Proceedings Series on Social Sciences & Humanities, Volume 25
Proceedings of International Conference on Social Science (ICONESS)
ISSN: 2808-103X

Implementation of Project-Based Learning (PjBL) Model in Science Subject for Grade V at SDN 2 Sered on Ecosystem Material

Yuniati[1], Ristiana Dyah Purwandari[2]
[1,2]Universitas Muhammadiyah Purwokerto

ARTICLE INFO

Article history:

DOI:
10.30595/pssh.v25i.1675

Submited:
July 22, 2025

Accepted:
August 11, 2025

Published:
August 24, 2025

Keywords:

Project-Based Learning (PjBL); Ecosystem Material; Model in Science Subject

ABSTRACT

This study aims to examine the implementation of the Project-Based Learning (PjBL) model in the science subject for Grade V at SDN 2 Sered with ecosystem material. The research uses a qualitative approach with observation, interviews, and tests to obtain a comprehensive picture of the learning process and student learning outcomes. Data were collected through direct observation at each stage of learning, interviews with teachers and students, and tests to measure understanding of ecosystem concepts. The results show that the implementation of PjBL is carried out through three main stages: preparation, implementation, and evaluation. This model successfully increased student engagement and understanding of ecosystem material significantly. In conclusion, PjBL is an effective learning strategy that can create an enjoyable and meaningful science learning experience for Grade V students at SDN 2 Sered.

Corresponding Author:
Yuniati
Universitas Muhammadiyah Purwokerto
Jl. KH. Ahmad Dahlan, Kembaran, Banyumas, Jawa Tengah 53182
Email:

1. INTRODUCTION

Science learning in elementary schools has its own challenges, especially in delivering abstract concepts such as ecosystems. The Project-Based Learning (PjBL) model is one of the approaches that can overcome these challenges by actively involving students in the learning process through real projects. PjBL not only emphasizes mastery of material but also develops critical thinking, collaboration, and communication skills.

SDN 2 Sered, as one of the elementary schools in Madukara District, Banjarnegara Regency, implements PjBL in science learning for Grade V with ecosystem material. This study aims to describe how the PjBL model is implemented, analyze its impact on student learning outcomes, and identify supporting and inhibiting factors in its implementation.

2. RESEARCH METHODS

a. Research Design

This study uses a qualitative approach with a phenomenological design to understand the experiences of teachers and students during the learning process using the PjBL model. This approach allows researchers to deeply capture how PjBL is applied and perceived by learners.

b. Research Subjects

The research subjects consisted of the Grade V science teacher and 32 Grade V students at SDN 2 Sered who participated in ecosystem material learning for one learning cycle (6 meetings).

c. Research Instruments

The instruments used include:

1. Observation: Used to observe the learning process at each stage of PjBL, from preparation, project implementation, to evaluation.
2. Interviews: Conducted with teachers and selected students to explore their experiences, obstacles, and perceptions of PjBL learning.
3. Tests: Written tests were given before and after learning to measure the increase in students' understanding of ecosystem concepts.

3. RESULTS AND DISCUSSION

1) Stages of Implementing the Project-Based Learning (PjBL)
   Model Based on observations and interviews, the implementation of PjBL on ecosystem material in Grade V at SDN 2 Sered is carried out systematically through three main stages:
   a. Preparation Stage:
      The teacher carefully prepares the project, starting from developing the Lesson Plan (RPP) which includes learning objectives, achievement indicators, and project-based learning steps. The designed project is the creation of an ecosystem miniature that includes biotic and abiotic components. The teacher also prepares clear assessment rubrics to assess students' knowledge, skills, and attitudes during the learning process.
   b. Implementation Stage:
      Students are divided into small groups of 4-5 people. Each group conducts investigative activities, such as observing the school environment, identifying flora and fauna, and collecting materials for the ecosystem miniature. During this process, the teacher acts as a facilitator and motivator, providing guidance when students encounter difficulties and encouraging group discussions for effective collaboration. Observations show that students are very enthusiastic and actively ask questions and discuss.
   c. Evaluation and Reflection Stage:
      Evaluation is carried out through several instruments, namely project product assessment (ecosystem miniature), group presentations, and written tests to measure conceptual understanding. In addition, students are also asked to write reflections on their learning experiences during the project. This reflection helps teachers understand students' perceptions and which aspects need improvement.
2) Improvement of Student Learning Outcomes
   The results of pretest and posttest show a significant increase in understanding of ecosystem concepts. The average pretest score was 62, while the posttest increased to 85, showing an increase of 23 points or about 37%. This indicates that PjBL is effective in helping students deeply understand ecosystem concepts.
   In addition, science process skills such as observation, classification, and data presentation also increased. As many as 78% of students were able to explain the relationships between ecosystem components and accurately describe food chains after participating in project-based learning.
3) Increase in Student Engagement and Positive Attitudes
   Observations during the learning process show that PjBL can increase students' active engagement. About 92% of students were actively involved in group discussions, sharing tasks, and helping each other to complete the project. Interviews with students revealed that they felt more motivated and enjoyed learning because they could learn directly and work together with their peers.
   A positive attitude towards science learning also increased, as seen from students' enthusiasm in observing the environment and their high curiosity about natural phenomena. This is in line with constructivist learning theory which emphasizes direct experience as the key to meaningful learning.
4) Supporting Factors for Successful PjBL Implementation
   Several factors support the successful implementation of PjBL, including:
   a. Supportive School Environment: SDN 2 Sered has a school garden and pond that can be used as real learning resources, allowing students to directly observe real ecosystems.
   b. Competent Teacher Support: The Grade V science teacher has a good understanding of the PjBL model and can effectively facilitate students.
   c. Parental Participation: Parents support by providing the materials needed for project making at home.
5) Obstacles and Challenges in Implementation
   Although in general the implementation of PjBL runs smoothly, there are several obstacles found:

a. Limited Time: The limited learning time made some groups unable to complete the project optimally. This caused some students to feel rushed and less optimal in completing tasks.
b. Differences in Student Ability: Variations in initial abilities among students caused imbalances in group contributions. Some less active students needed more guidance to participate optimally.
c. Limited Supporting Facilities: Although the school environment is supportive, facilities such as teaching aids and project materials still need to be improved to make the learning process more effective and interesting.

DISCUSSION

The results of this study are consistent with previous research findings which state that PjBL can improve students' conceptual understanding and science process skills (Akbar et al., 2024; Musa'ad et al., 2023). Student activeness in working on projects directly contributes to increased learning motivation and the development of social skills such as communication and cooperation. However, the success of PjBL greatly depends on teacher readiness and learning environment support. Therefore, teacher training and provision of supporting facilities are important factors that must be considered in the sustainable implementation of PjBL. With the addition of these details, the results and discussion section becomes richer, providing a clear and in-depth picture of the process, results, and challenges in implementing PjBL.

4. CONCLUSION

The implementation of the Project-Based Learning model on ecosystem material in Grade V at SDN 2 Sered runs effectively and has a positive impact on student learning outcomes. This model can increase students' active engagement and deep conceptual understanding. Although there are some obstacles, PjBL remains a recommended learning approach to be widely applied in science learning in elementary schools.

REFERENCES

Akbar, A., Sari, D. P., & Nugroho, H. (2024). Portofolio Hasil Belajar Berbantuan Project Based Learning pada Materi Ekosistem. Jurnal Media Akademik, 12(1), 45-58.

Alfiani, E. (2023). Penerapan Model Pembelajaran Project Based Learning di Sekolah Dasar. IAIN Ponorogo Press.

Arends, R. I. (2012). Learning to Teach (9th ed.). McGraw-Hill Education.

Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future. The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 83(2), 39-43. https://doi.org/10.1080/0009865090350541

Hadi, S., & Suryani, N. (2022). Efektivitas Model Pembelajaran Berbasis Proyek dalam Meningkatkan Hasil Belajar IPA Siswa Sekolah Dasar. Jurnal Pendidikan Dasar dan Pembelajaran, 8(2), 123-134.

Harmer, J. (2015). The Practice of English Language Teaching (5th ed.). Pearson Education Limited.

Musa'ad, M., Fatimah, S., & Rahman, A. (2023). Pengaruh Model Pembelajaran Berbasis Proyek terhadap Hasil Belajar IPA Materi Ekosistem di Sekolah Dasar. Jurnal Konstanta Widyakarya, 10(3), 210-222.

Putra, R., & Wulandari, D. (2021). Pengembangan Model Pembelajaran Berbasis Proyek untuk Meningkatkan Kreativitas Siswa SD. Jurnal Pendidikan Kreatif, 5(1), 56-65.

Thomas, J. W. (2000). A Review of Research on Project-Based Learning. The Autodesk Foundation. https://www.bie.org/research/study/review_of_project_based_learning_2000

Tim Penelitian SDN Ganrang. (2023). Eksperimen Model Pembelajaran Berbasis Proyek di Sekolah Dasar. Jurnal SGPP, 7(1), 78-89.

Wibowo, A., & Prasetyo, B. (2020). Implementasi Pembelajaran Berbasis Proyek dalam Meningkatkan Keterampilan Proses Sains Siswa SD. Jurnal Pendidikan dan Pembelajaran, 9(2), 98-107.