



Improving Students' Critical Thinking Ability: Problem Based Learning (PBL) with Technological Pedagogical Content Knowledge (TPACK) Approach assisted by Video for Pancasila Education Subjects

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Abstract

This study aims to determine the effectiveness of the Problem-Based Learning (PBL) method with the Technological Pedagogical Content Knowledge (TPACK) approach with the help of Pancasila Education subject videos in improving students' critical thinking skills at the secondary education level. The research method used a quantitative approach with a nonequivalent control group design. The study population was all students at SMA Negeri 3 Ponorogo class XI totaling 50 students. Sampling was conducted using a simple random sampling technique. The data collection technique used in this study was data collection by test. The data analysis technique used inferential analysis techniques, namely the independent sample t-test. The results showed that the PBL learning model with a TPACK approach assisted by videos can improve critical thinking skills, namely 80.00 compared to the conventional learning model, namely 66.80.

Keywords: *Pancasila Education; Problem Based Learning; TPACK, Critical Thinking Skills; Video Media*

Introduction

1. Background of the Problem

Pancasila education has an important role in shaping the character, values, and morality of students in Indonesia (Nurgiansah, 2021). One important aspect that must be developed in the context of education is the ability to think critically. The ability to think critically is one of the core skills needed in facing the dynamic development of the times (Ulfa, Prasetyo, and Marzuki, 2018). However, conventional learning methods are often less able to encourage students to think critically actively and independently (Mardiani and Hermawan, 2020). Where, conventional learning lacks linking the concepts learned with real situations or applications in everyday life, so students find it difficult to see the relevance or importance of the understanding they gain. The impact of this characteristic is the lack of development of critical thinking skills which include the ability to analyze, evaluate, and make decisions independently (Mardiani and Hermawan, 2020). Conventional learning sometimes does not provide

sufficient opportunities for students to hone these skills effectively. Therefore, an innovative approach is needed in the learning process to improve students' critical thinking skills in Pancasila Education subjects.

One promising approach is Problem Based Learning (PBL) which combines the concept of Technological Pedagogical Content Knowledge (TPACK) with the use of video as a tool in active learning in learning. According to Levine in (Wells, Warelow, and Jackson, 2009) Problem Based Learning (PBL) is often referred to as a total approach to education and where the PBL process involves a systematic approach to solving problems or facing challenges encountered in real life situations. Meanwhile, TPACK considers the interaction between technology (such as the use of video) with content knowledge and appropriate learning strategies.

According to (Koehler, Mishra, and Cain, 2013) TPACK is a framework used in the context of education. It refers to a combination of three types of knowledge that are essential for a teacher according to (Koehler, Mishra, and Cain, 2013) namely 1) Content Knowledge is an in-depth understanding of the subject matter or content being taught. This includes knowledge of concepts, theories, facts, principles, and structures within a particular subject area, such as Pancasila Education. 2) Pedagogical Knowledge refers to an understanding of effective teaching methods. This includes teaching strategies, classroom organization, time management, how to deliver information, and evaluating student learning outcomes. 3) Technological Knowledge includes an understanding of the use of technology in learning. This includes an understanding of technology tools and platforms, as well as how technology can be used to enhance the learning experience.

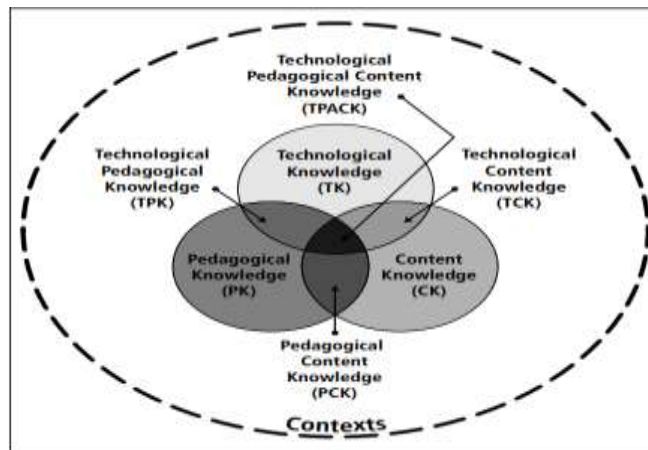


Figure 1. The TPACK Framework and Its Knowledge Components

TPACK emphasizes the importance of the integration of the three types of knowledge. A teacher who has good TPACK is able to integrate content, pedagogical and technological knowledge in a relevant and effective way in the learning process. In the context of research on improving students' critical thinking skills in Pancasila Education with a TPACK approach, teachers should be able to combine an understanding of Pancasila values (content knowledge), appropriate learning strategies (pedagogical knowledge), and the use of technology, such as the use of videos (technological knowledge), to create an appropriate and effective learning environment.

Some previous studies have shown that the use of technology can improve students' understanding of abstract concepts and increase their engagement in the learning process. Such as the research of (Ayunda, Kustiawan, and Erlin, 2022) showed that there was a very significant effect of the TPACK-based PBL model on improving students' higher-level thinking skills. Furthermore, research from (Prayogo, 2022) that the final results of learning show that the implementation of the Problem Based Learning learning model can improve learning outcomes in Civics subjects. Then, research by (Nasution and Radiansyah, 2023) that the application of a combination of PBL (Problem Based Learning) model, TGT, and TPACK approach can improve students' activities, critical thinking skills, and learning outcomes.

Based on this previous research, it shows that the TPACK-based Problem Based Learning learning model can improve students' critical thinking skills. However, research that focuses on the application of PBL with a video-assisted TPACK approach in the context of Pancasila Education is still limited. Therefore, this study aims to determine the effectiveness of PBL with TPACK approach using video as a tool in improving students' critical thinking skills in Pancasila Education subject. By integrating these elements in the learning process, it is expected to create a learning environment that facilitates the development of students' critical thinking skills significantly.

The urgency in this research is that with the advancement of technology, education must also develop. So the integration of technology in education allows students to be actively involved in interesting and effective learning. TPACK as a framework combining technology, pedagogy and content becomes relevant in addressing learning challenges in the digital era. So the implications of this research have the potential to make a significant contribution to the development of more effective learning methods in facilitating students' critical understanding of Pancasila. And the result of the implication is that the use of video-assisted TPACK approach-based learning model can be a foundation for the development of more innovative and effective curriculum and teaching methodology in other schools, not only for Pancasila subject but also in other learning contexts. In addition, the improvement of students' critical thinking skills is expected to have a positive impact on students' active participation in social life, society, and the state.

Research Methods

This study used a quantitative approach with a nonequivalent control group design. The population of this study were all students at SMA Negeri 3 Ponorogo. The sample in this study were 25 students of class XI A who were given the treatment of problem-based learning (PBL) with a video-assisted TPACK approach in the subject of Pancasila Education. And students from class XI C A totaling 25 people who became the control class or (non-treatment) in the subject of Pancasila Education. The total number of research samples was 50 people. The sampling technique that can be used in research is simple random sampling (Arieska and Herdiani, 2018). The data collection technique used in this study was a test. The data analysis technique used in this study is the inferential analysis technique used is the t test, namely the Independent Samples T-Test.

Discussion

Problem Based Learning (PBL) with Technological Pedagogical Content Knowledge (TPACK) approach and video assistance in Pancasila Education subject has been proven successful in improving students' critical thinking skills, which is reflected in the increase in students' average score. Problem Based Learning (PBL) is a learning approach that emphasizes problem solving and the application of concepts in a real-world context (Sungur et al., 2006). In PBL, students are invited to be actively involved in solving problems relevant to the subject matter (Houghton, 2023). This approach encourages students to develop critical thinking, collaboration, and communication skills in the face of real challenges (Boncukçu & Gök, 2023).

When PBL is combined with the Technological Pedagogical Content Knowledge (TPACK) approach, it considers the appropriate use of technology in the teaching of specific materials. In the context of Pancasila Education, the integration of TPACK enables the use of technology to convey complex values more effectively to students. In this case, video becomes one of the most useful tools because it is able to present content visually, attract students' attention, and clarify concepts that are difficult to understand. The use of videos in Pancasila learning can illustrate real situations, case examples, or history relevant to the values being taught. This visualization can help students to understand and internalize abstract concepts, such as the moral, ethical, justice, and democratic values

underlying Pancasila. Through the PBL learning model with a video-assisted TPACK approach, students are not only encouraged to understand the core concepts, but also invited to apply them in the context of everyday life. Thus, students not only learn about Pancasila as a theory, but also see how the values are relevant in their social, political and personal lives.

It can be seen from the results of the calculation using the t-test that the *Independent Samples Test* value in the *Equal variances assumed* section is known to be the *Sig value. (2-tailed)* of $0.000 < 0.05$, then as the basis for decision making in the *independent sample t test* it can be concluded that H_0 is rejected and H_a is accepted. Thus it can be concluded that there is an increase in critical thinking skills with the PBL learning model with the TPACK approach assisted by Vidio. The following is a table of t-test processing results:

Tabel 1. The t-test

Group Statistics										
model pembelajaran		N	Mean	Std. Deviation	Std. Error Mean					
Hasil berfikir kritis	PBL dengan Pendekatan TPACK Berbantuan Vidio	25	80,00	8,416	1,683					
	pembelajaran konvensional	25	66,80	11,169	2,234					

Independent Samples Test										
		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Hasil berfikir kritis	Equal variances assumed	3,745	,059	4,362	48	,000	12,200	2,797	8,576	17,824
	Equal variances not assumed			4,362	44,610	,000	12,200	2,797	4,565	17,835

Based on the results of the research and calculations, the results of the *posttest of the* experimental class and the control class there is a significant difference from the results of critical thinking after the t test. From the results of data processing, it can be seen that the average value of experimental class students is 80.00, while the control class only gets an average value of 66.80. This difference shows that students are better able to understand, apply, and analyze Pancasila concepts when invited to be actively involved in solving relevant problems and assisted by the use of technology, especially videos, as a learning tool.

In addition, PBL with the TPACK approach and video assistance can also help students develop critical thinking skills. In the context of Pancasila learning, students are invited to reflect on, analyze, and evaluate the values they learn, rather than simply recalling facts. By practicing these critical thinking skills, students become better able to construct arguments, assess information and make more rational decisions in their daily lives. Thus, PBL with the TPACK approach and video assistance as learning tools has proven that this method is effective in improving students' understanding, application, and critical thinking skills in Pancasila Education subjects, which is reflected in the significant increase in average scores.

Conclusion

The Problem Based Learning learning model with the TPACK approach assisted by video as a learning tool has proven to provide significant results in improving students' critical thinking skills in Pancasila Education subjects, as reflected in the increase in the average score of the experimental class 80.00 while the control class 66.80.

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