# The Influence Of Learning Models *Problem Based Learning* (Pbl) On Geography Student Learning Outcomes

Muhammad Agung Amrullah
PGRI Kanjuruhan University, Malang
Geography Education
Malang City, Indonesia
email: agungamrullah728@gmail.com

Suwito
PGRI Kanjuruhan University, Malang
Geography Education
Malang City, Indonesia
email: suwito@unikama.ac.id

Yuli Ifana Sari
PGRI Kanjuruhan University, Malang
Geography Education
Malang City, Indonesia
email: ifana@unikama.ac.id

***Abstract—*** This research aims to determine the effect of the Problem Based Learning (PBL) learning model on student learning outcomes in the Geography subject. The background to this research is the low level of student involvement and learning outcomes in conventional one-way learning. The PBL model offers a student-centered learning approach through real problem solving as a means of building knowledge. This research uses quantitative methods with a quasi-experimental design. The research subjects consisted of two classes X at Diponegoro Wagir Islamic High School, namely the experimental class with 28 students and the control class with 27 students. The instrument used is a learning outcomes test in the form of multiple choices. The results of the analysis show that there is a significant difference between the learning outcomes of students who use the PBL model and students who use conventional learning. The average student score in the experimental class was higher than the control class. This proves that the PBL model is able to improve student learning outcomes significantly. Thus, PBL can be recommended as an alternative learning model in teaching geography to improve the quality of learning at the high school level.

***Keywords-*** Problem Based Learning, learning outcomes, geography, high school students.

## I. INTRODUCTION

Education is an important pillar in forming an intelligent and characterful generation of the nation. In this modern era, education is required to be adaptive to developments in science and technology. In this case, the learning process in schools must be able to answer students' needs for 21st century skills. The right learning model will help students develop critical, creative and collaborative thinking skills. Therefore, learning innovation is a necessity at every level of education (Chen & Wang, 2022).

According to Tan & Hwang (2022), geography as a subject in high school has a major contribution in shaping students' understanding of the living environment and spatial dynamics. Students are expected to be able to understand geographical phenomena and analyze the relationship between humans and their environment. Learning geography not only requires memorizing concepts, but also contextual understanding of local and global issues. This is where an active and meaningful learning approach is important. One learning model that supports this is Problem Based Learning (PBL) (Prayoga et al, 2024).

Problem Based Learning (PBL) is a learning model that is student-centered and oriented towards solving real problems. In PBL, students are challenged to identify, analyze, and find solutions to problems that are relevant to their lives. The teacher acts as a facilitator who accompanies the student exploration and discussion process. PBL not only emphasizes results, but also the thought process that students go through in solving problems. With this approach, students learn actively, collaboratively and reflectively (Hasanah et al, 2023).

At Diponegoro Wagir Islamic High School, the implementation of geography learning is still dominated by lecture methods and written assignments. According to Lopez & Hernandez (2025), this causes some students to feel less interested and not understand the material in depth. Student activity in learning is not yet optimal. Based on initial observations, it was found that students' conceptual understanding of geography material had not reached maximum results. Therefore, a change in learning approach is needed that is more interactive and student-centered.

The PBL model is believed to be able to answer these challenges because it encourages students to think critically, work together, and be directly involved in the learning process. In the context of geography learning, PBL is very relevant because many topics relate to environmental, social and spatial issues. For example, in discussing environmental damage, students can be invited to analyze real cases around them. This process will increase student engagement and depth of understanding. Learning outcomes are also expected to be more meaningful and sustainable (Ahmed & Kumar, 2024).

Student learning outcomes are an important indicator in assessing the success of a learning process. According to Anggela et al (2021) explain that learning outcomes do not only include cognitive aspects, but also affective and psychomotor. With PBL, students not only gain new knowledge, but also develop attitudes and skills. The learning process becomes more fun and challenging. Thus, student learning outcomes can improve overall.

Student learning motivation is also an important aspect that can be improved through the implementation of PBL. When students feel that the problems being discussed are relevant to their lives, the desire to learn will grow by itself. PBL provides opportunities for students to express ideas, discuss, and take responsibility for their own learning. This creates a dynamic and participatory classroom atmosphere. As a result, students will be more enthusiastic in taking geography lessons (Momang et al, 2023).

Diponegoro Wagir Islamic High School as a private educational institution in Malang Regency continues to strive to improve the quality of learning. One of the strategies implemented is through innovative learning models that suit the characteristics of students and subjects. According to Nguyen & Tran (2021), the use of PBL is an interesting alternative in learning geography at this school. Through this approach, students are invited to more actively explore geographical phenomena around them. The hope is that the quality of student learning outcomes can improve significantly.

Apart from improving learning outcomes, PBL also provides space for developing students' soft skills. Communication skills, teamwork and responsibility can be developed through group discussions and presentation of problem solving results. This is very important in preparing students to face real life challenges. PBL not only emphasizes mastery of material, but also on character formation. Education has also become more holistic and future-oriented (Khotimah et al, 2022).

However, implementing PBL also faces various challenges. These include teacher readiness, time availability, and adequate learning facilities. According to Amanda et al (2024) explain that teachers must have a deep understanding of PBL principles and be able to design problems that are appropriate to learning outcomes. Students also need to be accustomed to more independent and collaborative learning patterns. Therefore, the implementation of PBL must be carried out in stages and in a structured manner.

In implementing PBL, the teacher's role as a facilitator determines the success of learning. Teachers must be able to direct discussions, motivate students, and provide relevant learning resources. Apart from that, teachers also need to assess the learning process and outcomes as a whole. Assessment in PBL is not only in the form of written tests, but also observations, portfolios and presentations. With proper assessment, student development can be monitored comprehensively (Brown & Davis, 2022).

A number of previous studies have shown that PBL is effective in improving learning outcomes in various subjects. According to Nursyahbana et al (2023), they explain that in a geographic context, PBL is able to strengthen conceptual understanding, encourage spatial thinking skills, and foster awareness of the environment. These findings indicate that PBL is feasible to be applied in geography learning at the high school level. However, research in local contexts such as at Diponegoro Wagir Islamic High School is still limited. This is an important basis for conducting further studies.

This research aims to determine the influence of the PBL learning model on the learning outcomes of geography students at Diponegoro Wagir Islamic High School. The main focus of the research is to compare the learning outcomes of students who use PBL with students who use conventional models. Apart from that, this research will also explore how students respond to the implementation of PBL. Thus, the research results can provide an empirical picture of the effectiveness of this model. These findings will be taken into consideration by teachers in designing learning.

The benefit of this research is that it contributes to the development of more effective geography learning practices. For teachers, the results of this research can be a reference in choosing an appropriate learning model. For schools, this research provides input for improving the quality of learning in general. For students, implementing PBL is expected to increase their interest, motivation and learning outcomes. Academically, this research adds to the body of studies on innovative learning in secondary education environments.

Theoretically, this research strengthens the foundation that active and student-centered learning can increase academic achievement. This is in line with constructivism theory which emphasizes the importance of students' active involvement in the learning process. PBL as a form of implementation of this theory has been proven to improve the quality of learning. In the local context, this approach needs to be tested to see its suitability for the characteristics of students at Diponegoro Wagir Islamic High School. That way, learning can be more effective and contextual (Amanda et al, 2024).

According to Khan & Ali (2023) explain that PBL also supports the implementation of the Independent Curriculum which emphasizes project-based and contextual learning. Through PBL, students learn in a way that is more independent, meaningful, and according to their interests. This supports the school's efforts to implement the curriculum optimally. This approach also trains students to become lifelong learners. Thus, the implementation of PBL has strong relevance within the national education policy framework.

Local geographic issues such as floods, drought and land use in the Wagir area can be a source of problems in PBL-based learning. Students are invited to study real problems that exist in the surrounding environment. This makes learning more contextual and grounded. As well as strengthening the relationship between subject matter and the social realities faced by students. Thus, learning becomes more relevant and applicable (Smith & Lee, 2021).

In implementing PBL, evaluation is an important part to see the effect on student learning outcomes. According to Garcia & Thompson (2023) explain that evaluation is carried out by comparing student test results before and after implementing PBL. Apart from that, observations of learning activities and student response questionnaires were also used to complete the data. With a comprehensive evaluative approach, research results are expected to be accurate and accountable. This data is the basis for drawing conclusions and recommendations.

Based on the description above, the aim of writing this article is to determine the influence of the Problem Based Learning (PBL) learning model on the learning outcomes of geography students at Diponegoro Wagir Islamic High School. This article was prepared to analyze whether the application of PBL can improve students' conceptual understanding, active involvement, and academic achievement in geography subjects. Apart from that, this article aims to provide a reference for teachers and schools in choosing a learning model that suits the characteristics of the subject and the needs of students. By understanding the positive impact of PBL, it is hoped that educators can implement a more contextual and student-centered learning approach. The final aim of this writing is to contribute to improving the quality of geography learning to be more innovative and effective.

## II. RESEARCH METHODS

This research uses a quantitative approach with a quasi-experimental method (*like an experiment*). The research design used is *nonequivalent control group design*, namely two groups of students who were not chosen randomly, but have relatively equal characteristics. The experimental group consisted of 28 class X students who were given treatment in the form of learning using the Problem Based Learning (PBL) model, while the control group consisted of 27 class X students who took part in conventional geography learning. The main instrument used in this research is a multiple choice learning outcomes test which has been tested for validity, reliability, level of difficulty and distinguishing power. The research was carried out at Diponegoro Wagir Islamic High School for four meetings according to the time allocated for geography subjects.

Before and after treatment, both groups were given a pretest and posttest to measure learning outcomes. The data collected was analyzed using descriptive statistics to determine the average value, standard deviation, and increase in learning scores. Next, a test is used *independent sample t-test* to find out whether there is a significant difference between student learning outcomes in the experimental class and the control class. The following table presents the distribution of the number of students in each group:

| Group | Number of Students | Learning model |
|---|---|---|
| Experimental Class | 28 students | Problem Based Learning (PBL) |
| Control Class | 27 students | Conventional Learning |

The table above shows that the total research subjects were 55 students who were divided into two classes with different treatments. The data in this table is the basis for making decisions regarding the effectiveness of the PBL learning model on student geography learning outcomes.

## III. RESULTS

This research aims to determine the effect of the Problem Based Learning (PBL) learning model on the geography learning outcomes of class X students at Diponegoro Wagir Islamic High School. Data was obtained from the results of the pretest and posttest given to two groups, namely the experimental class and the control class. Based on the results of data analysis, it is known

that the average pretest scores for the two groups are relatively balanced, but there are significant differences in the posttest results. This shows an increase in learning outcomes after different treatments were carried out in each class. The following table presents the average results of the pretest and posttest for the two groups.

**Table 1. Research Results**

| Group | Number of Students | Pretest rate | Posttest rate | Difference (Gain) |
|---|---|---|---|---|
| Experimental Class | 28 students | 62,1 | 83,4 | 21,3 |
| Control Class | 27 students | 61,5 | 74,2 | 12,7 |

From the table above, it can be seen that the average pretest score for experimental class students was 62.1 and increased to 83.4 during the posttest. Meanwhile, the control class experienced an increase from 61.5 to 74.2. The gain value (difference between pretest and posttest) in the experimental class was higher, namely 21.3 compared to the control class which was only 12.7. This shows that the use of the Problem Based Learning (PBL) model is more effective in improving student learning outcomes compared to conventional learning. This increase occurred because students in the experimental class were more active in solving problems and participating in the learning process.

To find out whether the difference in improvement in learning outcomes between the two groups was significant, a statistical test was carried out *independent sample t-test*. The test results show that the significance value (p-value) is <0.05, which means there is a significant difference between the learning outcomes of students taught using the PBL model and students taught conventionally. Thus, it can be concluded that the Problem Based Learning learning model provides a positive and significant influence on improving student geography learning outcomes. These results also support findings from various previous studies which show that PBL encourages students' deeper cognitive involvement in the learning process. Therefore, this model deserves to be applied more widely in geography learning at the high school level.

## IV. DISCUSSION

The Problem Based Learning (PBL) learning model has been proven to have a positive influence on students' geography learning outcomes. Students become more active in finding and solving problems independently. More challenging learning activities make students more cognitively engaged. The critical thinking process developed in PBL helps students understand concepts in more depth. Student activity in learning is an important factor in improving learning outcomes.

Students in the experimental class showed high enthusiasm during the learning process. They are used to asking questions and discussing with peers. Interaction between students is more dynamic because it is driven by problematic tasks. The teacher acts as a facilitator, not the only source of information. This situation creates a more open and creative learning atmosphere.

The application of PBL allows students to develop higher level thinking abilities. Activities such as analysis, synthesis and evaluation become part of daily learning. As a result, students not only memorize the material, but also understand and apply it in real contexts. This can be seen from the significant increase in posttest scores in the experimental class. This model encourages experience-based learning and reflection.

Learning geography requires an understanding of spatial concepts and relationships between phenomena. PBL provides a space for students to explore geographic issues in depth. This process helps them relate concepts to everyday life. The understanding gained becomes more contextual and applicable. Learning outcomes increase because students better understand the importance of the material being studied.

The t-test results which show significance between the experimental and control classes support the research hypothesis. A low significance value indicates that the difference is not caused by chance factors. The improvements that occur are truly the impact of using the PBL learning model. This strengthens the belief that the model is worthy of wider implementation. Geography teachers can consider PBL as an innovative learning alternative.

The control class using conventional methods showed a lower increase. Conventional methods tend to focus on lectures and memorization. Student involvement becomes passive and only listens to the teacher's explanation. Lack of interaction makes students less likely to understand concepts in depth. This has an impact on the posttest results which are not as high as the experimental class.

Improving learning outcomes is not only related to material, but also process. Students who are actively involved in the learning process will understand the material more easily. PBL provides learning experiences that trigger full student engagement. Learning becomes more interesting and meaningful. This condition creates increased motivation and academic achievement.

Motivation to learn in PBL arises because students feel they have control over the learning process. They are involved in determining the direction of solving the problem. Independence and sense of responsibility increase as learning progresses. Students become more confident in expressing opinions. This process fosters curiosity and enthusiasm for learning.

Learning independence is one of the important aspects developed through PBL. Students are accustomed to seeking information from various sources. Literacy skills increase because they don't just rely on textbooks. Information search activities strengthen lifelong learning skills. This ability is very much needed in facing future challenges.

The PBL model also helps students develop cooperation in groups. Problem-based assignments require them to discuss with each other and contribute ideas. Group dynamics are part of a learning process that is rich in meaning. Shared responsibility makes students learn to respect other people's opinions. Social values are developed along with the academic process.

Students' communication skills improve because they are used to expressing opinions. Group discussions provide a space to practice speaking and listening skills. PBL provides a safe environment for expression. Students become more open and reflective of other people's ideas. This situation supports the development of students' social competence.

The results of this research also show that innovative learning can increase teaching effectiveness. Innovation in learning methods is important to adapt to the characteristics of today's students. Students tend to be more interested in learning that is challenging and relevant. PBL answers these needs with a real problem-based approach. Teachers must be able to adapt to these developments.

The Merdeka Curriculum which emphasizes differentiated learning is in line with PBL principles. Both of these approaches place students as active subjects of learning. Students' needs and potential are the main considerations in the learning process. PBL provides opportunities for students to learn according to their individual styles. Learning becomes more fair and meaningful.

Implementing PBL requires teacher readiness from a pedagogical and managerial perspective. Teachers need to design problems that are challenging and appropriate to learning outcomes. The facilitation process needs to be carried out with patience and strategy. Reflection activities also need to be included to deepen students' learning experiences. All this demands high professional skills from teachers.

Evaluation in PBL does not only rely on final results. The learning process also needs to be assessed to determine student development. Cognitive, affective and psychomotor aspects must be considered in a balanced manner. This model encourages authentic assessment that is in line with 21st century competencies. Teachers can use portfolios, presentations and observations as assessment instruments.

The results of this study are consistent with previous findings. Many studies conclude that PBL is effective in improving learning outcomes. The geographical context provides ample scope for exploration of real problems. This provides advantages for the application of PBL in geography subjects. Abstract concepts become more concrete through problem solving.

Geography learning that involves spatial phenomena is very suitable to be packaged in the PBL model. Environmental, social and spatial issues are a source of relevant problems. Students can learn concepts while developing environmental awareness. Knowledge is not only learned, but also internalized. Learning becomes a tool for transforming attitudes and values.

PBL fosters critical and creative thinking skills which are much needed in the current era. Students are not only required to know, but also be able to analyze and solve problems. These skills provide provisions in facing global challenges. Geography education can play a strategic role in forming world citizens who are aware of space and responsibility. PBL can be a means of achieving this goal.

The school environment also influences the success of implementing PBL. The support of the school principal, learning facilities, and a positive learning culture are supporting factors. Teachers cannot work alone in changing the learning process. Collaboration with various parties is the key to successful implementation. Increasing teacher professionalism must also be a concern.

Time limitations are often an obstacle in implementing PBL. The in-depth learning process requires sufficient time. Teachers need to make careful plans so that curriculum targets can still be achieved. The integration between PBL and curriculum materials must be designed systematically. The student learning experience will be more optimal if time is used efficiently.

The use of technology can support the success of PBL. Access to information and learning resources becomes wider and faster. Students can search for data from various online sources. Teachers can use digital media to present interesting problems. The integration of ICT in PBL improves the quality of learning.

This research contributes to the development of learning models in schools. The findings obtained can be a basis for teachers in choosing an appropriate approach. Schools can also use PBL as a strategy to improve the quality of education. Consistent implementation will have an impact on improving learning outcomes on an ongoing basis. PBL is not just a method, but also a holistic educational approach.

Increasing learning outcomes through PBL shows that students have great potential if given the opportunity to be active. This learning model is able to explore this potential through challenging and meaningful strategies. A learning environment that encourages participation and reflection will improve the quality of learning. Teachers need to continue to develop themselves to be able to apply this model effectively. PBL is a learning solution that suits the needs of the 21st century.

## V. CONCLUSION

Based on the research results, it can be concluded that the Problem Based Learning (PBL) learning model has a positive effect on the learning outcomes of geography students at Diponegoro Wagir Islamic High School. Students who take part in learning using the PBL model show increased understanding of concepts, critical thinking skills, and active involvement in the learning process compared to students taught using conventional methods. PBL provides a meaningful learning experience through solving real problems that are relevant to everyday life. A student-centered learning process has been proven to increase motivation and learning independence. Therefore, PBL can be an effective alternative learning strategy to improve the quality of geography education at the high school level.

References


1. Ahmed, S., & Kumar, R. (2024). The Impact of PBL on Critical Thinking Skills in Geography Education. *Asian Journal of Educational Studies*, 9(3), 89–102.
2. Amanda, Y. A., Kurnianto, F. A., Pangastuti, E. I., Astutik, S., & Nurdin, E. A. (2024). Development of Inarisk WebGIS-Based E-LKPD Using the Problem Based Learning (PBL) Model in Flood Disasters Disaster Mitigation Material for SMA/MA Students. *Geography Learning Magazine*, 7(1), 1–11. https://doi.org/10.19184/pgeo.v7i1.46164
3. Anggela, R., Eviliyanto, E., & Rina, R. (2021). The Effect of Using Integrated Video Learning Models with Problem Based Learning (PBL) on the Critical Thinking Ability of Geography Education Students. *Social Horizon: Journal of Social Education*, 8(1), 102–114. https://doi.org/10.31571/sosial.v8i1.2260
4. Amanda, Y. A., Kurnianto, F. A., Pangastuti, E. I., Astutik, S., & Nurdin, E. A. (2024). Development of Inarisk WebGIS-Based E-LKPD Using the Problem Based Learning (PBL) Model in Flood Disasters Disaster Mitigation Material for SMA/MA Students. *Geography Learning Magazine*, 7(1), 1–11. https://doi.org/10.19184/pgeo.v7i1.46164
5. Brown, E., & Davis, L. (2022). Assessing the Effectiveness of PBL in Geography Teacher Training Programs. *International Review of Geography Education*, 29(1), 33–47.
6. Chen, L., & Wang, M. (2022). Enhancing Spatial Thinking through PBL in High School Geography Classes. *Journal of Educational Research in Geography*, 38(4), 210–222.
7. Garcia, R., & Thompson, D. (2023). Problem-Based Learning and Student Engagement in Geography: An Empirical Study. *Global Journal of Geography Education*, 12(1), 45–58.
8. Hasanah, U., Astawa, I. B. M., & Citra, I. P. A. (2023). Application of the Problem Based Learning Model in Geography Learning to Develop 21st Century Learning Skills in Students at SMA Negeri 1 Taliwang. *Undiksha Geography Education Journal*, 11(1), 45–58. https://doi.org/10.23887/jjpg.v11i1.52424
9. Khotimah, S. K., Prasetyo, K., Prasetya, S. P., & Nasution, N. (2022). The Influence of the Problem Based Learning Model on Geographical Literacy Ability in Social Studies Learning Material on Interregional and Intercountry Trade Activities. *Journal of Education: Research and Conceptual*, 6(3), 510–519. https://doi.org/10.28926/riset_konseptual.v6i3.547
10. Khan, N., & Ali, M. (2023). Student Perceptions of PBL in Geography Classes: A Qualitative Study. *Middle East Journal of Educational Research*, 14(2), 99–112.
11. Lopez, M., & Hernandez, J. (2025). Integrating Technology and PBL in Geography Teaching: Opportunities and Challenges. *European Journal of Geography Education*, 17(2), 67–80.
12. Momang, M. A., Pamungkas, B. T. T., & Sunimbar, S. (2023). The Influence of the Problem Based Learning Model on Students' Critical Thinking Ability in Geography Subjects at SMA Negeri 7 Kupang. *Geography Journal*, 19(2), 123–135. https://doi.org/10.35508/jgeo.v19i2.14061
13. Nursyahbana, A., Kasmiati, S., Nursalam, L. O., & Syarifah. (2023). Application of the Problem Based Learning Model to Improve Geography Learning Outcomes for Class X IPS Students at SMA Negeri

11 Bombana on the Main Material of Atmospheric Dynamics. *Geography Education Research Journal*, 8(4), 156–163. https://doi.org/10.36709/jppg.v8i4.139
14. Nguyen, T. H., & Tran, P. Q. (2021). Problem-Based Learning in Vietnamese High School Geography Curriculum. *Southeast Asian Journal of Education*, 5(4), 150–162.
15. Prayoga, E. B., Astutik, S., Pangastuti, E. I., & Kurnianto, F. A. (2024). The Influence of the Problem Based Learning Model Assisted by TikTok Media on the Geography Literacy Ability of High School Students. *Geography Learning Magazine*, 6(2), 262–269. https://doi.org/10.19184/pgeo.v6i2.46149
16. Smith, J. A., & Lee, K. (2021). Implementing Problem-Based Learning in Geography Education: A Case Study in Secondary Schools. *International Journal of Geography Education*, 45(2), 123–135.
17. Tan, J., & Hwang, M. (2022). Problem-Based Learning in Geography: Enhancing Students' Environmental Awareness and Decision-Making. *Global Education Review*, 10(2), 14–29.