

## Teacher Perceptions of the Application of Project-Based Learning Models to Improve Critical Thinking

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### Abstract

*This article discusses teachers' perspectives on project-based learning to improve students' critical thinking skills. This project-based learning model can improve students' problem-solving thinking through project-based experience and students' direct understanding. In fact, this study contributes to the existing literature, refines the study model, and overcomes key challenges in its implementation. Indeed, this study aims to provide valuable insights into how project-based learning can be used to improve critical thinking skills in primary schools. From a professional perspective, it is hoped that this study can inspire and motivate teachers to implement project-based learning programs to improve students' critical thinking ability. A total of 53 participants agreed that the project-based learning model can improve students' critical thinking skills.*

**Keywords:** *Project-based learning, critical thinking, problem solving*

### Abstrak

Artikel ini membahas tentang perspektif guru terhadap pembelajaran berbasis proyek untuk meningkatkan kemampuan berpikir kritis siswa. Model pembelajaran berbasis proyek ini dapat meningkatkan pemikiran pemecahan masalah siswa melalui pengalaman berbasis proyek dan pemahaman langsung siswa. Faktanya, penelitian ini berkontribusi terhadap literatur yang ada, menyempurnakan model penelitian, dan mengatasi tantangan utama dalam implementasinya. Memang benar, penelitian ini bertujuan untuk memberikan wawasan berharga tentang bagaimana pembelajaran berbasis proyek dapat digunakan untuk meningkatkan keterampilan berpikir kritis di sekolah dasar. Dari sudut pandang profesional, penelitian ini diharapkan dapat menginspirasi dan memotivasi guru dalam melaksanakan program pembelajaran berbasis proyek untuk meningkatkan kemampuan berpikir kritis siswa. Sebanyak 53 peserta sepakat bahwa model pembelajaran berbasis proyek dapat meningkatkan kemampuan berpikir kritis siswa.

**Kata kunci:** *Pembelajaran berbasis proyek, berpikir kritis, pemecahan masalah*

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## INTRODUCTION

Along with the progress and modernization of globalization, various challenges also arise as a result. The digital world is growing rapidly, and everyone has to adapt to keep up. With the constant changes and demands of globalization, work must be done quickly and accurately. In addition, technology is developing at a rapid pace, affecting all aspects of everyday life and mobility. For this reason, skilled and qualified human resources are needed. Collaboration and communication in different areas of life are essential for success in this globalized world. Therefore, individuals need to have creativity, critical thinking skills, problem-solving skills, and digital mastery to maintain high levels of productivity.

Rapid transformation is seen in all areas, including the education sector, which is actively developing strategies and learning environments to improve the quality of Education. Quality improvement includes teachers, students, curriculum, infrastructure, and Learning media. The role of educators is very important in the creation of quality education that fosters the competence of learners. Therefore, educators must have the ability to create learning media and interactive teaching materials based on Applied Technology. Shifting the approach from teacher-centered to student-centered learning is critical. To achieve independent and student-centered learning, creative, interactive, and interesting learning media are needed. In the learning process, communication between teachers and students is facilitated with learning media. This medium is created through the incorporation of tools and teaching materials to assist students in understanding. In the 21st century, teacher proficiency is critical to supporting a learning environment that encourages creative, critical, and responsive thinking in students.

In today's globalized and technologically advanced world, Helmon (2018) argues that critical thinking is an essential skill that all individuals should develop. The abundance of information available today includes not only factual information but also a lot of misleading information. Therefore, students need to have the ability to think critically. These skills should be a major focus in education, particularly in primary school. By developing critical thinking skills, students can overcome problems easily, apply logical and systematic reasoning, think carefully and objectively, and make the right decisions in everyday life. Developing critical thinking skills also helps students to resist the influence of misleading information and technology.

According to the Ministry of Education and Culture PSKP, the achievement of PISA 2018 shows that Indonesia occupies the bottom 10 positions out of 79 participating countries. The average reading ability of Indonesian students is 80 points below the OECD average. Abilities related to the average ability to read, math, and science Indonesian students are also still below the achievement of students in ASEAN countries.

The Learning Model in this curriculum uses a project-based learning model. This Model will make students bolder, take action, and collaborate actively in creating projects. According to (Setiono et al., 2020) the PjBL Model can even be synergized or combined with other competencies. This learning Model not only focuses on one lesson point but can also be used in all existing subjects. This learning Model has been studied to attract students. According to (Trinaldi, 2022) the PJBL learning model can increase student interest in learning. Therefore, teachers must be accustomed to using this learning model.

According to Sutriningsih, Suherman, and Khoiriyah (2014), the problems that exist are caused by a lack of information in learning that inhibits the development of critical thinking skills or thinking HOTS students. Tirani (2013) also asserts that the problem stems from excessive dependence on teacher-centered learning models, limiting students' critical thinking and reasoning capacities. To overcome these

difficulties, a student-centered learning model is needed to strengthen students' decision-making abilities, and ultimately improve the quality of the material taught.

The independent curriculum is rich in teaching models that can be applied to improve students' thinking or decision-making skills. However, the implementation of learning is still less creative, learning does not require students to actively engage in project activities, so the ability to think critically is relatively weak. To increase the flexibility of students in expressing opinions and thinking critically, we can choose to apply appropriate teaching models in learning in the independent curriculum, including using project-focused learning methods known as PjBL (project-based learning).

A lot of research has been done on the teacher's point of view regarding project-based learning. However, there is still little research on the perception of teachers on this topic. The focus of project-based learning is directed towards improving critical thinking skills in elementary school. The significance of this study lies in three aspects. Theoretically, this research is expected to contribute to the existing literature, refine learning models, and address key challenges in their implementation. In practical terms, this study seeks to provide valuable insights into the effective application of Project-Based Learning for the improvement of critical thinking skills in primary schools. Professionally, this research is expected to inspire and motivate teachers to apply project-based learning as a means to improve critical thinking skills in their students.

## METHOD

The qualitative descriptive method is the approach used in this study. By utilizing this method, the results of the study can be comprehensively described about the conditions in the field (Creswell, 2016 as quoted in Saputra & Hadi, 2022). The data were collected from 53 classroom teachers from different elementary schools who were members of the KKG forum (teacher Working Group) in the Sudirman cluster, Pracimantoro District, Wonogiri Regency, Central Java province. Researchers use research methods that involve conducting interviews to gather information. Questionnaires distributed to respondents contain questions about the teacher's perception of the application of the Project Based Learning model in improving the critical thinking skills of elementary school students.

The information obtained from the interview was qualitatively analyzed following several steps mentioned by Miles, Huberman, and Saldana (2014). Miles and his colleagues revealed that the process of qualitative data analysis was carried out interactively and continuously at each stage of the study until its completion. Components in data analysis: a) data reduction. The information obtained from the interview should be recorded carefully and in detail. Reducing data means summarizing, choosing core things, focusing on the essentials, and looking for themes and patterns. B) present the data. After the data is reduced, the next step is to show the data. In qualitative research, data can be presented in a concise form, diagrams, relationships between categories, and with narrative texts. By showing the data, it will make it easier to understand what is happening and plan the next steps based on that understanding. C) verification or conclusion of data. The initial conclusions presented are still provisional and will change if strong evidence is found in support at a later stage. However, if the conclusions submitted at the initial stage, are supported by valid and consistent evidence when the researcher returns to the field to collect data, then the conclusions submitted are reliable conclusions.

This chapter describes the findings and discourses obtained from the examination of semi-structured interviews conducted on 53 elementary class teachers who are members of the Teacher Working Group Forum (KKG) Elementary School located in Sudirman Gugus Kecamatan Pracimantoro Kabupaten Wonogiri. These interviews are conducted to gain insight into the educator's perspective on project-

based learning, in accordance with the formulated research questions. To answer the question of how teachers perceive project-based learning in elementary school, researchers conducted interviews with 53 participants, asking each of them 15 questions. The set of 15 questions consists of the following items:

No	Question	Answer
	Part A: Basic Teacher Information	
1.	Teacher's Name:	
2.	Subjects taught:	
3.	Teaching experience (in years):	
	Part B: Implementation Of the Project-Based Learning Model (PjBL)	
4.	How often do you apply the project-based learning (PjBL) model in your teaching? a. Very rarely b. Sometimes c. Often d. Always	
5.	What prompted you to start applying PjBL in your teaching?	
6.	What is the most successful project-based learning (PjBL) project you have implemented? How do you assess his success?	
7.	What are the main challenges you face when implementing PjBL in the classroom?	
	Part C: Improving Critical Thinking Skills	
8.	In your view, is the PjBL model effective in improving students ' critical thinking skills? Why?	
9.	What indicators or signs do you notice when your students are using critical thinking skills in a PjBL project?	
	Part D: Teacher's Perception of Learning Outcomes	
10.	How do you assess changes in student learning outcomes after applying PjBL in your teaching?	
11.	Do you see an improvement in students ' ability to analyze, solve problems, and think critically after applying CHD?	
	Part E: Support and Development	
12.	Does your school provide sufficient support in implementing the PjBL model?	
13.	Have you received specific training or assistance in developing teaching skills with PjBL? How did that experience affect your teaching?	
	Part F: Advice And Recommendations	
14.	Do you have any suggestions or recommendations for other teachers who want to start implementing the PjBL model in their teaching?	
15.	Is there anything else you would like to say about your experience with PjBL and students ' critical thinking skills?	

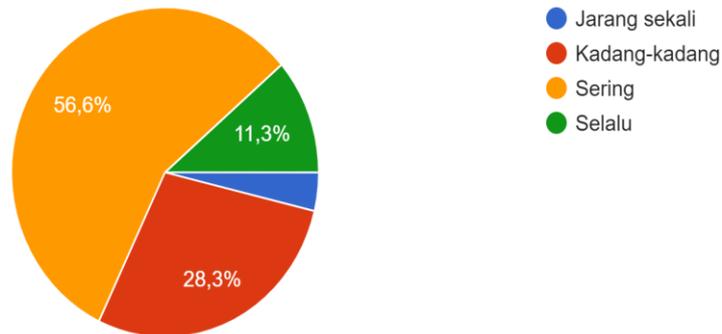
After conducting research and analyzing the data obtained. The researcher found several facts that can be summarized as findings. So by conducting interviews, the researcher seeks to find answers to research questions. Therefore, by recording and analyzing the data obtained, the researcher found some perceptions of teachers about Project-Based Learning. In addition, to be clearer, the following are the results of transcription analysis of the data obtained.

In this observation, the researcher took teacher perception data on the application of the project-based learning model to improve critical thinking skills, including aspects; 1) application of project-based learning model (PjBL), 2) improving critical thinking skills, 3) teacher perception of learning outcomes, 4) support and development and 5) suggestions and recommendations.

### RESULTS AND DISCUSSION

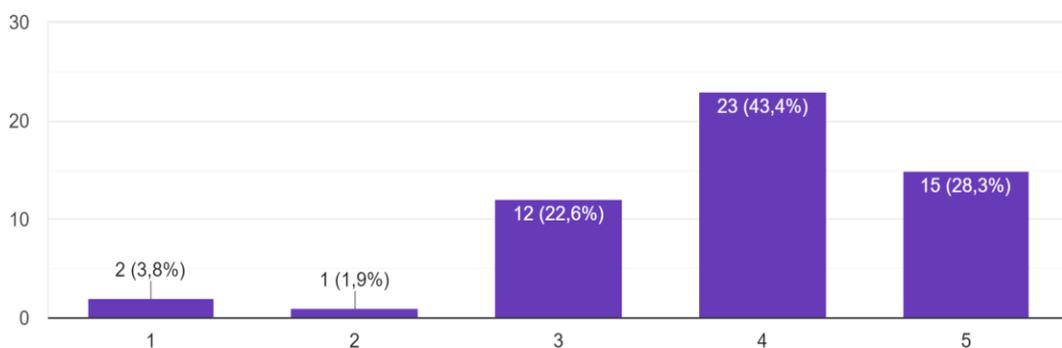
Aspects of implementation of the Project-Based Learning Model (Project-Based Learning)

53 jawaban



Based on the analysis of data from interviews and related questionnaires, it was found that 56.6% of teachers often apply project-based learning models, teachers who only sometimes apply project-based learning models (PjBL) there are 28.3% and 11.3% have always been project-based learning models (PjBL). Most teachers are encouraged to start implementing Project-Based Learning in teaching because they see the potential benefits in improving student learning experiences such as making students active and creative, and learning becomes more fun and teachers can innovate and adjust to the conditions and character of the environment. The emphasis on project-based learning is reflected in the self-directed curriculum (Fahlevi, 2022). Teachers have used a variety of approaches to teaching lesson concepts, including lectures, discussions, question-and-answer sessions, and hands-on practice techniques. Of the 53 participants, teachers said that the most successful project-based learning projects ever implemented were IPA, SBDP, and P5. The success rate by using the most Linkert scale is at Number 4 (1-5) which is 43.4% or as many as 23 teachers. This shows that teachers already feel that there is success when implementing the project-based learning model (PjBL).

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The main challenges often faced by teachers when implementing Project-Based Learning in the classroom are the lack of time management, limited facilities and infrastructure in schools, and the characteristics of students with different levels of intelligence and interest in talent so it is still rather difficult to invite students to be more active.

#### Aspects of Improving Critical Thinking Skills

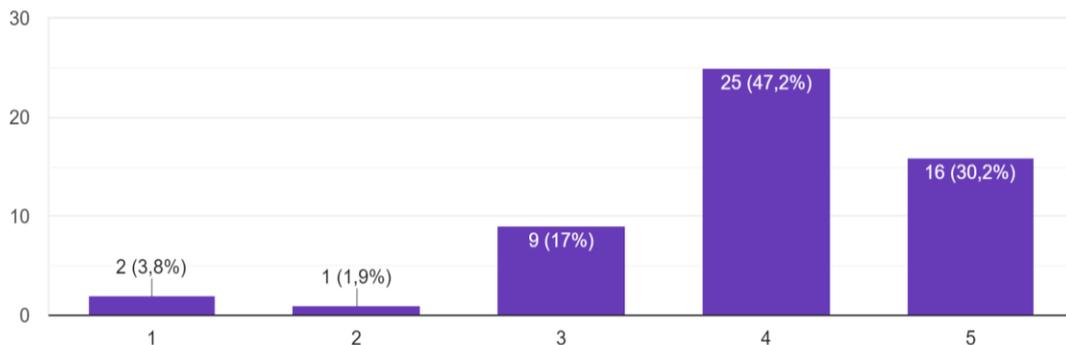
Of the 53 participants all agreed that the project-based learning model is effective in improving students' critical thinking skills because according to the teacher, students are given space to design projects in learning. This student will better understand the material theoretically and in the form of work and through Project-Based Learning students learn independently to plan, start, to report on what is done during learning activities. In addition, providing problems/ issues at the beginning of learning encourages students' curiosity about the issue so that it can foster students' critical thinking skills.

Indicators or signs that teachers can notice when students are using critical thinking skills in project-based learning projects are 1) students become more active, 2) students are able to find ways/solutions in designing and implementing projects, 3) can provide reasons in answering questions and can conclude answers, and 4) students understand and listen enthusiastically.

#### Aspects of Teacher's Perception of Learning Outcomes

Teachers in assessing changes in student learning outcomes after applying project-based learning in teaching from teachers are in the number 4 (1-5) on the Linkert scale which is as much as 47.2%, this shows that project-based learning gives a positive change in learning.

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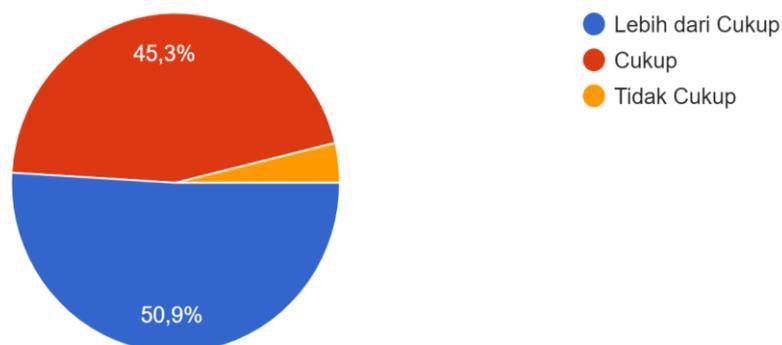


All teachers who filled out this questionnaire also 100% agreed that there was an improvement in students ability to analyze, solve problems, and think critically after implementing Project-Based Learning

#### Aspects of Support and Development

Based on the diagram of sufficient or not enough support provided by the school in implementing the project-based learning model found that 50.9% of teachers believe that the support from the school is more than enough and 45.3% of teachers feel enough support of the school. This shows that currently, the school is very concerned about the needs of teachers in implementing creative and innovative learning.

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The findings suggest that many teachers already receive specific training or assistance in developing teaching skills with Project-Based Learning. By attending independent training on the Merdeka Mengajar Platform, which has various features, making it easier for teachers to access and search for learning tools and others. There are also teachers who receive project-based learning materials through training that are attended independently or from PPG. From these experiences, teachers can develop skills to meet the learning needs of students. Now students can express their talents and interests and implement them in learning. But there are also teachers who have never received or attended training on learning by using project-based learning, so sometimes teachers still have difficulties in implementing Project-Based Learning

Several factors can affect the success of self-curriculum integration. These include teachers a comprehensive understanding of independent curriculum, school management support, infrastructure readiness, and the need to consider changes in learning practices and mindsets (Munthe, 2020). In addition, it is important to adjust the formulation of the objectives and learning outcomes of the self-curriculum to be more precise and measurable. Overcoming obstacles and challenges, such as efficient allocation of time and providing clear guidance in projects, is also important in ensuring successful implementation. Developing solutions and recommendations to overcome these obstacles can further support the implementation of self-curriculum.

#### Aspects Advice and Recommendations

Suggestions and recommendations from participating teachers for other teachers who want to start implementing Project-Based Learning models in their teaching are that teachers should pay attention to student readiness, student interests, student learning profiles/ student learning styles. It is better to first identify suitable material for learning in which there is a process of designing a project and creating a project. In addition, teachers must also prepare a mature learning plan and sufficient and relevant media. Another finding related to advice from teachers for other teachers is that if you are going to start a project for the first time, it is better to first look for a simple project that has a relationship with the material so that learners can more easily understand it so that it can be used as concrete learning learners. In addition, teachers also have to master the material so that the project can run smoothly be more mentally prepared, and expand learning including learning technology.

At the end of the interview, many teachers convey other things about their experiences with Project-Based Learning and students' critical thinking skills including:

1. It takes a spirit to be consistent in the implementation of Project-Based Learning in the classroom because it takes extra time and effort for teachers to prepare, but seeing the development of critical thinking skills of students who are growing, there is nothing wrong for teachers to apply in the classroom.

2. Project-based learners are not always able to make learners able to think critically. If learners do have low interest and talent in the lesson, they are also in implementing Project-Based Learning to be less than the maximum because it just completed the task of the teacher
3. The ability to think critically is not necessarily owned by students, we must grow it through learning that encourages students to grow their critical thinking ability

And there are many more impressions of teachers during the implementation of Project-Based Learning where all teachers find many memorable experiences during the learning process.

The Data obtained from the interviews showed that the teachers interviewed had integrated project-based learning (PBL) into their teaching methodology, which the researchers also corroborated in the teacher learning module. This fact is a positive indication of the effectiveness of PBL for student learning. When applying PBL, teachers must consider several factors, including student needs and curriculum requirements. The development of PBL materials should be based on a thorough analysis of student needs in order to facilitate effective learning outcomes. In addition, the material must be aligned with the curriculum and applicable to the student's future situation, thus equipping them with essential competencies for their future career.

Based on the findings of previous research on teacher perspectives (Sunarni & Karyono, 2023), the results of Interview-Based investigations show that the current curriculum has had a positive impact. In particular, this has increased creativity and professional growth among teachers, as well as the ability to create a more enjoyable and purposeful classroom environment. In addition, teachers are now better equipped to tailor their lessons to meet the specific needs of their students.

As teachers continue to hone their skills in implementing Project-Based Learning (Project-Based Learning), this educational approach is becoming increasingly important. By following Project-Based Learning, students are challenged to develop problem-solving abilities and strengthen themselves in the process.

Based on research conducted by Tetuko Adicondro and Indri Anugraheni in 2022, there was a significant increase in student learning outcomes. This improvement is seen after the application of problem-based learning and project-based learning methods.

## CONCLUSION

The results of this study indicate the perception of teachers when implementing Project-Based Learning. Teachers can use project-based learning methods in classroom learning. Project-Based Learning aims to get students actively involved in the learning process. The main purpose of a teacher in teaching is to make students critical in their learning. However, teachers still experience obstacles in using work-based learning. Teachers are still unsure whether they can distinguish this type of learning from other types of learning and there are still differences of opinion about the planning, implementation and assessment of learning in the 2013 curriculum and prototype program. As a preventive measure, the implementation of training programs using project-based learning programs should be possible without any problems. After that, teachers are expected to be more serious in the implementation of learning through the use of work-based learning because not only students who expect critical but also teachers are expected to be less good in learning activities. Further research should consider the implementation of Project-Based Learning Education in each region at the Sekolah penggerak and non-Sekolah penggerak.

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