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THE EFFECT OF PROJECT BASED LEARNING MODEL WITH WAMENA LOCAL WISDOM ON LEARNING OUTCOMES AND PROBLEM SOLVING OF GRADE V ELEMENTARY SCHOOL STUDENTS IN WAMENA

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ABSTRACT
This study examines the effects of Project-Based Learning (PjBL) integrated with Wamena local wisdom on elementary students' learning outcomes and problem-solving skills. Integrating culturally relevant pedagogy into innovative learning models is expected to enhance meaningful learning, particularly in remote regions with strong local traditions. A quasi-experimental design employing a non-equivalent pretest–posttest control group was used. The participants were 112 fifth-grade students from two elementary schools in Wamena, Indonesia. Data were collected using learning outcome tests and problem-solving assessments and analyzed using multivariate analysis of variance (MANOVA). The results indicate significant differences in learning outcomes and problem-solving skills between students taught using PjBL integrated with local wisdom and those taught using conventional learning models. Students in the PjBL group achieved higher scores in both dependent variables. These findings demonstrate that integrating local wisdom into project-based learning enhances students' conceptual understanding and problem-solving abilities. This study contributes to elementary education literature by highlighting the pedagogical value of culturally contextualized project-based learning in improving learning quality in geographically and culturally distinctive regions.

INTRODUCTION

Education is a conscious activity built as a means and forum to form a quality young generation in the future, as well as a support for the progress of the nation and state in the future. As education according to Law No. 20 of 2003 concerning the National Education System can be interpreted as a conscious and planned effort to create a learning atmosphere and learning process and so that students actively develop their potential to have spiritual

Sosioedukasi
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religious strength, self-control, personality, intelligence, noble morals and skills needed by themselves, society, nation and state. The Project Based Learning (PjBL) model is one of the recommended learning models for educators to implement. The project-based learning model is the first step to gaining new knowledge and experience. As stated by Wena (in Wulandari, R, 2020:17), the project-based learning model is the first step or innovative learning approach, which focuses on the core concepts and principles of a discipline, involving students in problem-solving investigations and other meaningful tasks, providing opportunities for students to work together to produce real products. The Project Based Learning (PjBL) model is an effective and alternative model that can be used in the current new normal learning period. The characteristics of the Project Based Learning (PjBL) model are that it involves students in an active, collaborative, student-centered learning process that develops problem-solving and independent learning skills needed to face life's challenges in today's increasingly complex environment.

Project Based Learning (PjBL) encourages the development of various skills including critical thinking, self-assessment and reflection, group participation and leadership, talent in inquiry and research, and communication and presentation skills. The Project Based Learning (PjBL) learning model requires students to learn and produce a work. The final result of the project is a product, which does not always have to be in material form, but can be in the form of a public presentation and evaluated for quality, etc. Performance evaluation can be involved in Project Based Learning (PjBL) by considering the quality of the output, the level of understanding of the information presented, and its contribution to the ongoing project realization process. PjBL also gives students the opportunity to develop their own perspectives and ideas, make choices that impact the course of the project and their overall learning process, and display their products.

Local culture-based learning is the creation of a learning environment and the design of learning experiences that integrate local culture as part of the learning process. In local culture-based learning, culture is integrated as a tool for the learning process to motivate students to apply knowledge. Suastra (2005) stated that the values embraced by indigenous communities are full of wisdom values (local genius). Sutarno (2007) stated that culture-based learning can be divided into four types: learning about culture, learning with culture, learning through culture, and learning with culture. Learning about culture places culture as a field of study. Culture is studied in special study programs, about culture, and for culture. Learning with culture occurs when culture is introduced to students as a way or method to learn a particular subject. Learning with culture includes the use of various forms of cultural manifestations. Learning with culture is where culture and its manifestations become learning media in the learning process, become the context for examples of concepts or principles in a subject, and become the context for applying principles or procedures in a subject. Learning through culture is a strategy that provides students with the opportunity to demonstrate their understanding or the meaning they create in a subject through various cultural manifestations. Learning culture is a form of embodying that culture in students' daily real behavior.

Based on empirical data from the 2024 National Examination (UN) for Elementary Schools in Jayawijaya Regency, specifically the Wamena region, the pass rate for students in 2024 was only 97.58 percent out of a total of 2,475 participants. This figure, while relatively high, still indicates an imbalance in the quality of student learning outcomes. The small number of students who did not pass indicates that there are still obstacles in the basic learning process, both in terms of academic ability, conceptual understanding, and higher-order thinking skills required by the current curriculum. This condition indicates that the quality of basic education in the Wamena region still requires serious attention, especially in improving the effectiveness of learning models that are appropriate to the characteristics and local socio-cultural context.

Furthermore, the test results show that students' conceptual mastery and problem-solving skills are still low in several core subjects, particularly mathematics and science. This can be caused by various factors, including a teacher-centered learning approach, the lack of utilization of local wisdom in the learning process, and limited educational resources in the mountainous regions of Papua. Therefore , innovation in learning strategies is needed that not only

Sosioedukasi
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improve cognitive learning outcomes but also develop students' critical and contextual thinking skills. One relevant effort is the implementation of a project-based learning model *in* collaboration with local Wamena wisdom, so that learning is more meaningful and can improve the quality of learning outcomes overall.

Several studies have been conducted on project-based learning models (PBL) and it has been proven that this learning model... can assist teachers in explaining material. One example is research conducted by Astuti Solong et al. (2023) which showed that the Project-Based Learning (PjBL) model had an effect on the problem-solving abilities of students at SMPN 5 Kota Bima in the 2022/2023 academic year. Similarly, research by Yuliana and Sunarti (2017) on "Integrating Local Wisdom in Learning to Improve Cultural Understanding and Student Learning Outcomes in Papua" demonstrated that contextualized and culturally relevant teaching can improve student motivation and learning outcomes. This research directly relates to the use of local wisdom in education, although its focus was on Jayapura, not Wamena. However, the methodology and relevant findings can be applied in the Wamena context.

This study aims to examine the effect of implementing a project-based learning model with local wisdom from Wamena on the learning outcomes and problem-solving abilities of fifth-grade elementary school students. This study is important because there is little research integrating local wisdom into modern learning models in remote areas like Wamena. Therefore, the results of this study are expected to contribute to the development of more effective and contextual educational practices in Indonesia, particularly in areas with rich local cultures.

Based on the theoretical and empirical review presented, it can be identified that although the *Project-Based Learning* (PjBL) model has been extensively examined and recognized for its effectiveness in improving students' learning outcomes and higher-order thinking skills, and although learning approaches grounded in local wisdom have also received considerable attention in educational research, there remains a lack of empirical studies that comprehensively integrate PjBL with Wamena local wisdom at the elementary school level, particularly in the remote areas of the Papua Highlands, which are characterized by distinctive geographical and socio-cultural conditions. Previous studies have generally examined PjBL or local wisdom-based learning in a partial manner, and therefore have not provided a holistic empirical picture of the combined effects of their integration on students' learning outcomes and problem-solving abilities. Consequently, systematic research is required to examine the effectiveness of implementing PjBL integrated with Wamena local wisdom as a contextualized learning model to enhance the quality and relevance of education in regions with rich local cultural heritage.

METHOD

The type of research used in this study is quasi-experimental research. This is because all the variables that arise and the experimental conditions cannot be strictly regulated and controlled (fully randomized). This quasi - experimental study compares two different types of learning models, each of which influences two dependent variables: learning outcomes and problem-solving ability. The research design used in this study was a non-equivalent pretest-posttest control group design. This research design was used because in quasi-experimental research, it is not possible to change the existing classes. The pretest-posttest nonequivalent control group design is a quasi-experimental research design that aims to investigate the level of similarity between groups.

According to Arikunto (2010: 173), population is defined as the entirety of a research subject. According to Harrison (2016: 22), population is a group that shares similar characteristics. Meanwhile, according to Suryani (2016: 190), population is a group of people, events, or objects that share certain characteristics and will be used as an object of research. The population in this study was all fifth-grade students at Wamena State Elementary School and fifth-grade students at Mulele State Elementary School in the even semester of the 2024/2025 academic year. The population in this study consisted of three classes at Wamena State Elementary School and two classes at Mulele State Elementary School, with a total of 143 students.

Sosioedukasi
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This study used a sample of 4 classes out of 5 existing classes. This is intended to minimize the error rate. The more sample members selected, the level of prediction is relatively accurate, the error in tabulating data and calculating is large, the reliability is large, and the power increases, and vice versa (Usman & Purnomo, 2003). According to Krejcie and Morgan (in Mustafa, 2000) in the list they have made to determine the number of samples, the sample required for a population of 143 is 112. In line with this, using the Slovin formula (in Setiawan, 2007), it was found that for a population of 143, a sample of 112 is needed. Based on the opinions above, the sample used to represent the population in this study was 112 students with a total of 3 classes from Wamena State Elementary School. This was because to avoid discarding some students in each class. The sample determination was carried out using a simple random sampling technique , namely a technique of selecting samples in stages by random means. This technique was used to draw 5 classes, which were drawn again to determine 2 experimental classes and 2 control classes. The experimental class was then treated with a project-based learning model, and the control class was given a conventional learning model.

RESULT AND DISCUSSION

After all prerequisite tests have been met, the next statistical analysis is to test the hypotheses. The analysis used to test the three proposed hypotheses is MANOVA (Multivariate Analysis of Variance). The results of the multivariate analysis using SPSS-Statistics 26 for Windows.

Table 1 Multivariate Analysis Results

Effect	Statistic	Value	F	df1	df2	Sig.
Intercept	Pillai's Trace	.891	447.633	2	109	.001
	Wilks' Lambda	.109	447.633	2	109	.001
	Hotelling's Trace	8.213	447.633	2	109	.001
	Roy's Largest Root	8.213	447.633	2	109	.001
Model	Pillai's Trace	.543	64.729	2	109	.001
	Wilks' Lambda	.457	64.729	2	109	.001
	Hotelling's Trace	1.188	64.729	2	109	.001
	Roy's Largest Root	1.188	64.729	2	109	.001

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Table 2. Results of Test Between Subjects Effects Analysis

Sumber	Variabel Dependen	JK Tipe III	df	RJK	F	Sig.
Corrected Model	Hasil Belajar	2.977	1	2.977	59.906	0.001
	Pemecahan Masalah	2.731	1	2.731	66.323	0.001
Intercept	Hasil Belajar	22.339	1	22.339	449.526	0.001
	Pemecahan Masalah	17.435	1	17.435	423.381	0.001
Model (A)	Hasil Belajar	2.977	1	2.977	59.906	0.001
	Pemecahan Masalah	2.731	1	2.731	66.323	0.001
Error	Hasil Belajar	5.466	110	0.050		
	Pemecahan Masalah	4.530	110	0.041		
Total	Hasil Belajar	30.783	112			
	Pemecahan Masalah	24.696	112			
Corrected Total	Hasil Belajar	8.444	111			
	Pemecahan Masalah	7.261	111			

Based on the Multivariate Test in the Table above, it can be seen that the F value of the MANOVA calculation is Fcount = 447.663 and a significance level of 0.001 ($p < 0.05$). The first hypothesis of this study is "There is a difference in learning outcomes and problem-solving abilities between the group of students who learn with the PjBL learning model and the group of students who learn with the conventional learning model". Because the significance value of the MANOVA test through the Pillai Trace, Wilk's Lambda, Hotelling's Trace and Roy's Largest Root statistics is 0.001 and this value is smaller than 0.05 ($p < 0.05$), then H0 is rejected and H1 is accepted. The conclusion that can be drawn is that there is a difference in learning outcomes and problem-solving abilities between the group of students who learn with the PjBL learning model and the group of students who learn with the conventional learning model. The average learning outcomes and problem-solving abilities of students who are given PjBL treatment are greater than the average group of students who are given conventional treatment.

The Test Between Subjects Effects in the table above shows that the F value for learning outcomes is 59.906 with a significance level of 0.001. The F value for students' problem-solving abilities is 66.323 with a significance level of 0.001. The second hypothesis of this study is "There is a difference in learning outcomes between the group of students who learn with PjBL and the group of students who learn with conventional learning models". Because the F value of the ANOVA calculation is Fcount = 59.906 with $p < 0.05$, then H0 is rejected and H1 is accepted. The conclusion that can be drawn is that there is a difference in learning outcomes between the group of students who learn with the PjBL learning model and the group of students who learn with conventional learning models.

The third hypothesis of this study is "There is a difference in problem-solving ability between the group of students who learn with the PJBL learning model and the group of students who learn with the conventional learning model". Based on the Test Between Subjects Effects table, the F value of the ANOVA calculation results can be seen as Fcount = 66.323 with $p < 0.05$, so H0 is rejected and H1 is accepted. The conclusion that can be drawn is that there is a difference in problem-solving ability between the group of students who learn with PjBL and the group of students who learn with the conventional learning model.

Project Based Learning (PjBL) Model with Wamena Local Wisdom and Conventional Learning Model (MPK) on Students' Learning Outcomes and Problem Solving Abilitie

The purpose of this study is to test the influence of the project-based learning (PjBL) model and models conventional learning (MPK) for the achievement of Learning Outcomes and problem-solving abilities. The results of the study showed that there were significant differences in learning outcomes and problem-solving between the group of students who studied with the project-based learning model with Wamena local wisdom and the group of

Sosioedukasi
JURNAL ILMIAH ILMU PENDIDIKAN DAN SOSIAL
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Volume 15 Nomor 1 Maret 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

students who studied with the conventional learning model (F=64.729 ; p<0.05) . Based on the results of descriptive statistics, it can be seen that the average normalized gain in student learning outcomes in the project-based learning model (PjBL) group with Wamena local wisdom was$\bar{X} = 0{,}61$ higher compared to the conventional learning model (MPK) group which had an average of $\bar{X} = 0{,}29$. In other words, the PjBL learning model is superior compared to the conventional learning model in achieving learning outcomes.

For the average value of normalized gain of problem-solving ability, seen from the descriptive statistics, the average value for the project-based learning model (PjBL) group is $\bar{X} = 0{,}55$ and the conventional learning model (MPK) group is $\bar{X} = 0{,}24$. Based on this value, it can be explained descriptively that PjBL provides better results than MPK. The results of this study are in line with the results of research conducted by Nurhadi (2019) regarding the effect of the PjBL (Project Based Learning) model on student learning outcomes. This model significantly improves students' conceptual understanding and skills in solving scientific problems. This study is relevant because it tests the effectiveness of the project-based learning model in the context of basic education.

In addition, research conducted by Sari (2020) had the same results, where the results of the research stated that this learning model can significantly improve students' abilities in solving complex problems. Research conducted by Astuti Solong et al. (2023) also had the same research results, the results of the study stated that there was a statistically significant influence on students who used the Project Based Learning (PjBL) learning model on the problem-solving abilities of students at SMPN 5 Kota Bima in the 2022/2023 academic year.

The Project-Based Learning (PjBL) learning model is capable of providing better learning outcomes and problem-solving skills compared to MPK. Theoretically, the project-based learning (PjBL) model can generally be understood as learning that occurs in small groups where each student has the right to express their ideas and work together to complete the assigned tasks. The project-based learning model provides opportunities to convey ideas or thoughts, ask questions, and discuss opinions with group members, thereby reducing group heterogeneity. Through these activities, students are able to build or construct their own knowledge with the teacher as a mediator and facilitator.

The power of project-based learning (PjBL) models is to support the emergence of active, creative, effective, and enjoyable learning, train students to work in groups, train harmony, in living together on the basis of mutual respect (life together). The advantages of this project-based learning model lies in the process of seeking and constructing knowledge, allowing teachers to act as evaluators, facilitators, and mediators. Teachers do not need to transfer all knowledge to students but rather encourage students to think and find their own answers to problems presented by the teacher or the students themselves through class discussions and group discussions based on their experiences gained from everyday life.

This contrasts with conventional learning models. The learning process prioritizes the delivery of key concepts, practice problems, and tests. Student participation in learning is still influenced by the teacher, as evidenced by the teacher's presentation of the material. Students are encouraged to be creative by conducting experiments, but they are still unable to express their ideas. This is because the teacher has designed the lab work, and students are only required to find answers to the questions posed.

Conventional learning models emphasize teacher activity. Learning steps using this conventional learning model include apperception, conceptual explanations, illustrations and example problems, practice problems, and feedback. Students simply await explanations from the teacher and are solely responsible for everything within their group. Although conventional learning uses methods other than lectures, such as practical work, supplemented or supported by the use of media, the emphasis remains on the process of acquiring knowledge, rather than on the process of seeking and constructing knowledge.

The results of the descriptive study show that the difference in average scores between the PjBL and MPK groups for each dependent variable is not too far apart. This is due to several factors in the research that has been

Sosioedukasi
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Volume 15 Nomor 1 Maret 2026 https://ejournal.unibabwi.ac.id/index.php/sosioedukasi/index

carried out, including 1) the implementation of innovative learning models, especially the PjBL learning model, can be said to be less than optimal. So students have not adapted to this learning model. 2) The teaching materials are based on a curriculum that is too dense. The material taken in this study is the environment. There are 3 topics, where each sub-chapter of the topic is very broad and must be carried out for 4 weeks, while the time for science lessons at school is only 5 hours of lessons per week and very much holiday time. This makes the implementation of the learning process less than optimal, because it will limit students' space for observation.

On the other hand, conventional learning models begin with the teacher presenting relevant subject matter to students. Theories, concepts, or scientific principles that students are expected to master are first presented to the class by the teacher. Afterward, students are confronted with problems related to the concepts presented. This contextual presentation of problems makes science learning more meaningful than simply reading or listening to the teacher's explanation of the subject matter. However, in conventional learning models, which present problems to students after they have been provided with information about the subject matter, it is considered less constructivist. Students' responsibility for their own learning is reduced, as students learn solely because the teacher assigns them assignments to study the subject matter. This reduces students' independence in learning to construct their own knowledge, impacting students' thinking skills, leading to lower learning outcomes.

Conventional learning models often force students to study and listen to lectures from teachers, thus creating an atmosphere that will cause chaos in thinking, in which there is irregularity in constructing information. Conventional learning *renders* students passive, relying solely on listening to teacher lectures, thus under-cultivating their creativity, or even leading to a lack of creativity. In the MPK learning system, teachers conduct most of the teaching and learning activities through lectures . While participating in lessons or listening to lectures, students simply comprehend and take notes, if necessary. The teacher plays a central role in achieving learning outcomes and appears to be the sole source of knowledge. This model provides one-way information, as the goal is to ensure teachers can teach effectively, leaving only knowledge transfer.

Implications findings study This is science learning can give results optimal learning If implementation learning based on the constructivism paradigm . The model learning based project (PjBL) is Wrong One model grounded learning constructivism , where in activity Study teaching between the concepts studied associated with its implementation , so that will give quite a big opportunity in process more science learning meaningful and students will build his knowledge Alone through process active in learning based on knowledge the beginning that has been owned Students . In addition, the project-based learning (PBL) model also contributes to group members by optimizing cooperation between group members. This can train students to be more responsible for the tasks assigned to their groups . learning based project can favored in frame increase ability solution problems and results Study student.

Effectiveness of Project-Based Learning (PjBL) to Improve Student Learning Outcomes

Findings empirical about results Study group students who follow model learning PjBL own the average value after treatment was 11.41 with a standard deviation of 1.68. Likewise for students who study follow group conventional has an average of 8.73 with a standard deviation of 1.80. Where in table distribution standard score frequency (1-100), frequency largest in range mark 70 until with 85 that is as much as 30 students (53.6%) with qualification more from high, whereas in the group conventional average score the largest in the range of 55 to 69 in qualification Enough with amount 38 students (46.4 %).

Based on the analysis of variance, it shows $F = 59.906$; $p < 0.05$. The conclusion that can be drawn is that there is a difference in learning outcomes between groups of students who study with PjBL. and the group of students who studied with conventional learning models. This supports the results of the descriptive analysis which states that the group of students who studied using PjBL had better learning outcomes than the group of students who studied using conventional learning models. There is also a significant difference, this description is obtained based on the LSD

Sosioedukasi
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calculation which obtained the LSD rejection limit of 0.060 with $\Delta\mu$ 0.326, where the absolute price $|\mu_i - \mu_j| > LSD$ means there is a difference in the average value of the learning outcome variable between the PjBL and MPK groups.

The results of this study are in line with the results of previously conducted research related to the project-based learning (PjBL) model, which states that the use of *the project-based learning model* in the experimental class is able to provide a greater influence on increasing student grades. student from *pretest* to *posttest* if compared to the control class. Related to the percentage obtained, there are research results conducted by Amanda from the postgraduate program at Ganesha University of Education which indicate that students who actively construct their knowledge through Model Project Based Learning will more provides a positive influence on biology learning outcomes compared to conventional learning models. This can be seen from the average normalized *gain value* of 0.63.

One appropriate learning model for science is project-based learning (PjBL), especially when combined with local wisdom. This learning model prioritizes group-based skills. Students work in cooperative learning groups of four. These students engage in a series of collaborative activities, including reading stories to each other. Students also collaborate to understand main ideas and develop other comprehension skills. Project-based learning provides cognitive skills that lead to improved learning and better retention. or applying knowledge. Essentially, project-based learning is a learning model that requires students to play an active role, becoming decision-makers, researchers/observers, and data collectors for presentation. The findings of this study have the following implications. First, exploration of students' activities and skills in science concepts is crucial for improving their learning outcomes Second, learning objectives should not only focus on student learning outcomes but also on their problem-solving abilities. Third, PjBL can be used as an alternative learning tool to optimize science learning outcomes.

Based on the findings and discussion regarding the influence of PjBL and MPK on student learning outcomes, it has implications that science learning can give optimal learning outcomes If implementation learning based on the constructivism paradigm. This is wrong one model grounded learning constructivism, where in activity Study teaching between the concepts studied associated with its implementation, so that will give quite a big opportunity in process more science learning meaningful and students will build his knowledge Alone through process active in learning based on knowledge the beginning that has been owned students. In addition, the PjBL learning model places students at the center of learning, not as passive recipients of information. This can train students to be more responsible for the tasks given in their groups. Learning PjBL can favored in frame increase student learning outcomes.

Effectiveness Learning Based Project (PjBL) for Increase Ability Solution Problem Student

Findings empirical about ability solution to problem group students who follow model learning PjBL own The average value after treatment was 32.10 with a standard deviation of 3.32 . Likewise for students who study follow group conventional has an average of 26.55 with a standard deviation of 2.48 . Where in table distribution standard score frequency (1-100), frequency largest in range mark 70 until with 84 that is as many as 29 students (51.8 %) with qualification more from high , whereas in the group conventional average score the largest in the range of 55 to 69 in qualification Enough with total of 51 students (91.1 %).

Based on analysis variant , shows that mark ($F = 66.323$; $p < 0.05$) , then hypothesis zero which states No there is difference ability think creative students between groups students who study with PjBL and groups students who study with MPK , rejected . In other words , the hypothesis alternative (H_a) which states there is difference ability solution to problem students between groups students who study with PjBL and groups students who study with MPK , accepted . This support results analysis descriptive which states that group students who study use PjBL more Good ability problem solving than group students who study use model learning conventional . There are also

Sosioedukasi
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significant differences , descriptions This obtained based on LSD calculation that obtains an LSD rejection limit of 0.076 with $\Delta\mu$ as big as 0.312 , where the price absolute $|\mu_i - \mu_j| > LSD$ which mean there is difference average value of variables ability solution to problem between group PjBL and MPK.

Results study This in line with results research that has been implemented previously related with model learning based project (PjBL). Azizah (2024) find that PjBL based wisdom local influential positive ; increase think creative (related solution problem). Besides that, the results of Desita's research Daughter Asyana et al (2025) also gave the same results, stating that that PjBL effective increase collaboration , understanding materials and abilities solution problem student class V. Furthermore, although the PjBL model is superior in improving problem-solving skills compared to conventional learning models, the average difference between the two models is not too significant . This can be identified due to several factors as follows.

First, students are not yet accustomed to solving problems they haven't directly identified. In previous learning, students often worked on academic problems, where all the known and questionable variables were readily available and truly guided them to find the answer. They tended to view these problems superficially and solve them based on logical but unscientific everyday experiences, without delving deeper into the concepts and principles that should be used to solve them.

Second, students are not yet accustomed to the test format used. Evaluations often conducted in schools use objective tests, which require only one answer without providing a rationale for the answer. This allows students to speculate, simply guessing. Students also tend to memorize formulas and ignore important concepts that must be understood. In this study, the test format used was a descriptive test, which requires students to express their opinions.

Third, the learning activity timeframe is relatively short. The implication of the findings in this study is that science learning in schools must always be accompanied by the teaching of creative problem-solving skills. For more complex problem-solving, teachers must be able to create a collaborative, cooperative atmosphere that can accommodate students for more meaningful learning.

CONCLUSION

Based on the results of data analysis and the summary of research findings, it can be concluded that the implementation of the *Project-Based Learning* (PjBL) model integrated with Wamena local wisdom has a significantly greater effect than conventional learning models. The statistical analysis indicates a significant simultaneous difference in learning outcomes and problem-solving abilities between students taught using Wamena local wisdom–based PjBL and those taught using conventional learning models ($F = 447.663$; $p < 0.05$). Partially, there are also significant differences in students' learning outcomes ($F = 59.906$; $p < 0.05$) and in their problem-solving abilities ($F = 66.323$; $p < 0.05$). These findings suggest that integrating Wamena local wisdom into the PjBL model is more effective in enhancing students' learning outcomes and problem-solving skills than conventional instructional approaches.

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Sosioedukasi
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