EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 01, Issue 10, October, 2025
brightmindpublishing.com
ISSN (E): 3061-6972

ADVANTAGES OF PROJECT-BASED LEARNING IN MATHEMATICS LESSONS

Qosimova Hurriyat Shuhrat qizi,
Master's Student of Bukhara State Pedagogical Institute
Email:hurriyatqosimova1@gmail.com

Abstract
The article examines the implementation of project-based learning methods in mathematics lessons, unconventional project-based approaches to teaching, and practical effective ways of mastering complex subjects like mathematics. It presents solutions to key issues such as: implementing research processes in mathematics education, applying acquired knowledge through innovative and creative methods in real-life contexts, and utilizing modern teaching methodologies in mathematics instruction.The work describes a series of methodological approaches used to enhance the effectiveness of designing mathematics learning activities through project work. The research highlights contemporary challenges in mathematics education, including the use of modern teaching methods aligned with current demands and the application of project-based learning to facilitate mathematical comprehension.

Keywords: Project, mathematics education, project-based learning, practical education, constructive learning.

Introduction

Mathematics is not just a science of memorizing calculations and formulas, as most people imagine, but also a necessary science that develops logical thinking, creative approach, and the ability to solve life problems. In addition to traditional teaching methods, project-based learning is widely used in modern education. Project-based learning creates an opportunity to learn complex subjects such as mathematics through practical processes based on real-life experiences. Teaching a subject in this way creates the basis for learning in an interesting and effective way[1-3].
Through project-based learning, students not only acquire theoretical knowledge, but also apply the knowledge they have gained in practice, develop teamwork

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 01, Issue 10, October, 2025
brightmindpublishing.com
ISSN (E): 3061-6972

skills. They acquire new knowledge through independent research. The project-based learning method is based on students' research, creating projects, and stimulating their intellectual and practical activities[4]. In project-based teaching of mathematics, the aspects of logical study of theoretical concepts and working with practical examples play an important role.

Project-based learning is a systematic teaching methodology, that is, a methodology implemented on the basis of systematic plans for the project. In it, students acquire knowledge and skills through independent research, real-life problems, practical issues beyond theory, and a product or solution. In project-based learning, projects are built on complex questions and students are given a central role in the process of project development, problem solving, and decision-making[5]. It creates opportunities for students to work independently. It allows students to work independently for a certain period of time and ends with a real product or presentation. Project-based learning is sometimes compared to research-based learning or experiential learning.

Scientific research shows that the project-based learning approach makes the learning process interesting and motivating, involves students in solving real-life problems, and connects theoretical knowledge with practice.

This article analyzes the theoretical foundations and methodological aspects of project-based learning in mathematics, and also discusses the advantages of implementing this approach.

The main part

Project-based learning consists of the following stages:

The syntax of the project-based learning approach is as follows:

1. Start with a key question;
2. Develop a plan for the project;
3. Create a schedule;
4. Monitoring project progress;
5. Evaluating results;
6. Analyzing experiences

Research has shown that a harmonious combination of project-based learning, meaningful learning, and the use of technology has a positive impact on student achievement, creativity, and motivation. When used in conjunction with

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 01, Issue 10, October, 2025
brightmindpublishing.com
ISSN (E): 3061-6972

appropriate exercises and assignments, projects can be applied across a variety of disciplines, enhancing students' life skills and providing real value to society.
The main principles of project-based learning are:
1. Students work and collaborate in groups Students develop social skills by working in groups or pairs.
2. Exploring real-life problems: The learning process is designed to develop students' logical thinking, problem-solving, and intellectual skills. Students are given the opportunity to think independently and be creative.
3. Analyzing data from research and receiving advice from a teacher: Students analyze data from research and receive guidance, understanding, and evaluation from a teacher.
4. Create and demonstrate models or practical products: Students create models or practical products that can be applied to real life and present them to their classmates.
5. Differentiated guidance. Differentiating instruction for students at different levels according to their level. For example, a differentiated guidance method is used in a lesson, where each group or student receives tasks appropriate to their level.
6. Share the final results with the community: The results of the projects are presented to the general public, developing students' social responsibility and desire to solve real problems[6-8].

Advantages of project-based learning

1. Increases students' interest in science. When teachers successfully implement the project, students become highly motivated, actively participate in the educational process themselves, and perform high-quality work.
2. Increases students' academic achievement. Through project-based learning, students acquire not only knowledge, but also meta-thinking (thinking about their own knowledge), skills. This method allows students to combine theoretical and practical knowledge.
3. Develops cooperation skills. Students learn to cooperate by working in teams. This method helps students acquire life skills such as teamwork, decision-making, and initiative in solving complex problems.

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 01, Issue 10, October, 2025
brightmindpublishing.com
ISSN (E): 3061-6972

4. Improves communication skills. Helps students develop the skills of clearly expressing ideas, speaking in front of a group, and listening to the opinions of others. This method bridges the gap between knowledge and practice.
5. Improves resource management skills. Teaches students to use various sources (internet, library, excursions), effectively manage time and other resources (tools, materials). In this way, students learn to independently search for and apply knowledge.
6. Creates an interesting learning environment and increases a positive attitude towards learning
7. Develops creativity. Helps students develop their creative abilities.
8. Improves problem-solving skills. Helps students acquire the skills to solve complex problems, collaborate, and analyze their own work.

Conclusion:

In summary, project-based learning reduces student stress levels compared to traditional programs, which has a positive impact on learning effectiveness. In traditional education, there are also assignments and projects, but in project-based learning, the project or problem is designed to actively involve students in the process of acquiring knowledge. Creating projects has a long tradition in education, in which the student not only masters the theory, but also consolidates his knowledge through practical activities. However, despite the effectiveness of the method, there are a number of difficulties in its correct application by teachers. These are:

-Insufficient methodological preparation;
-Additional time required for lesson development;
-The need to adapt the assessment system [9,10].

References

1. Қодирова М.Р. Замонавий педагогик технологиялар. – Тошкент: Янги аср авлоди, 2019. – 208 б.
2. Абдуллаев А.А. Лойиҳалар асосида ўқитиш методикаси.–Т.:Ўқитувчи, 2020. – 156 б.
3. Tojiboyeva M., Yo‘ldoshev Maxsus fanlarni o‘qitish metodikasi. – Toshkent: “Aloqachi”,2009 – 568b.

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
Volume 01, Issue 10, October, 2025
brightmindpublishing.com
ISSN (E): 3061-6972

4. Elam J.R., Nesbit B. The Effectiveness of Project-Based Learning Utilizing Web 2.0 Tools in STEM Subjects // Journal of Educational Computing Research. – 2012. – Vol. 47, № 3. – P. 279-304
5. Woro Sumarni The Strengths and Weaknesses of the Implementation of Project Based Learning:A Review// International Journal of Science and Research (IJSR). – 2015. – Vol. 4, № 3. – P. 478-484.
6. Холмуродов, Б., & Шерриев, М. (2025). Bo‘lajak informatika o‘qituvchilarni ijobiy kompetentligini rivojlantirishda zamonaviy axborot texnologiyalarini qo‘llash. Свет науки, (8 (43)).
7. Xolmurodov, B. (2025). Improving the positive competence of future informatics teachers through modern information technologies. EduVision: Journal of Innovations in Pedagogy and Educational Advancements, 1(4), 1013-1017.
8. Xolmurodov Behzod Botir o‘g‘li. (2025). Organizational and Technical Conditions for Establishing Students' Independent Learning with The Help of Artificial Intelligence. Nvpubhouse Library for American Journal of Applied Science and Technology, 5(07), 76-81.
9. Z. Mansurov (2024). Informal ta’limning o‘qitish samaradorligini oshirishdagi roli. Talqin va tadqiqotlar ilmiy-uslubiy jurnali, 2(54), 232-237.
10. Mansurov, T. (2024). Ta’limning formal, noformal va informal turlarining bilim olish jarayonidagi o‘ziga xos afzalliklari. “Педагогическая акмеология” международный научно-методический журнал, 9(17).