BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg

THE IMPORTANCE OF USING INQUIRY-BASED EDUCATION IN MATHEMATICS LESSONS

Babadzhanov Azamat Kadamovich
Senior lecturer of the department
"Methodology of exact and natural sciences" of the Khorezm regional PMM

Abstract: This article discusses the importance of using inquiry-based learning in mathematics lessons and how this approach can help students engage in independent research activities and develop their skills through scientific inquiry methods such as observation, experimentation, measurement, analysis, synthesis, induction and deduction, comparison, and analogy.

Keywords: Scientific research, observation, experiment, analysis, synthesis, induction, deduction, comparison, analogy.

Inquiry-based learning is one of the most effective methods in the modern educational process. This approach is based on the involvement of students in independent research activities and develops their skills through scientific research methods such as observation, experimentation, measurement, analysis, synthesis, induction and deduction, comparison, and analogy.

Basic principles of research-based education

• Scientific basis: The educational process is based on scientifically sound methods and techniques.

• Independence: Students have the opportunity to independently collect, process and draw conclusions from information.

• Creativity: Encourage students to create new ideas.

• Practical orientation: Develop the ability to apply the acquired knowledge in practice. Pose a problem and analyze it. Independent research and draw conclusions. Collaborative teaching and learning.

Benefits of inquiry-based learning

Develop critical thinking.

Increase student interest.

Focus on solving real-life problems.

Stages of research

1. Identify the problem.
2. Formulate questions.
3. Collect and analyze information.
4. Draw conclusions and propose solutions.
5. Evaluate and present the results.

Methods for developing research skills

1. Observation

Observation is the initial stage of scientific inquiry. Students perceive phenomena around them through their senses and gather information from them.

Practical example.

In a math class, students observe the growth of plants and draw mathematical conclusions about seasonal changes.

2. Experiment

Experiment is the process of recreating and studying phenomena in artificial conditions. This method allows students to deeply understand cause-and-effect relationships.

Practical example.

In a math lesson, students can calculate the concentration of salt water based on an experiment, and conduct a process experiment in connection with chemistry.

3. Measurements

Measurements are a stage of scientific research that requires accuracy. Through this method, students learn to determine physical and mathematical parameters.

Practical example.

In a geometry lesson, models are made with various measurements.

4. Analysis and synthesis

Analysis is the study of complex objects by breaking them down into parts. Synthesis is the integration of these parts into a general system.

Practical example.

In a mathematics lesson, analyzing each topic of a chapter on a topic separately and then synthesizing it by connecting it with general formulas.

Induction and deduction

Induction is the determination of general laws from specific phenomena. Deduction is the drawing of specific conclusions from general rules.

Practical example.

In a math class, students discover a general formula through a series of numbers (induction) and solve specific problems based on it (deduction).

Comparison and analogy

Comparison is the identification of similarities and differences between objects. Analogy involves the application of the properties of one object to another.

Practical example.

In geometry, students study and compare objects on a plane and in space, explaining their correspondence to objects in real life.

Results and discussion

Changes in students' knowledge and skills as a result of inquiry-based learning. Discussion and exchange of ideas: Challenges and opportunities of this method. Inquiry-based learning allows not only to acquire knowledge, but also to develop independent thinking, research and practical skills. This approach, which includes scientific research methods such as observation, experimentation, measurement, analysis and synthesis, induction and deduction, comparison and analogy, serves to develop students' creative abilities. Teachers can improve the quality of education by effectively applying these methods in the classroom.

LIST OF REFERENCES USED

1. Alikhonov S. Mathematics teaching methodology. Textbook. Cholpon, Tashkent 2011.

2. Tojiyev M., Barakayev M., Khurramov A. Mathematics teaching methodology (textbook, part 1). – T.: T.: "Science and Technology", 2017.

3. Ishmuhamedov R.J., Yuldashev M.A., Innovative pedagogical technologies in education and upbringing. // Tashkent. – "Nihol" publishing house, 2013.

4. Yunusova D.I. Modern technologies of teaching mathematics, (textbook) T.: 2007.