ISSN : 2962-9195 E-ISSN : 2963-8992

Journal of Educational Management Research
Vol. 04 No. 03 (2025) : 1111-1121
Available online at https://serambi.org/index.php/jemr

The Influence of the Management Problem-Based Learning Model with Pop-Up on the Cognitive Abilities

Firliya Dwi Saputri*, Jamilatun Nafiah
Universitas Al-Falah As-Sunniyah, Indonesia
Email : firliyadwi@gmail.com

DOI: https://doi.org/10.61987/jemr.v4i3.1018

Keywords:
Problem-Based Learning, Pop-Up Media, Cognitive Ability

****Corresponding Author***

ABSTRACT

The purpose of this study is to investigate the impact of the PBL model with Pop-Up media on cognitive abilities in madrasah. The background of this study is based on the low understanding of students towards the concept of citizenship and the dominance of the lecture method in learning. The study employed a quantitative approach with an experimental design, specifically a one-group pretest-posttest Design. The sample used 25 students. The research instrument was a 16-item questionnaire that had undergone validity and reliability tests. The results of the normality test showed that the data were normally distributed, and the Paired Sample T-Test showed a significant score of 0.000 < 0.05. This demonstrates a substantial impact of applying the PBL model with Pop-Up media on enhancing students' cognitive abilities. This study concludes that the combination of the PBL model and Pop-Up media is efficacious in improving student learning outcomes in the Pancasila Education subject. This study emphasizes the importance of innovative teaching methods, such as the PBL model with Pop-Up media, in enhancing students' cognitive abilities. For educational management, incorporating such methods can improve student engagement, promote critical thinking, and align teaching practices with contemporary pedagogical needs.

Article History:
Received: April 2025; Revised: May 2025; Accepted: July 2025

Please cite this article in APA style as:
Saputri, F. D., Nafiah, J. (2025). The Influence of the Management Problem-Based Learning Model with Pop-Up on the Cognitive Abilities. *Journal of Educational Management Research, 4*(3), 1111-1121.

INTRODUCTION

Education in Indonesia has a broader goal than simply transferring knowledge. Its primary focus is the formation of national character and identity (Rasyid et al., 2024). In this context, Pancasila education in elementary schools or Madrasah Ibtidaiyah (MI) plays a crucial role, as students are introduced to the fundamental values of national and state life from an early age. Pancasila values, such as devotion to God Almighty, mutual respect for others, love of the homeland, participation in deliberation, and fairness, are taught through simple activities that can be implemented in everyday life. This is supported by Sianturi

& Dewi (2021), who stated that Pancasila values need to be fully integrated into life, not only in laws and regulations, but also through concrete daily actions. Examples are seen in the habit of praying in congregation, sharing with friends, doing class duty, and following school rules.

However, the reality on the ground shows that students' understanding of the concept of citizenship is still relatively low. Based on direct observations in grade III of MI Bustanul Ulum 06, only 40% of 25 students were able to correctly explain the rights and obligations of citizens. This finding is reinforced by Susi Rahmawati (2022), who stated that 60% of elementary school students still experience difficulties in understanding the basic concept of citizenship, one of the reasons being the lack of varied learning methods. This indicates the need for different, even contextual, learning approaches so that students can understand Civics lessons more deeply, meaningfully, and relevantly to their lives.

At the Madrasah Ibtidaiyah (Islamic elementary school) level, material mastery should be tailored to students' cognitive abilities to avoid overburdening them. Based on Piaget's cognitive development theory, elementary school-aged children are at the concrete operational level, where they can think rationally about real objects, but still struggle to understand abstract concepts (Rosyadi et al., 2021; Imanulhaq & Ichsan, 2022; Falah et a., 2023). Therefore, engaging learning models based on real-life experiences are essential. However, observations in grade III of MI Bustanul Ulum 06 show that the learning process is still dominated by lectures without interactive variations. A questionnaire showed that 75% of students felt less interested, and 50% lacked enthusiasm for participating in lessons. This situation indicates a gap between the ideal learning approach according to student development theory and learning practices in the field.

Previous research, such as that by Noviati et al. (2023), has recommended that the learning process should be interactive, enjoyable, and provide space for student creativity and independence. Furthermore, the Problem-Based Learning (PBL) model, as explained by Suswati (2021), has been proven effective in helping students think critically in solving problems. The use of Pop-Up media has also been shown to increase appeal, clarify concepts, and facilitate student visual understanding. However, there is little research specifically examining the effectiveness of combining the PBL model with Pop-Up media to support students' cognitive abilities in Pancasila Education learning at the Madrasah Ibtidaiyah level. This gap underlies the need for this research.

In addition to these methods, the effective management of the PBL model with Pop-Up media is essential for creating an engaging and productive learning environment. Managing this approach involves structuring activities that require

students to actively engage with the learning content, encourage collaborative problem-solving, and integrate visual aids such as Pop-Up media to clarify abstract concepts. Effective classroom management strategies, such as clear instructions, well-defined roles within groups, and ongoing assessments, will play a crucial role in facilitating the success of this model. By carefully managing these elements, teachers can enhance the learning experience and ensure that students not only comprehend Pancasila concepts but also apply them meaningfully in their lives.

The purpose of this research is to improve students' cognitive abilities in Pancasila Education through the PBL model with the aid of Pop-Up media. This combination, when effectively managed, is expected to encourage students to actively understand concepts and apply Pancasila values in their daily lives. Pancasila Education emphasizes not only theoretical mastery but also character building. Therefore, effective learning methods and their management are needed to motivate students, encourage critical thinking, and develop intelligence and character.

RESEARCH METHOD

The method in this research is quantitative with a one-group pretest-posttest Design experiment.(Sugiyono, 1967). Implemented at MI Bustanul Ulum 06 Gumukmas-Krebet. The sample used was sufficient from one class sample, namely the entire third grade, with a population of 25 students, including 12 male students and 13 female students. This study was carried out for 4 weeks/1 month, namely from September 26 to October 26, 2024. In this case, before the researcher implemented the learning model, students were given a pre-test (initial test) to measure cognitive abilities related to Pancasila Education material, especially on the topic of the rights and obligations of citizens. Furthermore, the PBL model was implemented and supported by interactive Pop-Up media during the learning process (treatment). After the treatment was given, students were again given a post-test (final test) to measure changes in their cognitive skills. Regarding the structure of the One Group Pretest-Posttest Design research design, the following can be shown in the Table 1.

Table 1. One Group Pretest-Posttest Design Scheme

Class	Pretest	Treatment	Posttest
Experiment	O1	X	O2

Information;
O1: Initial test (Pretest)
O2: Final test (Posttest)
X: Action (Treatment)

In this study, a hypothesis was formulated to test the effect of the application of the PBL model with pop-up media on the cognitive abilities of third-grade students of MI Bustanul Ulum 06 in the Pancasila Education subject. Hypothesis Ho states that there is no significant difference between the average pretest score and the average posttest score of students' cognitive abilities after the application of the PBL model with pop-up media, which means that the treatment does not have a significant effect. On the other hand, hypothesis Ha states that there is a difference between the average pretest and posttest scores, which shows that the PBL model with this media affects increasing students' cognitive abilities.

According to this research, the test criteria are as follows: if the significance score (sig.) > 0.05, then Ho is accepted and Ha is rejected, meaning there is no significant difference between the two teams being compared. Conversely, if the significance score (sig.) < 0.05, then Ho is rejected and Ha is accepted, meaning there is a difference between the two teams. The data collection technique consisted of pretests and posttests presented in questionnaire form, utilizing a Likert scale. For analysis of learning outcome data, a t-test was applied, as data collection was conducted twice: before and after treatment. This data analysis was conducted to identify any differences between the results before and after treatment. This data analysis technique includes validity test, reliability test, normality test, and Paired Sample t-test.

Validity test is used to assess whether the questionnaire items used measure the intended cognitive ability aspects. Then it is also used to correct the value of each item with the total value, and the questionnaire item is declared valid if the calculated r-score> the r table. Next, a reliability test is run using the Cronbach's Alpha formula to see the consistency of the instrument; the instrument is said to be reliable if the alpha score > r table. Good validity and reliability ensure that the collected data are trustworthy and worthy of further analysis. A normality test is carried out to see whether the pretest results of this posttest material are normally distributed. After meeting the normality requirements, the data are analyzed using a paired sample t-test to determine whether there is a significant effect of the application of the PBL model with Pop-Up media on students' cognitive abilities in the Pancasila Education subject at MI Bustanul Ulum 06.

RESULT AND DISCUSSION

Result

Instrument Integrity: Ensuring Valid Assessment in PBL-Pop-Up Learning

Before analyzing the influence of the PBL model with Pop-Up media on students' cognitive skills, the first step was to test the instrument's validity. The

goal was to identify the extent to which the questionnaire items in the instrument measured what they were supposed to measure, in this case, students' cognitive skills related to Pancasila Education material. The following data from the validity test of the instrument used in this study:

Table 1. Validity Test

rxy	rxy > r_t	r table	Information
0.511	>	0.3961	Valid
0.613	>	0.3961	Valid
0.708	>	0.3961	Valid
0.459	>	0.3961	Valid
0.480	>	0.3961	Valid
0.546	>	0.3961	Valid
0.376	<	0.3961	Invalid (because it has a negative value)
0.445	>	0.3961	Valid
0.475	>	0.3961	Valid
0.498	>	0.3961	Valid
0.371	<	0.3961	Invalid (because it has a negative value)
0.428	>	0.3961	Valid
0.393	<	0.3961	Invalid (because it has a negative value)
0.342	<	0.3961	Invalid (because it has a negative value)
0.586	>	0.3961	Valid
0.746	>	0.3961	Valid
0.756	>	0.3961	Valid
0.746	>	0.3961	Valid
0.575	>	0.3961	Valid
0.469	>	0.3961	Valid

Based on the results of the instrument validity test, it was found that out of 20 questionnaire items developed to measure students' cognitive abilities in the Pancasila subject, 16 items were declared valid. This conclusion was drawn from the SPSS analysis, which showed that the r-calculated values of these 16 items exceeded the r-table value of 0.3961. This indicates that the items were appropriately measuring the intended cognitive constructs. Meanwhile, 4 items were considered invalid because their r-calculated values were lower than the threshold; thus, they were excluded from further analysis to ensure the accuracy and reliability of the research instrument.

Empirical Proof: Enhancing Cognitive Outcomes through Pop-Up Learning

After the 16 questions were declared valid through a validity test, the researchers then proceeded to conduct a reliability test on the instrument. The purpose of the reliability test is to determine the extent to which the instrument delivers results. In this study, reliability was assessed on the 16 questions that

had previously been declared valid. The testing process was conducted using the SPSS application using the Cronbach's Alpha technique. The results of the reliability test are presented in the following Table 2.

Table 2. Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
,858	**16**

From the output results above, the alpha score is 0.858 when compared with the r table score, namely in total N = 25, then the r table is 0.396, so it can be concluded that the overall alpha = 0.858, > r table = 0.396 that the question item is said to be reliable or can be trusted.

Researchers also conducted a normality test on the pre-test and post-test results of third-grade students. This normality test was carried out to determine whether the data were normal or not using the Kolmogorov-Smirnov normality test. If the sig score > 0.05 is considered normal, while if the sig score < 0.05 is considered abnormal:

Table 3. Pretest Posttest Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		25
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	2,90314342
Most Extreme Differences	Absolute	,131
	Positive	,131
	Negative	-,115
Test Statistic		,131
Asymp. Sig. (2-tailed)		,200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

Based on the researcher's output, a sig score of 0.200 > 0.05 indicates that the tested sample data is normally distributed. After the researcher completed the three prerequisite tests, the next step was to conduct a paired sample t-test. This test aims to compare the means of two paired samples. Hypothesis testing was conducted using the SPSS application, with a significance level of 0.05. The following are the results of the paired sample t-test:

Table 4. Paired Sample T-Test Results of Learning Outcomes

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest - Postest	-4,526	3,454	,792	-6,191	-2,862	-5,712	18	,000

According to the table above, the score (Sig. 2-tailed) is 0.000 < 0.05. Therefore, H_0 is rejected and H_a is accepted. This shows that there is an influence of the use of the PBL model with Pop-Up media on students' cognitive abilities in Pancasila Education lessons for class III MI Bustanul Ulum 06. This research was conducted in the even semester of the 2024/2025 academic year in grade III of MI Bustanul Ulum 06, Krebet–Gumukmas. The focus of this study was to evaluate the effectiveness of the use of the PBL model with pop-up media in improving students' cognitive skills in the Pancasila Education subject. In its implementation, students were given a pretest first to measure their initial skills before the next treatment, namely learning using the PBL model with Pop-Up media.

Discussion

The Problem-Based Learning (PBL) model is a learning approach that focuses on active student involvement in solving real-world problems. PBL is designed to foster critical and collaborative thinking skills, encouraging students to understand and solve problems they frequently encounter. In the context of Pancasila Education, the PBL model encourages active learning by first confronting students with problems. Through this process, students explore the material and discover understanding before receiving explanations from the teacher. According to constructivist theory, students construct knowledge through active learning experiences (Hefniy et al., 2025; Wahyu et al., 2025).

In the article by Masgumelar (2021), it is explained that constructivist learning focuses on the active role of students in creating their understanding, where students do not just receive explanations from the teacher, but also participate in the process of analysis and even reflection on the knowledge they have acquired. According to Lubis et al. (2024), to teach with this approach, focus more on students so that they have the opportunity to learn independently about the subject matter being taught. The PBL model, as a teaching approach that emphasizes problem-solving through projects or real-life situations, provides opportunities for students to recognize, evaluate, and resolve moral and social issues in the context of Pancasila Education.

Problem-Based Learning (PBL) using Pop-Up media can be an innovative strategy to increase student engagement in learning. Pop-Up media is an attractive visual media in the form of a prop with three-dimensional elements that can appear when opened, making it easier for students to understand, especially those in elementary school who are still at the concrete operational level based on Piaget's theory (Fransiska et al., 2024)This media serves to illustrate concepts in Pancasila education, thereby helping students better understand the content of Pancasila Education learning.

Before being implemented, the researcher first compiled a 20-item questionnaire to measure student learning outcomes. However, after going through the validity and reliability testing stages, only 16 questionnaire items were declared suitable for use as data collection instruments. The questionnaire items were used in pretests and even posttests to see differences in learning outcomes before and after treatment. After students were given treatment such as learning through the PBL model with Pop-Up media, a posttest was conducted to determine whether there were changes in students' cognitive abilities from their learning outcomes. The results of the normality test showed that both pretest and posttest data were normally distributed, with a sig score of 0.200, which is > 0.05. Furthermore, the hypothesis test using the Paired Sample T-Test showed a significance score of 0.000, < 0.05. This shows that there is a significant difference between student learning outcomes before and after the application of the PBL model using Pop-Up media.

These findings reinforce the theory that the PBL model can improve students' cognitive problem-solving skills because students are actively involved in the teaching and learning process, which demands analytical and exploratory thinking. Meanwhile, Pop-Up media acts as an effective visual aid, supporting students' understanding of Pancasila Education lessons. The combination of a problem-based learning model and visually appealing Pop-Up media provides more optimal results compared to conventional methods that are one-way and teacher-centered. This is reinforced by the results of a study from Desvian et al. (2025), who found that the PBL model can support students' cognitive problem-solving skills by encouraging active engagement and critical thinking. The combination of PBL and visual media creates a dynamic learning environment, superior to passive methods. Therefore, implementing PBL with Pop-Up media is highly recommended to support educational quality.

The uniqueness of this study lies in the application of the PBL model combined with Pop-Up media in Pancasila Education learning at the elementary school level. Although the PBL model has been widely studied and even guaranteed to be effective in supporting students' cognitive abilities and problem-solving at various levels of education, its application in the context of Pancasila Education subjects with the help of Pop-Up media is still very rarely studied. Meanwhile, MI students are at the concrete operational development stage based on Piaget's theory, where they require the help of concrete, visual, and interactive media to be able to understand the material optimally. Pop-Up media provides an interesting learning experience because it presents material in a three-dimensional form, so it can attract students' attention and activate their thinking processes. With this approach, students' cognitive abilities can develop, especially in terms of understanding, connecting, and applying the abstract

values of Pancasila in everyday life. Therefore, this study is important to be conducted as a contribution to the development of learning methods that are not only enjoyable, but also effective in developing students' cognitive skills as a whole.

CONCLUSION

Based on the results of data analysis and discussion in the research findings conducted in class III of MI Bustanul Ulum 06 Gumukmas-Krebet, it can be concluded that the application of the PBL model combined with Pop-Up media has a significant effect on improving students' cognitive abilities in the Pancasila Education subject. The results of the paired sample t-test showed a sig score of 0.000 <0.05, which means there is a difference between the students' pretest and posttest scores after the learning model was implemented. This finding answers the research objective, which is to determine the effectiveness of the PBL model with Pop-Up media in supporting students' cognitive learning outcomes, and shows novelty in combining problem-based learning approaches with interactive visual media, which is proven to be able to stimulate conceptual understanding and active student involvement during the learning process.

In the results of this study, it is recommended for subsequent researchers to develop the use of Pop-Up media in combination with other innovative learning models to see its influence on students' affective and psychomotor aspects, as well as try to apply it to different levels and even subjects to enrich insights into the implementation of interesting and effective learning media in elementary education environments.

REFERENCES

Desvian, A. R., Santoso, A. M., & Utami, A. D. (2025). Implementation of Problem-Based Learning (PBL) model using Pop-Up book media to improve the learning outcomes of Pancasila Education of grade II students. *Journal of Educational Research, 1*(1), 1–10.

Falah, M. R. F., Wibowo, A., & Kumala, S. A. (2023). Communication in Pesantren Educational Institutions: The Application of Social Cognitive Theory in Understanding Social Interaction in The Pesantren Environment. *Mapendis: Jurnal Manajemen Pendidikan Islam*, *1*(2), 18-28.

Fransiska, K. A. W., Suarni, N. K., & Margunayasa, I. G. (2024). Students' cognitive development in the use of digital learning media reviewed from Jean Piaget's theory: A systematic literature review. *Ideguru: Journal of Teacher Scientific Work, 9*(2), 466–471. https://doi.org/10.51169/ideguru.v9i2.839

Hefniy, H., Azizah, N., Zahro, F., Tohet, M., & Widat, F. (2025). Assistance in the Use of YouTube Kids as a Creative Learning Resource for Educators and Education Staff. *Communautaire: Journal of Community Service*, *4*(1), 14-24.

Imanulhaq, R., & Ichsan, I. (2022). Analysis of Piaget's cognitive development theory in children of concrete operational age 7-12 years as a basis for learning media needs. *Waniambey: Journal of Islamic Education, 3*(2), 126–134. https://doi.org/10.53837/waniambey.v3i2.174

Lubis, H., Tumanggor, C. N., Fazariah, H., Yana, L., Nababan, & Ginting, S. S. B. (2024). The use of Problem-Based Learning models in improving mathematics learning outcomes in linear program material. *Journal of Mathematics Education, 4*(1), 174–182.

Masgumelar, N. K., & Mustafa, P. S. (2021). Constructivist learning theory and its implications in education. *GHAITSA: Islamic Education Journal, 2*(1), 49–57. https://doi.org/10.62159/ghaitsa.v2i1.188

Noviati, W., Syafruddin, & Ramdhayani, E. (2023). Project-Based Learning (PjBL) in biotechnology learning on students' process skills. *Journal of the Teaching Profession, 9*(3), 275–280.

Nurwahidin, M., Perdana, D. R., Mustakim, E., Izzatika, A., & Aulia, F. N. (2023). Obstacles in implementing Pancasila values in the era of Society 5.0 among the millennial generation. *Scientific Journal of Bina Edukasi, 16*(2), 167–173. https://doi.org/10.33557/jedukasi.v16i2.2863

Rasyid, R., Fajri, M. N., Wihda, K., Ihwan, M. Z. M., & Agus, M. F. (2024). The importance of character education in the world of education. *Basicedu Journal, 8*(2), 1278–1285. https://doi.org/10.31004/basicedu.v8i2.7355

Rosyadi, B. R., & Asiya, D. (2021). Inclusive Education Management in the Development of Cognitive Intelligence of Children. *Al-Ishlah: Jurnal Pendidikan*, *13*(2), 1057-1067.

Salsabila Samsyah, N. K., & Dheasari, A. E. (2022). Improving the cognitive abilities of 5-6 year old children through color guessing media at Abatatsa Kindergarten, Pasuruan. *Incrementapedia: Journal of Early Childhood Education, 4*(2), 47–55. https://doi.org/10.36456/incrementapedia.vol4.no2.a6544

Sianturi, Y. R. U., & Dewi, D. A. (2021). The application of Pancasila values in daily life and as character education. *Journal of Citizenship, 5*(1), 222–231. https://doi.org/10.31316/jk.v5i1.1452

Sugiyono. (1967). *Quantitative, qualitative, and R&D research methods*. CV Alvabeta.

Susi Rahmawati. (2022). Improving student learning outcomes in citizenship education (PKN) learning using the sociodrama method in grade IV of SDN 06 Suman, District X Koto Singkarak.

Suswati, U. (2021). Implementation of Problem-Based Learning (PBL) to improve chemistry learning outcomes. *Teaching: Journal of Teacher Innovation and Educational Sciences, 1*(3), 127–136. https://doi.org/10.51878/teaching.v1i3.444

Umam, H. I., & Jiddiyyah, S. H. (2020). The effect of project-based learning on scientific creative thinking skills as one of the 21st-century skills. *Basicedu Journal*, *5*(1), 350–356. https://doi.org/10.31004/basicedu.v5i1.645

Wahyu, Mustajab, Azaroh, S., & Baharun, H. (2025). Implementasi Model Problem Based Learning untuk Meningkatkan Hasil Belajar Siswa pada Materi Larangan Mengkonsumsi Minuman Keras. *Journal of Pedagogical and Teacher Professional Development*, *2*(1), 122–139. https://doi.org/10.35719/jptpd.v2i1.115