

ANALYSIS OF THE IMPLEMENTATION OF PROJECT-BASED LEARNING TEACHING MODULES IN SCIENCE LEARNING IN ELEMENTARY SCHOOLS

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Abstract

Project Based Learning based teaching module in Science learning in elementary school lies in the need to ensure the effectiveness of contextual learning. This study aims to analyze the application of Project Based Learning (PjBL) based teaching module in learning Natural and Social Sciences (IPAS) grade IV in Gugus 1 Peudada. This study uses a descriptive qualitative approach with data collection techniques through in-depth interviews, observations, in three elementary schools, namely UPTD SD Negeri 1 Peudada, UPTD SD Negeri 10 Peudada, and UPTD SD Negeri 12 Peudada. Qualitative data validity tests include credibility, transferability, dependability and confirmability tests. Data analysis was carried out using qualitative descriptive namely data reduction, data presentation and conclusions. The results of this study indicate that the completeness of the PjBL teaching module. The PjBL teaching module used by teachers is in the fairly complete category, but does not meet all the ideal components of the Independent Curriculum. Time constraints, facilities and infrastructure, student numbers, and differences in student abilities also hamper the optimization of PjBL in the classroom. The results of the obstacles and challenges in implementing PjBL face internal obstacles in the form of limited time, minimal practice facilities, heterogeneity of student abilities, and teacher skills in managing projects. In addition, there are external obstacles such as lack of parental support, an unsupportive home environment, economic limitations, and school policies that still emphasize academic achievement. These obstacles overall affect the effectiveness of implementing PjBL in science learning.

Keywords: Project-Based Learning, Teaching Module, IPAS, Independent Curriculum



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INTRODUCTION

Education in the era of the industrial revolution 4.0 is expected to have high creativity skills in order to be able to solve problems in real daily life.¹ The Natural and Social Sciences (IPAS) subject functions to equip students to be able to solve problems in real life in the 21st century related to natural and social phenomena around them scientifically by applying science concepts. According to Natalia, the natural and social science project consists of three competency elements that refer to scientific literacy competencies, namely explaining phenomena scientifically, designing and evaluating scientific investigations, and translating data and evidence scientifically.² Learning is a planned activity that conditions a person to be able to carry out a good learning process according to the learning objectives. Murdini stated that learning goals are behaviors that should be achieved or that should be done by students at certain circumstances and levels of competence.³

The learning planning in the independent curriculum is contained in a teaching tool called a teaching module. Teaching modules are learning designs or tools based on the independent curriculum that are applied to achieve the standards of competence that have been applied and teaching modules also have an important role to support teachers in designing learning.⁴ Here, teachers' thinking skills are honed to be able to innovate in making teaching modules. Therefore, making teaching modules is a teacher's pedagogic competence that needs to be developed, so that teachers' teaching techniques in the learning process in the classroom are more effective, efficient, and do not come out of the discussion of achievement indicators.

The independent curriculum teaching module refers to a tool or media, methods, instructions and guidelines that are designed systematically and variously but still adjusted to the needs of students. And indeed the implementation of this independent curriculum emphasizes student-centered education.⁵ The teaching module is also a form of implementation of the Learning Objectives Flow (ATP) which is developed based on Learning Outcomes with the concept of Pancasila Student Profile.

¹ Kusmiati Kusmiati, "Pengaruh Model Pembelajaran Project Based Learning Terhadap Kreativitas Siswa Sekolah Dasar," *EDUCATOR: Jurnal Inovasi Tenaga Pendidik Dan Kependidikan* 2, no. 2 (July 2022), <https://doi.org/10.51878/educator.v2i2.1309>.

² Desy Natalia et al., "Pengembangan Modul IPAS Berbasis Proyek Untuk Meningkatkan Kreativitas Belajar Peserta Didik," *Jurnal Teknologi Pendidikan : Jurnal Penelitian Dan Pengembangan Pembelajaran* 8, no. 2 (April 2023), <https://doi.org/10.33394/jtp.v8i2.6459>.

³ Murdini, *Teori Dan Praktik Pembelajaran Efektif* (Jakarta: Pustaka Eduka, 2023).

⁴ Utami Maulida, "Pengembangan Modul Ajar Berbasis Kurikulum Merdeka," *Tarbawi: Jurnal Pendidikan Dan Pemikiran Islam* 5, no. 2 (August 2022), <https://doi.org/10.51476/tarbawi.v5i2.392>.

⁵ Nur Hakiky, Siti Nurjanah, and Endang Fauziati, "Kurikulum Merdeka Dalam Perspektif Filsafat Konstruktivisme," *TSAQOFAH* 3, no. 2 (March 2023), <https://doi.org/10.58578/tsaqofah.v3i2.887>.

Teachers are required to be able to create learning activities that are challenging, fun, meaningful and not monotonous. According to Puspita, learning is an interaction between teachers and students in the process of transferring knowledge.⁶ In learning activities, teachers can create scientific attitudes in students. There are nine aspects of scientific attitudes that can be developed in elementary school age children, one of which is the cooperative attitude. Cooperative attitudes cannot grow well if each student in the group attaches importance to his ego.

The results of observations made on students in Cluster I of Peudada found that the learning outcomes of students were quite low, this could be caused because students only depended on one print learning resource, namely books, so that it had an impact on low learning outcomes. Low student participation in learning activities, which often occurs due to the predominantly use of traditional lecture methods. A study conducted by Rikawati and Sitinjak showed that the interactive lecture method, which includes aspects of lectures, questions and answers, and discussions, was able to significantly increase student participation.⁷ In addition, the lack of learning facilities, including inadequate libraries, is also a barrier to students' motivation to learn. Research by Yunus et al., concluded that the availability of good learning facilities has a great influence on students' learning motivation.⁸ In addition, research by Rukmana and Marimin shows that the existence of a good library, the performance of librarians, and the overall effective management of library materials contribute greatly to students' reading interest. Teachers often have difficulty in designing learning modules that are in accordance with the PjBL approach, both in terms of complete structure and the relevance of the material to the competencies to be achieved. In addition, there has been no in-depth research to analyze the extent to which the modules used meet the principles of project-based learning and how appropriately they are implemented in the classroom.

Irdalisa stated that through the implementation of PjBL, students work together and are responsible as team members, and realize the connection between the learning they do and the surrounding environment.⁹ Involvement in this project allows students to improve their ability to put forward ideas, make predictions, and collect and analyze data to solve problems, so that their scientific reasoning skills are further honed

⁶ R. Puspita, *Strategi Pembelajaran Di Era Modern* (Bandung: Alfabeta, 2020).

⁷ Kezia Rikawati and Debora Sitinjak, "Peningkatan Keaktifan Belajar Siswa Dengan Penggunaan Metode Ceramah Interaktif," *Journal of Educational Chemistry (JEC)* 2, no. 2 (September 2020), <https://doi.org/10.21580/jec.2020.2.2.6059>.

⁸ Rahmat Sayyid Al-Nuzul Yunus, Fatimah Djafar, and Wiwik Pratiwi, "Pengaruh Fasilitas Pembelajaran Terhadap Motivasi Belajar Siswa," *EDUCATOR (DIRECTORY OF ELEMENTARY EDUCATION JOURNAL)* 2, no. 2 (December 2021), <https://doi.org/10.58176/edu.v2i2.153>.

⁹ Irdalisa Irdalisa et al., "Project-Based Learning on STEAM-Based Student's Worksheet with Ecoprint Technique: Effects on Student Scientific Reasoning and Creativity," *Jurnal Inovasi Pendidikan IPA* 10, no. 2 (October 2024), <https://doi.org/10.21831/jipi.v10i2.77676>.

In the context of education, SWOT analysis is used to develop the right strategies to achieve educational and teaching goals in schools.¹⁰ SWOT analysis is the process of finding a strategic fit between opportunities in the company's external environment and the company's internal environment, while considering external threats and internal weaknesses.¹¹ Hasanah's research shows that SWOT analysis provides a comprehensive overview of the internal and external conditions of educational institutions, helps create a vision for the future, and develops relevant and innovative programs. Thus, the application of SWOT analysis in strategic planning can improve the overall quality of education, through the identification and utilization of strengths and opportunities as well as the management of weaknesses and threats.

Asprila and Subiyantoro showed that the use of the PjBL model can improve students' understanding of concepts in science subjects in grade V elementary school. However, without proper evaluation of the completeness of the modules and their relevance to the learning context, their implementation can face obstacles such as time constraints, lack of resource support, and low teacher literacy towards the PjBL model itself. This research is focused on *Project-Based Learning-based* teaching modules in IPAS learning. Based on the description above, the question of this research is how to implement the *Project-Based Learning Teaching Module* in Social Science Learning in Class IV Cluster 1 Peudada.

RESEARCH METHODS

The purpose of this study is to analyze the application of Project Based Learning (PjBL)-based teaching modules in Natural and Social Sciences (IPAS) class IV in Cluster 1 Peudada. This research uses qualitative, which is a research approach aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, and thoughts of people individually or in groups. This research uses a type of field study research or commonly called *field research*, this research is a type of qualitative research where researchers directly obtain information in the form of data from the field in the form of the realization of social life in the community.

The determination of data sources in qualitative research is carried out purposively, which is determined by adjusting to certain research objectives or conditions. Creswell (2015) suggests that in qualitative research, we identify participants and places with *purposive sampling* that is based

¹⁰ Shelly D. M. Sumual et al., "Strategi Pengembangan Lembaga Pendidikan Melalui Analisis SWOT: Suatu Tinjauan Teoritis, Integratif, Dan Adaptif," *Khatulistiwa: Jurnal Pendidikan Dan Sosial Humaniora* 5, no. 2 (May 2025), <https://doi.org/10.55606/khatulistiwa.v5i2.5784>.

¹¹ Hilya Gania Adilah and Yaya Suryana, "Manajemen Strategik Dalam Meningkatkan Mutu pendidikan Madrasah Ibtidaiyah," *Jurnal Isema : Islamic Educational Management* 6, no. 1 (June 2021), <https://doi.org/10.15575/isema.v6i1.11037>.

on the places and people that best help us understand our central phenomenon.¹² The sample used consisted of school principals and teachers as respondents. Data collection techniques with interview and observation guidelines. Interview guidelines are used as a guide when the interview is conducted, so that it is in accordance with the purpose and objectives to be achieved. Observations were carried out in learning using a *Project-Based Learning* (PjBL) teaching module for science subjects in grade IV students of Cluster I Peudada.

The validity test of qualitative data includes the test of credibility (credibility), transferability (transfer value), dependability and confirmability. Data analysis was carried out using qualitative descriptive, namely data reduction, data presentation and conclusions. Data processing in this study was carried out qualitatively with SWOT analysis, which consisted of *Strengths, Weaknesses, Opportunities* and *Threats*. SWOT analysis aims to maximize strengths and opportunities, but can minimize *weaknesses* and threats. According to Rangkuti (2015), combining qualitative data analysis techniques with SWOT analysis is an act of systematically identifying strategic factors to formulate a strategy through logical explanations.

RESULTS AND DISCUSSION

SWOT Analysis of the Implementation of PjBL-Based Teaching Modules

This study aims to analyze the application of *Project Based Learning* (PjBL)-based teaching modules in Natural and Social Sciences (IPAS) learning in grade IV Cluster 1 Peudada. Data was obtained through in-depth interviews with teachers from three schools, namely UPTD SD Negeri 1 Peudada, UPTD SD Negeri 10 Peudada, and UPTD SD Negeri 12 Peudada. Data analysis was carried out using the SWOT (*Strengths, Weaknesses, Opportunities, Threats*) approach in the implementation of PjBL-based teaching modules.

¹² John W. Creswell, *Penelitian Kualitatif & Desain Riset: Memilih Diantara Lima Pendekatan*, 3 Bahasa Indonesia (Yogyakarta: Pustaka Pelajar, 2013).

Table 1. SWOT Analysis Matrix on the application of *Project Based Learning* (PjBL) based teaching modules in Natural and Social Sciences (IPAS) learning in grade IV Cluster 1 Peudada

Internal Eksternal	Strengths (Kekuatan)	Weaknesses (Kelemahan)
	1. Meaningful and Contextual Learning 2. Increase Students' Motivation and Interest in Learning 3. Developing 21st Century Skills 4. Support from Principals and Peers	1. Limited Learning Time 2. Limitations of Practical Facilities and Materials 3. Teachers' Ability to Design Projects Is Still Limited 4. Differences in Students' Abilities in Groups
Opportunities (Peluang)	Strategi S O	Strategi W O
1. Flexible Independent Curriculum 2. The Potential of the Surrounding Environment as a Learning Resource 3. Students' Enthusiasm for Practical Activities 4. Collaboration Between Teachers and School KKG	1. Utilize meaningful and contextual learning to explore the potential of the surrounding environment as a learning resource. 2. Using high student motivation and interest to optimize collaboration between teachers and KKG. 3. Develop students' 21st century skills through projects according to the Independent Curriculum.	1. Overcoming the limitations of facilities and practice materials by utilizing the potential of the surrounding environment. 2. Participate in training or collaboration with other teachers (KKG) to improve project design skills. 3. Adjust the division of study groups to reduce differences in students' abilities.
Threats (Ancaman)	Strategi S T	Strategi W T
1. Lack of Parental Support 2. Socio-Economic Conditions of Students 3. Less Supportive Home Environment 4. School Policies That Still Focus on Academic Grades	1. Utilizing the support of school principals and peers to educate parents about the importance of PjBL. 2. Use contextual learning to adjust students' socioeconomic conditions. 3. Develop students' motivation and interest in learning even though the home environment is not supportive.	1. Develop flexible project plans to overcome learning time constraints. 2. Utilize alternative learning resources when means/practices are limited. 3. Provide additional assistance to students with low abilities so that they can continue to participate in projects. 4. Align learning methods with school policies so that they remain focused on academic results but remain based on PjBL.

Based on the results of the SWOT analysis on the implementation of PjBL-based teaching modules, various internal and external aspects were found that affected the effectiveness of social studies learning in grade IV. This analysis provides a comprehensive overview of the strengths, weaknesses, opportunities, and threats faced, as well as strategies that can be applied to maximize the implementation of PjBL.

1. Strengths

The results of the study show that there are several forces that support the implementation of PjBL:

- a. Meaningful and Contextual Learning: PjBL allows students to learn through hands-on experiences and projects relevant to daily life, thereby improving conceptual understanding.
- b. Increases Students' Motivation and Interest in Learning: Involvement in projects makes students more active and motivated.
- c. Developing 21st Century Skills: PjBL hones critical thinking, collaboration, communication, and creativity skills.
- d. Principal and Peer Support: The support of teacher leaders and colleagues provides ease of implementation and facilitates professional cooperation.

2. Weaknesses

Some of the internal constraints found include:

- a. Limited Learning Time: Limited class durations make it difficult to complete projects completely.
- b. Limited Facilities and Practice Materials: The lack of laboratory facilities or practice materials limits students' experiments.
- c. Teachers' Ability to Design Projects Is Still Limited: Some teachers need further training to design projects that are in line with the Independent Curriculum.
- d. Differences in Students' Abilities in Groups: Variations in students' abilities demand differentiation strategies so that all students can participate effectively.

3. Peluang (Opportunities)

External environments that support the implementation of PjBL include:

- a. Flexible Independent Curriculum: Giving teachers flexibility in designing project-based learning.
- b. Potential of the Surrounding Environment as a Learning Resource: Local resources can be used as learning media and materials.
- c. Student Enthusiasm for Practical Activities: Students are more active when they are involved in experimental activities and real projects.

- d. Collaboration between Teachers and School Teachers: The exchange of experiences between teachers can improve the quality of project planning.

4. Threats

External factors that are obstacles include:

- a. Lack of Parental Support: Parental participation in supporting projects is still limited.
- b. Student Socioeconomic Conditions: Limiting the student's access to materials or technology required for the project.
- c. Less Supportive Home Environment: A home learning environment is not always conducive.
- d. School Policies That Still Focus on Academic Scores: Pressure on academic grades can reduce the focus on project-based learning processes.

5. Implementation Strategy

Based on the SWOT matrix, the strategies that can be implemented include:

- a. S-O Strategy (Harnessing power for opportunity):
 - 1) Optimize contextual learning to explore environmental potential.
 - 2) Use student motivation to improve collaboration between teachers.
 - 3) Develop 21st century skills through projects according to the Independent Curriculum.
- b. W-O Strategy (Overcoming weaknesses with opportunities):
 - 1) Utilize local resources to overcome limited resources.
 - 2) Participate in training and collaboration with other teachers to improve project design skills.
 - 3) Adjust the division of study groups to reduce differences in students' abilities.
- c. S-T strategy (Harnessing power to deal with threats):
 - 1) Educate parents about the importance of PjBL with the support of the principal.
 - 2) Use contextual learning to adjust students' socioeconomic conditions.
 - 3) Motivate students even though the home environment is not supportive.
- d. W-T Strategy (Overcoming weaknesses and mitigating threats):
 - 1) Arrange flexible projects so that they don't run out of time.
 - 2) Utilize alternative learning resources if facilities are limited.
 - 3) Provide additional assistance for students in need.
 - 4) Adjusting learning methods to remain in accordance with school policies but based on PjBL.

The results of this study show that the application of PjBL-based teaching modules has great potential to increase students' skills, motivation, and involvement in IPAS, as long as the right strategies are applied to overcome internal and external constraints.

Based on data obtained through in-depth interviews with science teachers from three schools in Cluster 1 Peudada, it can be concluded that the level of completeness of Project Based Learning (PjBL)-based teaching modules is in the category of being quite complete, but does not fully meet all the components recommended in the Independent Curriculum. The findings show that there are variations between schools, both in the preparation and use of teaching modules. In general, teachers have prepared teaching modules with basic components such as learning objectives, activity steps, subject matter, and student worksheets. However, some important parts that should ideally be present in the PjBL-based module, such as *driving questions*, systematic project flows, project assessment rubrics, and draft publication of student works are still not available comprehensively.

In addition, the results of the interviews showed that teachers' interest and commitment to developing the PjBL module were quite high, but they needed mentoring, training, and the provision of more concrete references from schools and groups. This shows that the completeness of the teaching modules does not only depend on the teacher's ability, but also on the available support system. Data was obtained through in-depth interviews with social studies teachers in the three schools, the main themes were obtained in accordance with the interview guidelines, namely:

Teachers' understanding of *the Project Based Learning* (PjBL)-based teaching module shows the extent to which teachers understand the concepts, objectives, and application of the project-based learning approach in teaching and learning activities. In general, teachers in Cluster 1 Peudada (UPTD SD Negeri 1, 10, and 12 Peudada) already have a fairly good understanding of the basic concept of PjBL-based teaching modules.

Teachers understand that the PjBL-based teaching module is a set of learning guidelines that are systematically designed to help teachers carry out the project-based teaching and learning process. This module serves as a guideline in directing students to discover, analyze, and solve real problems relevant to daily life, particularly in Natural and Social Sciences (IPAS) learning.

The results of the interview with Mrs. OV as a teacher at UPTD SD Negeri 1 Peudada stated that the Project Based Learning (PjBL)-based teaching module is a learning tool designed to involve students in real project activities as a means of understanding lesson concepts. Project-based learning requires students to actively seek information, think critically, and produce products or works that are relevant to daily life. Also adding PjBL-based teaching modules helps students learn meaningfully, as they not only hear explanations, but also practice directly through project activities.

Teachers from UPTD SD Negeri 1 Peudada explained that PjBL-based teaching modules are very helpful for students in meaningful learning because they can connect learning materials with direct practice in the surrounding environment. Thus, learning becomes more contextual and memorable for students.

Furthermore, with Mrs. AW as a teacher of UPTD SD Negeri 10 Peudada revealed that the Project Based Learning (PjBL)-based teaching module is a learning guide centered on project activities to help students understand concepts through direct experience. According to teachers, PjBL is an approach that emphasizes the active involvement of students in finding solutions to real problems, so that they learn not only from theory, but also from hands-on practice. The teacher said, "PjBL-based teaching modules help students learn in a fun way because they are invited to create projects related to daily life."

Meanwhile, teachers from UPTD SD Negeri 10 Peudada emphasized that the PjBL module has a systematic and directed structure, both for teachers and students. This module makes it easier for teachers to manage project stages, starting from planning, implementation, to evaluating student work. For students, this module provides clear guidelines on what to do, so they can learn more independently and in a more directed way.

The same thing was also expressed by JU as a teacher of UPTD SD Negeri 12 Peudada revealed that the Project-Based Learning (PjBL)-based teaching module is a learning guide that emphasizes the active involvement of students in project activities to understand concepts in depth. According to teachers, PjBL is a learning model that teaches students to learn through real experiences and problem-solving that is relevant to their daily lives. The teacher stated, "The PjBL-based teaching module is very helpful because it provides a step-by-step guide for teachers and students to learn actively and independently."

The teacher from UPTD SD Negeri 12 Peudada assessed that the implementation of PjBL-based teaching modules played an important role in increasing student active involvement. Through projects relevant to daily life, students are motivated to seek solutions to real problems around them. This also encourages the emergence of a sense of responsibility, the ability to work together, and *higher order thinking skills*.

Based on the results of interviews with teachers from three schools in Cluster 1 Peudada, namely UPTD SD Negeri 1 Peudada, UPTD SD Negeri 10 Peudada, and UPTD SD Negeri 12 Peudada, it can be concluded that all teachers have a good understanding of *the Project Based Learning (PjBL)-based teaching module*. Teachers understand that the PjBL-based teaching module is a learning guide designed to guide teaching and learning activities centered on real projects. Through this approach, students not only receive information passively, but are actively involved in the learning process that emphasizes the development of critical, creative, collaborative, and communicative thinking skills. Overall, teachers' understanding of the PjBL-based teaching module shows that they are aware of the strategic value of this approach in Natural and Social Sciences (IPAS) learning. Teaching modules are not only seen as teaching aids, but also as a means of developing 21st century character and competencies for students through authentic and meaningful project-based learning experiences.

Project-Based Learning (PjBL)-based teaching modules are learning tools designed to facilitate students to actively learn through the implementation of projects that are relevant to real life. This module emphasizes the direct involvement of students in the learning process, starting from problem identification, planning, implementation, to presentation of project results. With this approach, students not only master concepts theoretically, but also apply them practically, making learning more engaging, meaningful, and contextual.

The results of an interview with Mrs. OV as a teacher at UPTD SD Negeri 1 Peudada stated that PjBL-based teaching modules have many advantages compared to conventional learning. Some of the advantages conveyed include: Increasing students' interest and motivation to learn, because learning feels more fun and contextual. Help students develop critical and creative thinking skills. Foster cooperation and responsibility in the group. It makes it easier for students to understand the concept of social studies because they learn through real experience. The teacher adds, "Children have an easier time remembering material because they experience it on their own in the project, not just reading or listening."

Based on the results of the interview, it can be concluded that the teaching module based on Project Based Learning (PjBL) has a number of advantages compared to conventional learning. These advantages include: increasing students' interest and motivation to learn, as learning becomes more fun, contextual, and relevant to real life.

Furthermore, with Mrs. AW as a teacher of UPTD SD Negeri 10 Peudada revealed that the implementation of PjBL-based teaching modules has many advantages compared to conventional learning. The advantages conveyed include: Increasing students' curiosity and motivation to learn because project activities make learning more interesting. Accustoming students to think critically and creatively in solving problems. Foster cooperation and communication between students while working in groups. Helps students connect the subject matter with real experiences in the surrounding environment. The teacher adds, "Children are more excited to learn because they can see the results of their work immediately, not just listen to the teacher's explanation."

Based on the results of the interview, it can be concluded that the teaching module based on Project Based Learning (PjBL) has a number of advantages compared to conventional learning. These advantages include: Increasing students' curiosity and motivation to learn, as project activities make learning more interesting and challenging. Develop critical and creative thinking skills, because students are directly involved in solving real problems.

The same thing was also expressed by JU as a teacher of UPTD SD Negeri 12 Peudada revealed that the application of PjBL-based teaching modules has many advantages in learning IPAS, including: Making students more active and enthusiastic during learning activities. Cultivate the ability to think critically and creatively in solving problems. Improve cooperation and communication between students in group activities. Relate the concept of IPAS to the real situation in the environment around students. The teacher added, "With the project, children can see firsthand how IPAS theory is applied, so they are easier to understand and don't get bored quickly."

Based on the results of in-depth interviews with science teachers from Group 1 Peudada, it can be concluded that the completeness of *the Project Based Learning* (PjBL)-based teaching module is in the category of quite complete, but does not meet all the ideal components as directed in the Independent Curriculum. Teachers have compiled basic components such as learning objectives, activity steps, subject matter, and LKPD, but some important components of PjBL such as *driving questions*, systematic project flows, project assessment rubrics, and publication plans for student work are still not comprehensively available. The teachers' understanding of the PjBL teaching module is relatively good, and they show a high commitment to developing the module. The main obstacles lie in time constraints, lack of technical training, and lack of examples of contextual modules that are in accordance with IPAS. This shows that the completeness of the modules is not only determined by the competence of teachers but also greatly influenced by the support of the school system and the cluster. The following are the themes of the research findings based on interview analysis: Teachers understand PjBL as a project approach that encourages students to actively find, analyze, and solve real problems. The PjBL module is seen as a systematic guide for teachers and students to learn based on hands-on experience.

The suitability of *the Project Based Learning* (PjBL)-based teaching module with the social studies learning process in grade IV group 1 Peudada.

Based on the results of in-depth interviews with science teachers in three schools in Cluster 1 of Peudada, it was found that the level of suitability between the Project Based Learning (PjBL)-based teaching module and the implementation of the learning process in the classroom is in the category of quite appropriate, but has not been optimally realized in daily learning practice.

Teachers generally understand that the PjBL model requires a learning process that emphasizes exploratory activities, problem-solving, collaboration, and producing the final product. However, the teaching modules used have not fully provided a complete guide to realize this learning flow. Some modules already contain components such as learning objectives, activity steps, and simple project assignments, but have not fully integrated the PjBL flow starting from driving questions, in-depth investigations, project time management, to publication of student work.

In the implementation of learning, teachers more often adjust project activities improvised based on class conditions. This happens because the available teaching modules do not provide detailed directions, so teachers must add, subtract, or modify activities to suit students' abilities and the availability of facilities. The teacher said that the existing modules are more similar to ordinary learning modules, so the implementation of PjBL has not been fully carried out according to its characteristics.

In addition, it was found that the limited time for learning social studies, the large number of students, and the lack of supporting facilities meant that teachers often only applied part of the stages of PjBL. The stages that were most often not implemented were the in-depth project design phase and final reflection discussions. This causes the suitability of the module to the learning process to be less optimal. Data was obtained through in-depth interviews with social studies teachers in the three schools, the main themes were obtained in accordance with the interview guidelines, namely:

PjBL takes enough time to carry out each stage of the project, from planning, implementation, to evaluation. The results of the interviews show that some teachers have difficulty adjusting the time of PjBL to a busy learning schedule. This has an impact on the rushed learning process and sometimes projects cannot be completed optimally.

The results of the interview with Mrs. OV as a teacher at UPTD SD Negeri 1 Peudada stated that in the implementation of PjBL-based teaching modules there are still several obstacles faced in the field, including: limited learning time, because project activities require several meetings. Facilities and practical materials are limited, so teachers must improvise using simple tools. Teachers' ability to design and manage projects still needs to be improved through training. The difference in students' abilities in the group causes unequal activity. The teacher said, "The biggest challenge is the time and readiness of the tools. But if it's well designed, the project can keep going."

Based on the results of the interview, it can be concluded that the Project Based Learning (PjBL)-based teaching module includes: Limited learning time, because project activities require several meetings so that the schedule often feels congested. Limited facilities and practical materials, which make teachers have to improvise using simple tools or materials.

Furthermore, Mrs. AW as a teacher of UPTD SD Negeri 10 Peudada revealed that the implementation of PjBL-based learning is still encountered with several obstacles, including: Limited learning time, while project activities require several meetings so that the results are maximized. Limitations of tools and materials for project activities. Variations in students' abilities cause inequality in group work. Teachers also still need to adapt in preparing projects that are in accordance with the level of students' ability. The teacher explained, "Sometimes project materials or tools are hard to come by, so we have to find other alternatives to keep the activity going."

The implementation of Project Based Learning (PjBL)-based learning at SD Negeri 10 Peudada still faces obstacles, namely limited learning time, limited project tools and materials, differences in students' abilities in groups, and teachers who are still adjusting to designing projects according to students' ability levels. Teachers need to utilize alternative learning facilities and strategies so that the project continues to run effectively and every student can be optimally engaged.

The same thing was also expressed by JU as a teacher of UPTD SD Negeri 12 Peudada revealed that there are several obstacles in the implementation of PjBL-based teaching modules, including: Time constraints because project learning requires a long process from planning to evaluation. Inadequate facilities and practice materials, especially for projects that require experimental tools or certain media. Differences in students' abilities, so not all children can contribute in a balanced way. Teachers also still need to adapt to the preparation of project-based modules so that activities remain effective. The teacher said, "To design a project takes time and enough preparation. Sometimes it is difficult to adjust to the time available at school."

The results of interviews with teachers in Cluster 1 of Peudada showed several obstacles encountered in the implementation of *Project Based Learning* (PjBL)-based teaching modules: limited learning time, limited facilities and practical materials, differences in students' abilities in groups and diverse teacher abilities. Overall, the results of the interviews show that the main obstacles in the implementation of PjBL-based teaching modules in Cluster 1 Peudada include: Limited learning time to complete the project thoroughly. Limited facilities and practical materials so that teachers have to improvise. Differences in students' abilities in groups that affect project participation and outcomes. It is necessary to improve teachers' ability to design, manage, and assess projects so that learning runs effectively. These findings show that the implementation of the PjBL module requires adequate support, both in terms of time, facilities, and teacher competence, so that the project can be carried out optimally and learning objectives are achieved.

Although there are a number of obstacles in the implementation of *Project Based Learning* (PjBL)-based teaching modules, the results of the study show that there are several opportunities that support the successful implementation of PjBL in schools. This opportunity can be used to optimize learning, increase student motivation, and strengthen competency mastery.

The results of the interview with Mrs. OV as a teacher at UPTD SD Negeri 1 Peudada stated that there are many opportunities that can be used to support the implementation of PjBL, including: The Independent Curriculum which gives teachers freedom in regulating learning methods and models. The availability of local learning resources, such as the environment around the school that can be used as project material. Students' enthusiasm for practical activities. Collaboration between teachers in designing cross-subject projects. Teachers said, "With the Independent Curriculum, teachers can be more creative and relate learning to students' real lives."

Based on the results of the interview, it can be concluded that the Project-Based Learning (PjBL)-based teaching module includes: The availability of local learning resources, such as the environment around the school, which can be used as project material so that learning becomes more contextual. Students' enthusiasm for practical activities, which increases motivation and engagement in the learning process.

Furthermore, with Mrs. AW as a teacher of UPTD SD Negeri 10 Peudada revealed that there are several opportunities that can support the successful implementation of PjBL-based teaching modules in schools, including: The Independent Curriculum provides

freedom for teachers to innovate in learning. The students' enthusiasm for practical activities and real projects is very high. A supportive school environment, as there are many learning resources around that can be utilized. Collaboration between teachers who actively share experiences in designing projects. The teacher added, "With the freedom from the Independent Curriculum, we can adapt the project to the conditions and potential of the surrounding environment."

Based on the results of the interview, it can be concluded that the *Project Based Learning* (PjBL)-based teaching module includes: a supportive school environment, with many learning resources around that can be used for project activities. Collaboration between teachers, who actively share experiences and ideas in designing cross-subject projects, thus enriching the quality of learning.

The same thing was also expressed by JU as a teacher of UPTD SD Negeri 12 Peudada revealed that the school provides quite good support for the implementation of project-based learning. The principal encourages teachers to innovate and provide space for the implementation of project activities in the classroom. In addition, colleagues actively discuss and share experiences, especially through KKG (Teacher Working Group) meetings. The teacher said, "We often exchange project ideas between teachers, so that we can adapt the activities to the conditions and abilities of the students."

Based on interviews with teachers in Cluster 1 Peudada, there are several opportunities that can support the successful implementation of *Project-Based Learning* (PjBL)-based teaching modules in science learning in grade IV: independent curriculum support, student enthusiasm for project activities, school environment and community as a learning resource, collaboration between teachers across subjects. These opportunities can strengthen the implementation of PjBL-based teaching modules, making learning more interesting, relevant, and effective for students, as long as teachers are able to optimally utilize curriculum support, student enthusiasm, the surrounding environment, and peer collaboration.

Based on the results of interviews with teachers in Cluster 1 of Peudada, it can be concluded that there are several opportunities that support the implementation of *Project Based Learning* (PjBL)-based teaching modules. These opportunities include: Independent Curriculum Support which provides freedom for teachers to choose learning methods, models, and strategies so that projects can be tailored to the conditions and potential of students. Students' enthusiasm for practical activities and real projects, which increases participation, creativity, and motivation to learn. The school environment and the community as a learning resource, which can be used for project activities so that learning becomes more contextual and relevant to students' real lives. Collaboration between teachers across subjects, including through forums such as the Teacher Working Group (KKG), which allows the sharing of experiences, ideas, and strategies in designing projects that suit students' abilities.

Overall, these external factors suggest that the successful implementation of PjBL depends not only on the readiness of teachers and students, but also on the support of the environment, parents, and school policies. Therefore, strategies such as socializing the benefits of PjBL to parents, utilizing local materials, adapting projects to student conditions, and supporting flexible school policies are important to minimize external barriers and increase the effectiveness of project-based learning. In addition to internal constraints related to teachers, students, and school facilities, the results of interviews with teachers in the three schools show that there are several external factors that have the potential to hinder the successful implementation of *Project Based Learning* (PjBL)-based teaching modules. These factors are beyond the school's direct control, but they affect the effectiveness of the project's learning.

Discussion

Based on the results of the study, the application of Project-Based Learning (PjBL)-based teaching modules in Natural and Social Sciences (IPAS) learning in grade IV Cluster 1 Peudada showed a complex interaction between internal and external factors that affect the effectiveness of learning. The discussion focused on six main aspects: teacher understanding, module advantages, implementation constraints, opportunities, external obstacles, and mitigation strategies. Based on SWOT analysis, the application of Project-Based Learning (PjBL)-based teaching modules shows that learning effectiveness is influenced by various interrelated internal and external factors.

The results of the study show that PjBL has several main strengths that support learning success. Meaningful and contextual learning allows students to relate the concepts learned to real experiences, resulting in deeper understanding.¹³ In addition, PjBL is able to increase students' motivation and interest in learning, as active involvement in projects gives a sense of achievement and responsibility.¹⁴ PjBL also develops 21st century skills, such as critical thinking, communication, collaboration, and creativity, that are relevant to today's learning needs.¹⁵ The support of the principal and colleagues is a supporting factor that makes it easier for teachers to design and implement projects, so that the implementation of PjBL can run more optimally.

¹³ Astuti Solong, Muh. Nasir, and Ferawati Ferawati, "Pengaruh Model Pembelajaran Project Based Learning (PjBL) Terhadap Kemampuan Pemecahan Masalah Siswa SMPN 5 Kota Bima Tahun Pelajaran 2022/2023," *JUPENJI: Jurnal Pendidikan Jompa Indonesia* 1, no. 3 (November 2022), <https://doi.org/10.57218/jupenji.Vol1.Iss3.242>.

¹⁴ Isrohani Hamidah and Sinta Yulia Citra, "Efektivitas Model Pembelajaran Project Based Learning (PjBL) Terhadap Minat Dan Hasil Belajar Siswa," *BIOEDUSAINS: Jurnal Pendidikan Biologi Dan Sains* 4, no. 2 (October 2021), <https://doi.org/10.31539/bioedusains.v4i2.2870>.

¹⁵ Dicky Chandra Lubis et al., "Pembelajaran Berbasis Proyek: Mengembangkan Keterampilan Abad 21 Di Kelas," *EDU SOCIETY: JURNAL PENDIDIKAN, ILMU SOSIAL DAN PENGABDIAN KEPADA MASYARAKAT* 4, no. 1 (June 2024), <https://doi.org/10.56832/edu.v4i1.472>.

Despite having many advantages, PjBL also faces internal obstacles. The limited learning time limits the duration of the project so that not all activities can be completed optimally.¹⁶ Limited facilities and practical materials limit students' experiments, while teachers' ability to design projects is still limited, requiring additional training. In addition, the differences in students' abilities in the group demand differentiation strategies so that all students can actively participate and feel the benefits of the project.

The external environment provides a great opportunity to optimize PjBL. The flexible Merdeka curriculum gives teachers the freedom to design projects according to the needs of students.¹⁷ The potential of the surrounding environment can be used as a real learning resource, while students' enthusiasm for practical activities allows for more interesting and interactive learning.¹⁸ In addition, collaboration between teachers through the KKG improves the quality of project planning and shares the best strategies, so that the implementation of PjBL can be more effective.

Several external factors can be a threat to the effectiveness of PjBL. Lack of parental support and a less supportive home environment can decrease students' motivation and opportunities to learn outside the classroom. Students' socioeconomic conditions limit access to the necessary materials or technology. In addition, school policies that still focus on academic grades can distract from the project-based learning process. These threats must be anticipated so that PjBL can continue to run effectively.

Based on the results of research and SWOT analysis, the implementation of Project Based Learning (PjBL)-based teaching modules in grade IV of SD Negeri 10 Peudada can be optimized through strategies tailored to the strengths, weaknesses, opportunities, and threats found.

1. *Strength-Opportunity (S-O)*

This strategy leverages internal strengths to explore external opportunities. PjBL that provides contextual and meaningful learning can be used to optimize the potential of the surrounding environment as a learning resource, so that the projects carried out are more relevant to students' daily lives. In addition, students' high motivation and interest in learning can be used to increase collaboration between teachers through KKG, so that projects can be designed and implemented more effectively. This strategy also supports the development of 21st century skills, such as critical thinking, collaboration, communication, and creativity,

¹⁶ Juliana Margareta Sumilat et al., "Analysis of the Implementation of the PjBL (Project Based Learning) Model in Elementary Schools," *Basicedu Journal* 7, no. 6 (2023), <https://doi.org/10.31004/basicedu.v7i6.6557>.

¹⁷ Dear Noer, "The Implementation of Project Based Learning in the Independent Curriculum," *J-PiMat : Journal of Mathematics Education* 7, no. 1 (2025), <https://doi.org/10.31932/j-pimat.v7i1.4663>.

¹⁸ Retnita Ernayani Lubis and Tri Astuti Mardiana, "Project-Based Learning with Local Potential Learning Resources: Efforts to Increase Student Independence and Creativity," *Toga Journal of Teacher Training and Education* 2, no. 1 (2025), <https://doi.org/10.56211/toga.v2i1.1056>.

according to the flexibility of the Independent Curriculum.¹⁹ The results of the study show that when students are actively involved in contextual projects, their understanding of concepts improves and their practical skills develop.

2. *Weakness-Opportunity (W-O)*

This strategy aims to overcome internal weaknesses by taking advantage of external opportunities. The limitations of teachers' facilities and abilities in designing projects can be overcome by utilizing local resources as practical materials and participating in training and collaboration between teachers.²⁰ Adjusting the division of study groups is also important to reduce differences in students' abilities, so that each student can actively participate in the project. The findings of the study show that teachers who use this strategy are able to increase student participation and engagement equally, despite limited means.

3. *Strength-Threat (S-T)*

This strategy uses internal power to deal with external threats. Teacher support, student motivation, and contextual learning can be used to educate parents about the importance of PjBL, so that their support increases. In addition, learning can be adjusted to the socioeconomic conditions of students, and students' motivation is maintained even though the home environment is less supportive. The results indicate that educational interventions with parents and project adaptations to students' conditions significantly lower external barriers and improve learning success.

4. *Weakness-Threat (W-T)*

This strategy is designed to address internal weaknesses while minimizing external threats. Teachers can arrange flexible projects so that they do not run out of time, utilize alternative learning resources when facilities are limited, provide additional assistance for students in need, and adjust learning methods to remain in line with school policies but based on PjBL.²¹ Research shows that this strategy is effective in maintaining the smooth running of the project and ensuring that all students can continue to participate optimally despite internal and external constraints.

¹⁹ Ahmad Suryadi et al., "The Application of the Independent Curriculum in Elementary Schools: A Review of Systematic Literature," *Kalam Cendekia: Scientific Journal of Education* 13, no. 2 (2025), <https://doi.org/10.20961/jkc.v13i2.97777>.

²⁰ Ida Marina, "Agribusiness Development Strategy for Agricultural Products through Innovation and Creativity to Become a Superior Product at SMK Negeri 1 Pacet Cianjur Regency," *MIMBAR AGRIBISNIS: Journal of Scientific Community Thought with an Agribusiness Perspective* 1, no. 1 (2017), <https://doi.org/10.25157/ma.v1i1.31>.

²¹ Farida Daniel, "Students' Critical Thinking Ability in the Implementation of Project Based Learning (PjBL) with a Scientific Approach," *JPMI (Indonesian Journal of Mathematics Education)* 1, no. 1 (2017), <https://doi.org/10.26737/jpmi.v1i1.76>.

The findings of the study show that SWOT-based strategies provide practical guidance for teachers to design, implement, and modify PjBL projects so that social studies learning is more effective, contextual, and focused on developing students' 21st century skills. PjBL has great potential to improve the quality of IPAS learning, but the success of its implementation is highly dependent on teachers' ability to harness strengths, overcome weaknesses, take advantage of opportunities, and anticipate threats. SWOT-based strategies become a practical guide to achieving effective, contextual, and focused learning on students' 21st century skill development.

These findings are in line with Thomas' theory that *Project Based Learning* is a pedagogical approach that uses real-world projects to stimulate student involvement in constructing knowledge independently. Wena also explained that PjBL helps students build scientific concepts through contextual and collaborative activities. Thus, teachers' understanding in the field reflects the theoretical implementation of PjBL principles, namely meaningful, contextual, and student-centered learning. Hosnan stated that project-based learning is effective in increasing students' active engagement as well as higher-level thinking skills. The findings of this study reinforce the opinion that PjBL is able to create a fun, meaningful, and collaborative learning atmosphere.

Research shows that the PjBL teaching module is conceptually compatible with IPAS learning, but the level of suitability in practice still varies. A good fit is seen in the parts of the learning objectives, core activities, and product creation of the project. Meanwhile, low conformity is found in the project management, reflection, rubric-based assessment, and project sustainability. This shows that the teaching modules used have not fully supported the implementation of PjBL as a whole, so it is necessary to strengthen the modules and improve the competence of teachers in integrating PjBL into the IPAS learning process.

Overall, these external factors emphasize the importance of collaboration between schools, teachers, parents, and the community to create conditions that support the implementation of PjBL. Mitigation strategies, such as socialization to parents, the use of local materials, and the adjustment of projects to student conditions, are crucial steps so that these external barriers can be overcome and learning continues to run effectively. Hmelo-Silver emphasized that social and family environmental support greatly influences the success of PjBL, so that synergy between schools, parents, and the community is a crucial factor in the implementation of project-based learning.

CONCLUSION

The conclusion of this study is the results of research on the completeness of teaching modules based on Project Based Learning (PjBL). The level of completeness of the Project Based

Learning (PjBL)-based teaching module is in the category of being quite complete, but it does not meet all the ideal components recommended in the Independent Curriculum. Teachers have compiled basic components such as learning objectives, activity steps, subject matter, and LKPD, but the essential components of PjBL such as driving questions, systematic project flows, project assessment rubrics, and product publication plans are not yet available comprehensively. The suitability of the PjBL teaching module with the implementation of social studies learning in the classroom is in the category of being quite appropriate, but it has not been implemented optimally. The module used does not fully contain a complete PjBL flow from the driving question stage, in-depth investigation, project time management, to the publication/publication of project products. There are two main types of barriers: internal barriers in the form of time constraints, practice facilities, variations in student abilities, and teachers' skills in designing and managing projects. External obstacles are in the form of lack of parental support, a less supportive home environment, family economic limitations, and school policies that are still oriented towards academic achievement rather than the learning process.

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