PEDAGOGICAL SCIENCES

METHODS OF TEACHING TO INFORMATION TECHNOLOGIES: PROBLEM TYPE OF LEARNING

Bekjan Askarovich Akhmedov[1], Maksadxan Sultaniyazovich Yakubov[2], Dilmurod Gulomovich Akhmedjonov[3].

[1]Senior teacher of Chirchik State Pedogogical Institute
[2]Doctor of technical sciences, professor of Tashkent University of Information technologies named after Al-Kharezmi
[3]Doctor of technical sciences, professor of Chirchik State Pedagogical Institute
E-mail: axmedov@cspi.uz

Annotation: This article presents the basic concepts of problem-based teaching of computer science and its defining features, psychological explanations, didactic bases and areas of practical application.

Key words: information technologies, problem, problem education, problem situation, problem learing, problematic task.

Аннотация. В настоящей статье рассмотрена сущность проблемного обучения предмета информационные технологии, даны основные понятия, связанные с этой тематикой, психологическое обоснование, показаны дидактические основы и возможности применения в образовательной практике.

Ключевые слова: информационные технологии, проблема, проблемное образование, проблемная ситуация, проблемное обучение, проблемная задача.

INTRODUCTION

Based on activating and accelerating student activity, the foundation of problem-based learning technology is that human thinking begins with solving a problem situation and has the ability to identify, research, and solve problems. Problem-based learning plays an important role in developing students' creative thinking and creative abilities.

Today, Uzbekistan is a country with a rapidly developing economy and education system. In the ten years since independence, our country has undergone significant changes and gradual reforms in the traditional education system. Therefore, the study of the rich experience of foreign countries in the field of education is an urgent and very demanding task. It is no secret that, given the circumstances and characteristics of our education system, the use of such experience is much more effective than achieving the same results as long and costly experiments. In particular, the problems and tasks in this area are almost the same everywhere. It is known that one of the main problems in the field of education is the development of new educational technologies and their psychological justification. This article is a commentary on the basic concepts of the theory of problem-based education, which is a type of non-traditional education today, and introduces the specialists of our country to the achievements of other authors actively working in this field.

It is known that the educational process has two characteristics: the management and formation of students' ability to independently acquire new knowledge. All the educational technologies used today are closely interrelated, but at the same time the requirements for each technology are its upbringing, the nature of education and the initiative of the student. Education based on the principle of consciousness (intuitionism) - the nature of learning.

Given the theories of education based on the principle of consciousness, it is important to answer the following question: What is the object of awareness in the learning process? If students only know the rules, the tools, then it is called a traditional, communicative, dogmatic form of education. If this is awareness of the behavior itself following certain rules, then it is a theory of the formation of mental actions. If it's a program, an algorithm of actions, then it's a programmed exercise, an algorithm theory. If the task is to understand the problem, to master the tools, methods and techniques to solve it, then it is a problem-based education. According to some experts, "traditional education is a form of information and communication, dogmatic, passive education, and its effective implementation depends on many factors, in

particular, all the basic conditions and conditions of knowledge development, determined by the individual psychological characteristics of students. includes "[1].

LITERATURE REVIEW

Based on the above, the study of problems related to the development of non-traditional education remains relevant and effective today. The most important of the models that are evolving in non-traditional education areas, which are prevalent in modern higher education and have a significant impact on modern educational practices, include software and problem-based learning.

Problem-based learning is based on students learning new knowledge by solving theoretical and practical problems. Well-known Polish scientist V. Okon in his book "Fundamentals of Problem-Based Learning" states that the closer the researchers are to the path of research, the better the results [2]. Russian experts (TV Kudryavtsev, AM Matyushkin, ZI Kalmikova, etc.) have managed to develop a psychological basis for problem-based learning in various modifications. According to the authors, "the problem teaches students to solve a cognitive task and ways and means to solve it independently with the direct participation of the teacher or students. They make assumptions, plan and discuss methods to verify accuracy, debate, experiment, observe, analyze, substantiate, and prove results. "[7] These include, for example, the problems of independently re-proving rules, laws, formulas, theorems, mathematical formulas and expressions, and finding ways to prove a geometric theorem.

Problem-based learning involves several steps:

1) understanding the general problem situation;

2) its analysis, the formation of a particular problem;

3) problem solving (identification and substantiation of hypotheses, their verification);

4) Check that the solution to the problem is correct.

This process follows three logical steps that occur in a problem situation, including understanding the problem, solving it, and drawing a final conclusion. A.V. According to Brushlinsky, "Thinking begins with a problematic situation, that is, during its activity a person begins to experience incomprehensible difficulties in trying to move forward successfully ... Thus, the resulting problematic situation becomes a conscious task of man" [3] .

RESEARCH METHODOLOGY

Basic concepts of problem-based learning: "problem-solving", "problem-solving", "problems", "problem-solving", "problem-solving".

The condition for achieving the goal of studying a problem can be open or closed, that is, clear and expressive. We think of a problem situation as a way to create problem-based problems (as a way to identify problems that exist objectively). Problem-based learning, which is reflected in the thinking of students, is based on their analytical and synthetic activities. Apparently, this is an heuristic research work with great development potential.

Let's look at some of the features of problem-based learning. New information is gained in the process of solving theoretical and practical problems, and traditional training materials are provided. In the process of problem solving, the student overcomes all difficulties, his activity and independence reach a high level here, and in traditional teaching there are problems with the oral presentation of the material or through the textbook, due to the student's temporary withdrawal from the didactic process. a state of compression and difficulty is observed. Student engagement helps to develop positive motivations and reduces the need for formal verification of outcomes, whereas in traditional teaching, monitoring student outcomes is only concerned with the learning process. Learning outcomes are relatively high and stable. Students are able to apply their knowledge more easily in new situations and at the same time develop their skills and creative abilities, while in traditional education not all students have the opportunity to give one hundred percent results and use the information received from the teacher difficult Now, when we think of a problem, it can be seen as a means of creating a problem, and it can be formally presented. The problem is focused on the needs and capabilities of the students and is reflected in the presentation.

ANALYSIS AND RESULTS

According to experts, "the process unit is an open or closed conflict of the problem, which is related to the environment and promotes the logical and creative development of the student"

[4]. From the above, it is important that the student in the problem situation is able to independently address the situation and the teacher is able to show the student the conflict. The didactic basis of problem-based learning is determined by the content of its concept. According to MM Makhmutov, the basic concepts of problem theory of education are "problem situation", "scientific hypothesis", "problem teaching", "problem education", "problem bases", "logical search" and "problem presentation". Another important point is that the form of implementation of the principle of problem-based learning is the problem of learning, which is a subjective phenomenon and is present in the mind of the learner in an artificial way. In this sense, the didactic classification of educational problems presented by some experts is based on the following four cases:

1) origin and place;

2) participate in the learning process;

3) socio-political significance;

4) methods of organizing the decision-making process [5].

Psychological classification of learning problems is based on the following indicators:

1) difficulty in an unknown conflict;

2) how to solve the problem;

3) the connection of known and unknown facts in the problem.

Experts identify three types of problem-based learning:

1) scientific creativity;

2) practical creativity;

3) artistic creation. The main purpose of problem-based learning is to increase mental activity in certain contexts.

According to psychologists, students' activities are related to the contradictions between their experiences and the problems they face, and occur in the process of solving learning problems. This contradiction leads to active mental movement. Another important issue in problem-based learning is that the opinion of experts in the process of creating a problem situation is related to the logical relationship between object and subject, the psychological state of the subject (student), and new, unknown knowledge in the process of problem solving. and is presented as a task to demonstrate actions [6]. In other words, the problem situation is that the solution of the difficult problems facing the subject requires additional knowledge. The student will have to find and invent this missing knowledge.

As a result, there are a number of advantages of problem-based learning over traditional education:

1) teaches logical, scientific, dialectical, creative thinking;

2) better understand educational materials, thus strengthening knowledge;

3) leads to a deeper intellectual feeling, including a sense of joyful satisfaction, confidence in their abilities and strength, so it attracts students, arouses a serious interest in their scientific knowledge;

4) Independent "scientific results" have been found to be easily forgotten and, if forgotten, the knowledge gained can be recovered more quickly.

Conclusions and suggestions. Problem-based learning involves a student learning a certain task that he or she constantly thinks about and will not get out of until he or she solves it.

Problems and shortcomings build strong knowledge and skills. The shortcomings of problem-based learning always create difficulties for the student in the learning process and force the student to learn. Therefore, it takes more time to understand and find solutions than traditional education. Teaching requires a great deal of pedagogical skill and time from the teacher, and it is precisely these conditions that prevent the widespread use of problem-based learning. But at the same time, problem-based education meets the requirements of modern education.

REFERENCE:

1. Akhmedov, B. A. (2020). On the development of skills of interactive online courses in the distance conditions of modern society (model program for teachers of educational institutions). Universum Engineering Sciences, 12-1 (81).

2. Akhmedov B. A. (2021). Zadachi obespecheniya nadejnosti klasternix sistem v neprerыvnoy obrazovatelnoy srede. Eurasian education science and innovation journal. № 1 (22). P. 15-19.

3. Akhmedov, B. A. (2020). Mathematical models for evaluating the characteristics of the quality and reliability of software. Eurasian Education Science and Innovation Journal, 3 (10), 97-100.

4. Rakhimov, S. M., Djamirzaev, A. A., Akhmedov, B. A. (2021). Methods of teaching Informatics in Higher Education Problems and Observations. Ekonomika i sotsium, *9*(88).

5. Akhmedov B.A., Shayxislamov N., Madalimov T., Maxmudov Q. (2021). Smart texnologiyasi va undan ta'limda tizimida klasterli foydalanish imkoniyatlari. Scientific Progress, *1*(3), 102-112.

6. Ахмедов, Б. А., Султанов, Б. (2021). Анализ и новые тенденции использования кластерных систем и искусственного интеллекта в современной системе высшего образования. Ekonomika i sotsium, *8*(87), 344-358.

7. Якубов, М. С., Ахмедов, Б. А., Дуйсенов, Н. Э., Абдураимов, Ж.Г. (2021). Анализ и новые тенденции использования нейросетей и искусственного интеллекта в современной системе высшего образования. Ekonomika i sotsium, *5*(84), 1148-1162.

8. Rakhimov, S. M., Ahmedov, B. A. (2021). O'rta ta'lim maktabida informatikani o'rgatish metodikasi. Ekonomika i sotsium, *9*(88).

9. Якубов, М. С., Ахмедов, Б. А. (2021). Применение цифровых технологий в формировании структуры системы образований. Ekonomika i sotsium, *5*(84), 1163-1177.

10. Mukhamedov, F. I., & Akhmedov, B.A. (2020). Innovation "Klaster mobile" ilovasi. Academic Research in Educational Sciences, *1*(3), 140-145.

11. Akhmedov, B. A. (2022). Use of Information and Communication Technologies in Higher Education: Trends in the Digital Economy. Ижтимоий фанларда инновация онлайн илмий журнали, 3(3), 71-79.

12. Akhmedov, B. (2022). Methodology of Teaching Informatics in Cluster Systems. International Journal of Innovative Research in Science Engineering and Technology, 11(4), 3485-3491.

13. Мажидов, Ж. М., Ахмедов, Б. А. (2020). Использование мультимедийных технологий как средство повышения мотивации к изучению иностранного языка студентов ВУЗА. Экономика и социум, 3(82), 703-706

14. Кудратиллоев, Н. А., Ахмедов, Б. А. (2021). Методика использования веб-приложении на основе инновационных методов. Экономика и социум, 3(82), 699-702.

15. Duisenov, N., Akhmedov, B. (2022). Matnli, ovozli va grafik axborotlarni kodlash. Academicia, 13(21), 1454-1459.