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DATABASE PROBLEMS AND SOLUTIONS IN TECHNICAL HIGHER EDUCATION

Bobur Kadyrovich Kadyrov*

*Assistant,
Department of "Information Technology Service",
Tashkent University of Information Technologies,
UZBEKISTAN
Email id: b-qodirov@bk.ru

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ABSTRACT

The article describes teaching the subject "Database" using the method of the Flipped classroom, and its effectiveness differs from the traditional method of teaching. Additions have been made to further develop the flipped classroom method, and we have made recommendations for the use of several mobile applications on smartphones in order to organize the lesson properly.

KEYWORDS: *Flipped Classroom, Illustrative, Reproductive, Relational Database, SQL, Traditional Teaching Methods, Interactive, Large Volume Data, Blum Taxonomy.*

INTRODUCTION

Today, the rapid development of information technology is leading to the quality of education. The number of people using smartphones has increased and they are taking advantage of it. This leads to a situation where the younger generation has access to large amounts of data. Higher education institutions (HEIs) teach the subject "Database" for large-scale data processing. This science organizes the electronic database of different objects by combining their data. We plan to do this using various database technologies.

PURPOSE:

Application of the Flipped Classroom method in the teaching of the subject "Database" in the field of technical education and its potential.

Brief Analysis of Scientific Works of Other Scientists on the Subject:

The proliferation of data encourages research on them. This is because making sure the information is accurate is judged by where the information came from and when the process took place. For these two indicators to work more accurately, it will be necessary to make it electronic. We call it a scientific database. In the development of the science of "database" a number of scientists are conducting research. Of these, O.L. Golitsyna, S.A. Martishin, Rahul Batra, A.M.Polikov, J.T.Usmanov, T.A.Khujakulov, Eric Redmond, M.Kh.Khakimov, S.M.Gaynazarov and others.

The subject of "Database" by O.L.Golitsyna in the textbook solves the following problems [6]:

• The main approaches and directions of database system development are discussed;

• classical machine-oriented forms of information and data presentation are analyzed;

• typical models of physical and logical organization of data are considered;

• The capabilities of SQL as a base language for professional work with relational databases are described in sufficient detail;

• Necessary attention is paid to the problems of database modeling and design.

S.A. Martishin created a textbook on the subject “Database” to study the practical application of SQL and NoSQL databases in the design of information systems, focusing on the strengthening of theoretical knowledge in the process of laboratory work [7].

Rahul Batra's book, quickly Learning the Basics of SQL, states that he will have 7 innovations while studying it: [8]

• Create tables in the database and write data to them;

• Read and analyze SQL queries;

• Create queries that give accurate results;

• Merge relevant rows from multiple tables;

• Grouping and sorting data to support reporting applications;

• Understand NULL, normalization and other basic concepts;

• Use subqueries, complex queries, and other advanced features.

The textbooks created by M.Kh. Khakimov and S.M.Gaynazarov on the subject "Database Management Systems" offer a number of methods for creating a database using Microsoft Access, MySQL and other technologies, which encourage more students to work independently [9].

SCIENTIFIC SIGNIFICANCE OF THE ARTICLE:

As far as we know, in the course of the lesson, the teacher chooses methods based on the subject and its topics. The subject of “Database” is planned to be taught in different directions, and the traditional method of teaching is often used to explain the subject to students. This is due to the lack of high-tech computers to create a database and, most importantly, the student’s inability to understand the assignments given by the teacher. It is natural that all programming sciences have similar problems. This is because the proof of the theory explained by the professor-teacher is that it is inextricably linked with the solution on the computer. Therefore, taking into account the above problems, we will need to choose a method that suits him.

OBJECT OF RESEARCH:

It is planned to transfer the subject “Database” mainly to 2nd year students. The study was conducted with the participation of students of “Computer Engineering” (17 people).

METHODS USED IN THE STUDY:

Teaching method is a process of interaction between teacher and students, as a result of which the transfer and mastery of knowledge, skills and competencies provided for in the content of training. Acceptance of learning (acceptance of teaching) is a short-term interaction between a

teacher and students aimed at the transfer and acquisition of certain knowledge, skills, and abilities [1].

The teaching method is a complex, multifaceted, multi-quality teaching. Teaching methods reflect the objective laws, goals, content, and principles of teaching. Neither goals, nor content, nor forms of work can be introduced without taking into account the possibilities of their practical implementation, methods provide exactly this opportunity. They also set the pace of development of the didactic system - the faster the learning progresses, the faster the methods used will move forward [2].

Our study involves the use of the traditional method and the Flipped Classroom methods.

Traditional method - The purpose of traditional methods is to convey new knowledge to the student and provide him with up-to-date information on any subject. Such methods are based on the informational and illustrative activities of the teacher and the reproductive activities of the student.

The reader becomes acquainted with previously unknown information, uses new methods of action and reasoning in the process of understanding. Then, to solve relevant problems, apply the acquired knowledge in practice [3].

The main disadvantage of traditional teaching methods is that the learner acquires knowledge patterns that are easily forgotten and cannot be applied to other types of problems and assignments. Nevertheless, traditional methods are actively used and used by teachers [4].

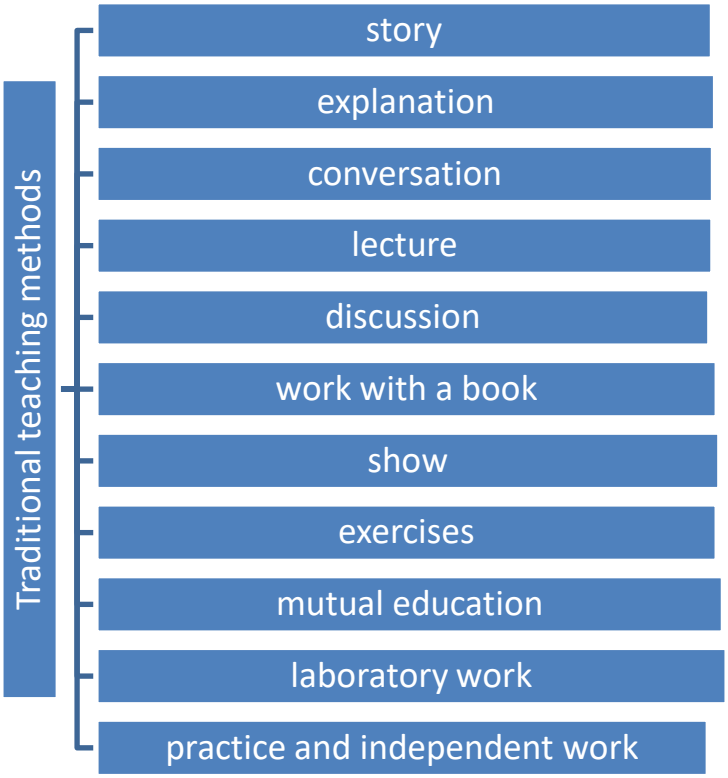

Figure 1 Traditional teaching methods

Flipped classroom is a "pedagogical approach in which direct learning moves from a group learning area to an individual learning area, and as a result the group space becomes a dynamic, interactive learning environment in which the teacher guides students in applying concepts and engaging in creative activities [5].

In the Flipped Classroom method, the homework is replaced by the lesson, which is the main part of the learning process, first video, audio and other interactive materials are studied and prepared for the future lesson, and then the lesson is considered.

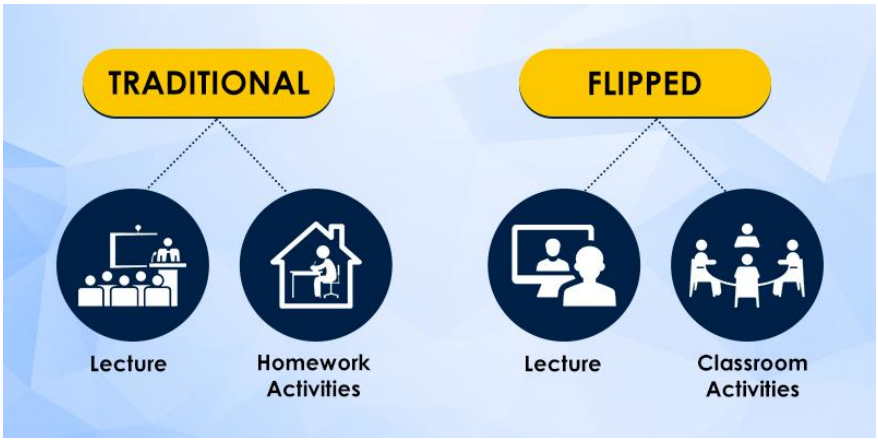

Figure 2 General view of the flipped classroom method

Results and Practical Examples:

The purpose of the subject "Database" is to create a database of any object and analyze the data in it. We create a database using MySQL. MySQL is one of the relational database management systems. It has several types so far and it is free.

During the lesson, students were given a laboratory topic on the following topic: "Creating, modifying and deleting tables in SQL". Using the traditional teaching method, students wrote the following codes on the board using a class board with the help of a professor and teacher:

The code for creating a client table using SQL codes:

CREATE TABLE client

(ID INT PRIMARY KEY,

Name VARCHAR (20),

fam VARCHAR (25),

Father's name VARCHAR (30),

Age INT,

Address VARCHAR (50));

Change the client table to the client1 table name

ALTER TABLE client RENAME client1;

Delete the newly created client1 table

DROP TABLE client1;

Using the Flipped Classroom method, students were provided with materials on the topic before the lesson. During the lesson, the students' opinions and suggestions were heard, and the professor gave a more detailed solution, which was evaluated.

The result from the two methods was as follows

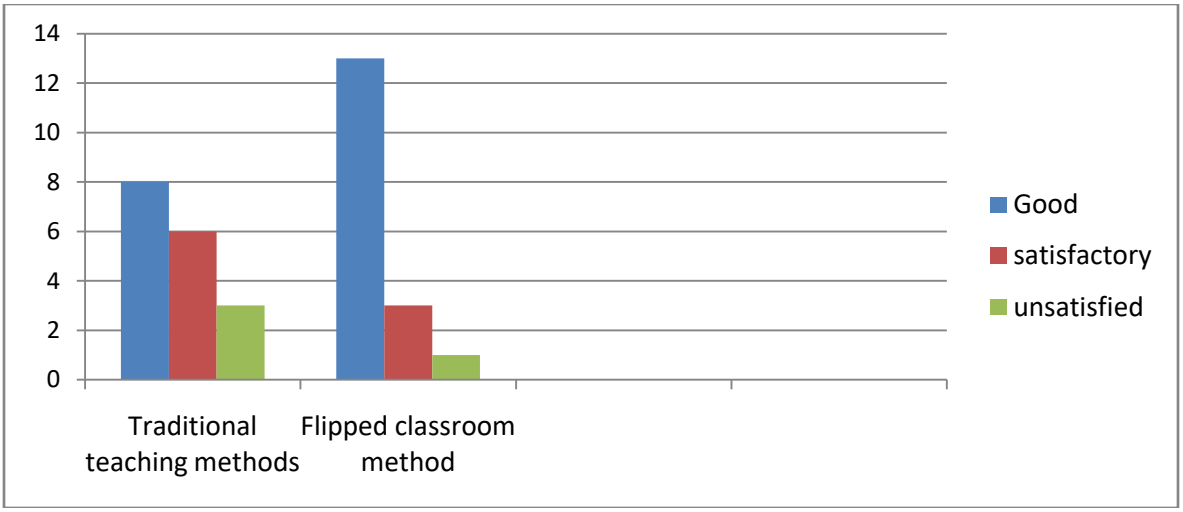

Diagram 1 Students 'mastery indicators from traditional teaching and Flipped classroom methods

From the diagram above, it is clear that the use of the Flipped classroom method, which is different from the traditional teaching method, gives a more positive result.

CLEAR CONCLUSIONS AND PRACTICAL PROPOSALS:

In conclusion, the use of the Flipped classroom method in teaching the subject "Database" is effective. Because science belongs to the family of computer science, it is important for students to be able to imagine every process. Otherwise, all knowledge will inevitably be forgotten after the lesson. The student, on the other hand, may not develop from the knowledge gained in such an environment into a modern cadre.

All methods are adapted to the science. In order to further increase the effectiveness of the use of the method of flipped classroom in the subject "Database", we recommend its founders (professor, teacher, and student) to perform the following tasks. To the teacher:

- Ask questions that ensure the disclosure of the subject of science;
- Ensure that an issue is resolved according to a plan;
- Striving from simple actions to complex ones in solving a problem;
- Take into account time standards;
- Organize processes as a video;
- High quality of the organized video board and optimally small size;

- Deliver a pre-class video to the student offline and online.

To the student:

- Receive a video from the professor;
- watch the video carefully;
- Completion of stages of Blum's taxonomy;
- Share their ideas in the planned training;
- The professor receives a final opinion from the teacher.

When the above tasks are completed, the lesson will be interesting. Because the focus is only on the topic, the activity of the students is clearly felt.

In addition, not everyone may have computer technology when given tasks by a professor. It would recommend working with the following “Database” applications on (smartphones):

- SQL code play;

- EZ Database;

- SetEdit (Settings Database Editor);

- Database Designer;

- Memory Database;

- Easy Database;

- SQLite Database Editor;

- Base dannyxMobiDB - relational SUBD.

Another benefit of the above applications is that the student uses more convenient technology to enhance their knowledge every minute and tries harder to evaluate the process.

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