materials that can be viewed and obtained results in the Internet system;

It does not require the developer to know HTML or other programming languages.

An objective approach allows you to create educational materials of any complexity.

Using scenarios makes it easy to create complex multi-Object relationships.

It has an automatic test creation mechanism.

An open-object interface allows for easy extension of object and template libraries and user-created libraries.

Features an object animation mechanism.

Allows embedding of any type of Rich media — Macromedia® Flash®, Shockwave®, Java®, and any video format — into educational courses.

Easy mechanisms for placing and synchronizing musical sequences.

Ability to embed presentations in Microsoft®PowerPoint® format into educational material.
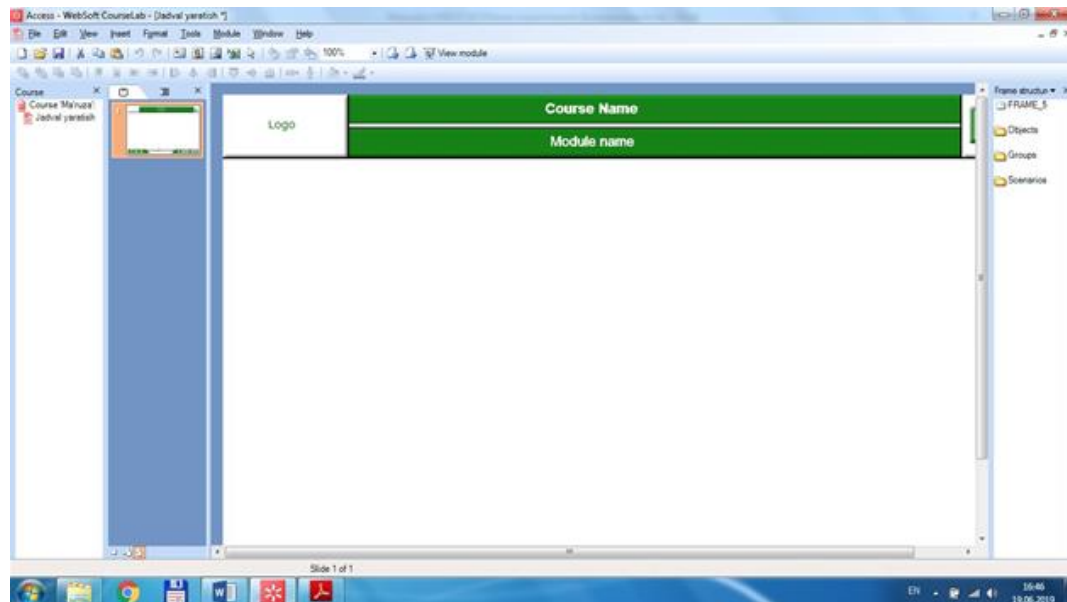
It has a screenshot mechanism that allows you to create simulations of various software.

It has an easy language to explain actions.

Allows the skilled user to directly access the properties of the application files in JavaScript.

Java is not required to view e-learning courses.

The program interface looks like this (Figure 1):

Figure 1. Creating an e-learning course in the CourseLab window.

An e-learning course created using CourseLab consists of a set of ordered learning modules. Depending on the construction of the educational material, modules can be combined into sections. In turn, sections can be hierarchically combined into larger units.

A learning module is the main unit of the course hierarchy and consists of a sequence of slides. During the educational system, students move sequentially from slide to slide. Usually, the study of slides is carried out in the sequence determined by the author, but the sequence of slides may change depending on the results of the tests.

The educational module can be designed both for study and for control of acquired knowledge. Learning and control materials are usually combined in a module: at the end of the learning material, the student takes a test in this module.

Preparation of the theoretical information bank for the training module "Creating tables in MS Access" in the CourseLab program is carried out in the following order (Fig. 2):
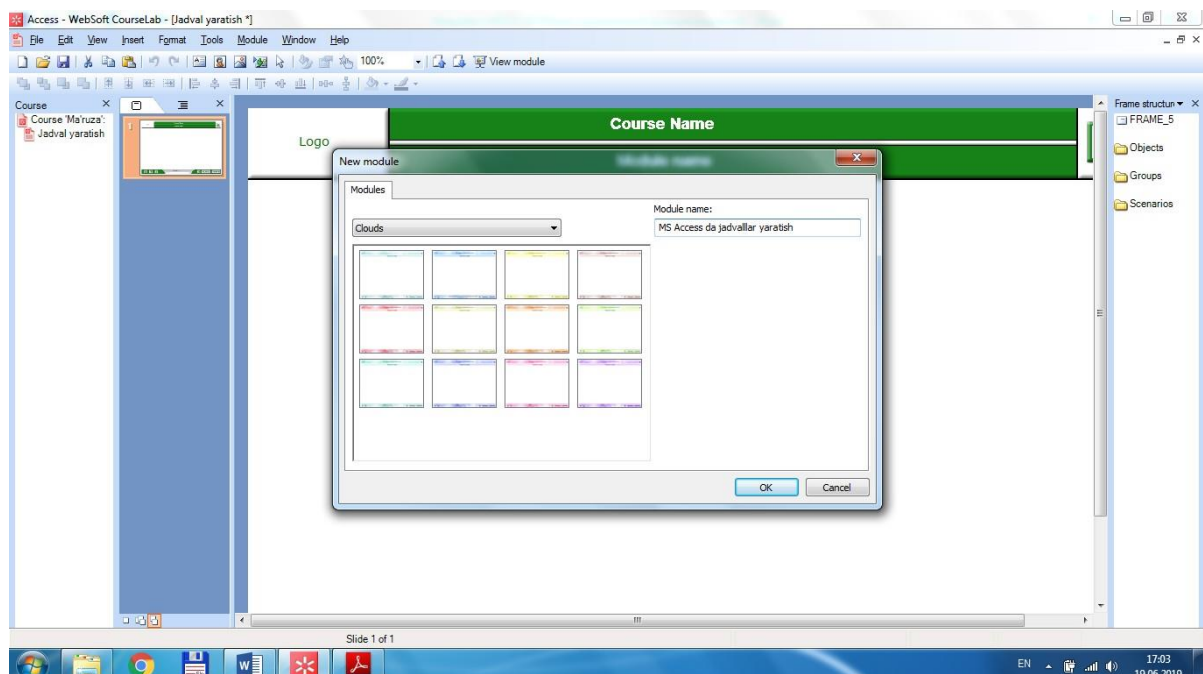
Figure 2. An e-learning course created using CourseLab

In the image above, you can see that there is an option to choose a template for the module. An arbitrary one is selected from among them (Fig. 3).
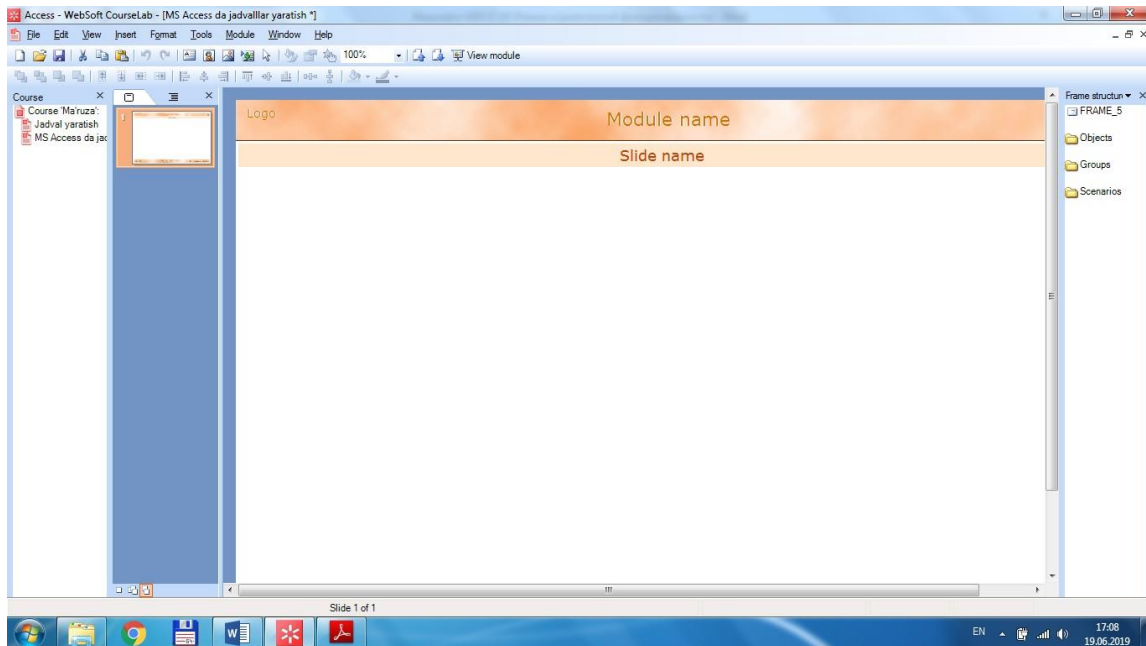
Figure 3. Working with the module.

Insert the module logo (optional) in the upper left part and the module name in the center. Under it, the name of the first slide of the module and a slide or picture are inserted (Fig. 4). In this case, the sequence of actions performed in Access can be taken as a PrintScreen as a picture. It is also possible to import slides created in PowerPoint using the program.
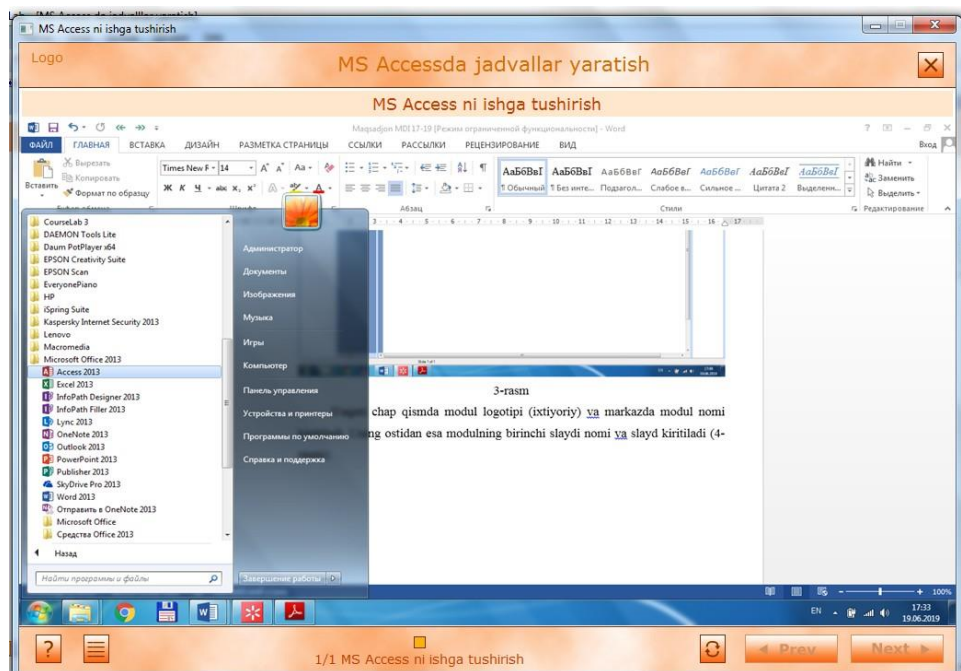
Figure 4. View of the training module on the topic of creating a table in MS Access.

It is also possible to embed moving animations, mouse movements and frame transitions (such as slideshows) and audio data using the program. In addition, control buttons and help, additional options buttons are created automatically. Theoretical data is created in the same order. In addition,

there is an opportunity to deliver theoretical information to students in an audio format, and through this, it is possible to achieve a wider coverage of the topic and increase the efficiency of mastering.

Several effective ways of improving the teaching of the subject "Data base" are presented. As we know, today there are several different programs that prepare didactic and demonstration materials for professors and teachers. One such program is CoursLab. With the help of this program, it is possible to prepare various demonstration and practical products, as well as training or educational projects for use in the course of the lesson. In addition, this program has various audio tutorials, non-standard tests, slides and presentations, advisory programs and many other additional features.

The teaching of the "Database" subject in higher education institutions in separate specializations means that the program is difficult to master and is mainly used in the necessary fields. Based on this, there is a need to base a special approach on teaching database management systems.

As a pedagogical experiment, this module was tested in the 2nd stage 1-1ATT-23 and 1-2ATT-23 groups of Bukhara State University "Information Systems and Technologies". In this process, one of them was taken as a control group and the other as a test group. When selecting the groups for the experiment, the mastery of both the students of the experimental group and the students of the control group in the requirements of DTS was strictly taken into account. In doing so, we were based on the average arithmetical value of the grades of students of the group.

In order to determine the effectiveness of the proposed module and the methodology of its use, the results of the control work received from students were analyzed both quantitatively and qualitatively. The results of 1 (2 hours) lecture, 2 (4 hours) practical, and 2 (4 hours) laboratory sessions were fully analyzed in order to compare the learning of the students of the experimental and control groups. The average grades of students were as follows.

Groups	Total number of students	«5»	«4»	«3»	«2»	Arithmetic average value of the grade	Effectiveness
Experimental group	18	5	9	4	0	4.05	1.074
Control group	18	3	9	5	1	3.777	

As a result of observations, analysis, results of control tests, conversations with teachers and students, when organizing practical, laboratory and lecture classes on the topic of creating tables in Access with pedagogically and methodologically based modules, students' knowledge level, we have come to the conclusion that it is possible to increase the skills and qualifications. In order to verify the correctness of this conclusion, the development of modules for practical, laboratory and lecture classes, the study of its tools, requirements and features of module content development, and the education of ideas related to these features We have organized a research phase in order to determine the results of the system.
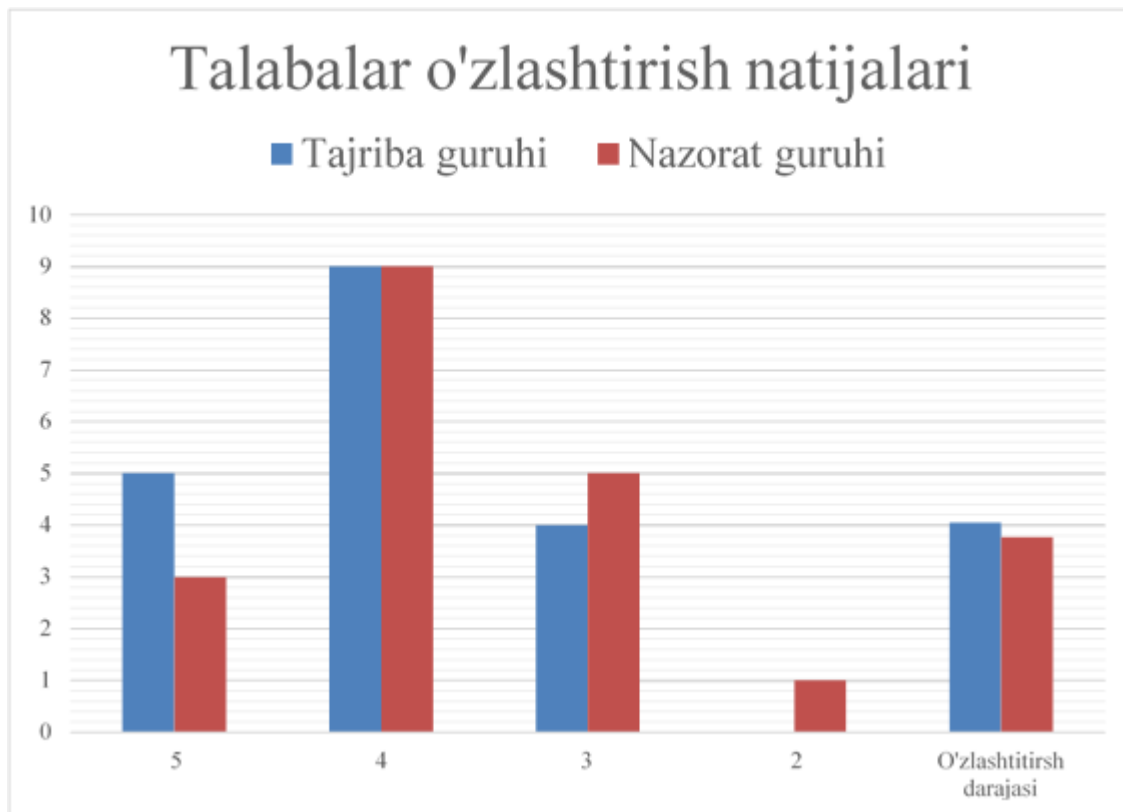
The diagram of the statistical analysis of pedagogical experiments is as follows:

Thus, it can be seen that the obtained absorption efficiency is greater than one ($\eta=1.074>1$). It turned out that the performance of the experimental group was higher than that of the control group. So, it is clear from the results of the experiment that the use of this module gives good results when conducting practical and lecture sessions on creating tables in Access with students in experimental groups.

Conclusion

It can be concluded from the mathematical statistical analysis carried out above that the test method of using the module used in the experimental groups is effective, and the conducted experimental-test analyzes created the basis for popularizing it on the scale of our republic.

Using the module created for practical, laboratory and lecture classes, pedagogical experiments were conducted in order to study the practice of organization, management, control of education and its effectiveness. It has been proved based on the results of pedagogical experience that the module increases the level of mastery of theoretical knowledge, practical skills and qualifications among students and improves their quality. When the results of the experiment were processed using the methods of mathematical statistics, it was found that the mastery of the students of the experimental group was 7-8% higher on average than the control group.