



## The effect of problem-based learning (PBL) and audio-visual media on learning outcomes in social studies for junior high school students in Susukan District

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### Abstract

*This study aims to determine the influence of the problem-based learning (PBL) model and audio-visual media on students' learning outcomes in Social Studies (IPS) at the junior high school level in Susukan District. A causal quantitative method was employed using multiple linear regression analysis. The population consisted of 1,768 students from three schools: MTs Ma'arif NU 01 Susukan, SMP Negeri 1 Susukan, and SMP Negeri 2 Susukan. A total sample of 327 students was selected through Proportionate Stratified Random Sampling. Data were collected using a questionnaire. The results show that: (1) the PBL model has a positive but not significant effect on learning outcomes, indicated by a  $t$ -value of  $1.671 < t\text{-table } 1.967$  and a significance level of  $0.096$ . Its contribution is relatively low, with an Effective Contribution (SE) of  $1.4\%$  and a Relative Contribution (SR) of  $9\%$ . (2) Audio-visual media has a positive and significant effect on learning outcomes, shown by a  $t$ -value of  $4.817 > 1.967$  and a significance level of  $0.000$ . This variable contributes an SE of  $14.2\%$  and an SR of  $91\%$ . (3) Simultaneously, PBL and audio-visual media have a positive and significant effect on Social Studies learning outcomes, as evidenced by an  $F$ -value of  $29.998 > F\text{-table } 3.023$ . The coefficient of determination ( $R^2$ ) of  $15.6\%$  indicates that both variables influence learning outcomes, although the effect is relatively weak, while the remaining  $84.4\%$  is influenced by other factors not examined in this study.*

**Keywords** Problem-Based Learning Model, Audio-Visual Media, Learning Outcomes.

### Background

A common problem in schools is the lack of student proficiency in the material provided by teachers. Nafindra and Rifqi (2022) stated that several problems related to the implementation of education that cause low student proficiency in learning materials are inadequate facilities and infrastructure that do not support learning, school rules that make students feel pressured, and the large number of teachers who do not meet competency requirements meet competency requirements, making learning monotonous, teachers who rely on only one textbook, and teachers who do not engage in discussion during the learning process. Factors related to students include low levels of

independence and a low learning ethic (Widodo, 2022).

Efforts to improve learning quality must be made in a balanced manner by both teachers and students. Perdana (2016) states that teachers can improve learning quality with the aim of creating active learning by developing teaching materials, learning models and media, learning evaluation techniques, and conditioning the learning environment. Meanwhile, students can improve their quality by developing their abilities, not hesitating to be active during the teaching and learning process, and exploring knowledge not only based on books but also by making good use of the latest technology (Rahila, 2019)

Previous research conducted by Wajdi and Hanif (2023) stated that there was an improvement in learning outcomes in audio-visual media and PBL. Budiman, Wijoyo, and Arwani (2019) noted in their analysis that the PBL approach did not produce a significant effect on students' cognitive learning outcomes, as indicated by an independent samples test value exceeding  $0.05$ . Perdana and Slameto (2016)

explained in their analysis that this learning method is related to audio-visual media; if implemented according to the correct process standards, it can improve learning outcomes. Wipradharma and Qatrunada (2024) stated in their research that the application of PBL can lead to improved learning outcomes. Risanatul and Junaidi (2022) argued that one of the external causes of low learning outcomes is the monotonous application of learning media and models. Rozali, Irianto, and Yuniarti (2022) stated that student-centered learning is more effective for students.

There is a research gap, namely inconsistency in research results. Further studies are required to examine how audio-visual media and the PBL learning method influence learning outcomes. At present, their respective impacts on student achievement remain insufficiently understood. Based on this, the researcher conducted a pre-survey at junior high schools/equivalent schools in the Susukan sub-district on January 17, 2025. This pre-survey was conducted by observing students and teachers in relation to social studies learning at school. The outcomes of these observations can be summarized as follows.

**Table 1. Observation Results**

No.	School	Learning Model		Learning Media		Completion of Social Studies Learning Outcomes
		Teacher Center	Student Center	Textbook	Creative and Innovative	
1	MTs Ma'arif NU 01 Susukan	v		v		21,8%
2	SMP N 1 Susukan	v		v		30%
3	SMP N 2 Susukan	v		v		32,2%

The reality that researchers found in the field was that student learning outcomes in social studies were still quite low. For example, in one class at MTs Maarif NU 01 Susukan, out of 32 students, only 21.8% or 7 children had achieved mastery, while 78.2% or 25 other children had not. Nurhakim (2023) revealed that the criteria for mastery are based on the Minimum Mastery Criteria (KKM). At this school, the KKM for social studies is 76. Students are declared to have mastered the material if their score is equal to or higher than the KKM. On the other hand, students

are declared to have not mastered the material if their score is lower than the KKM. This indicates that the delivery of material to students is still not optimal. The school has implemented a student-centered learning system, but its implementation is still not optimal, so learning activities are still like conventional learning.

Learning activities still tend to be teacher-centered or concentrated on the teacher, so students are still dependent on the teacher's explanations. The teaching and learning process is only limited to imparting knowledge, so students do not really understand the material presented by the teacher. The teaching method also uses lectures, which do not stimulate students to participate actively. Based on the results of the preliminary survey, MTs Ma'arif NU 01 Susukan still experiences obstacles related to infrastructure, namely the limited availability of LCD projectors, so teachers have to take turns when teaching with learning media that require projectors. These shortcomings certainly hinder teachers in innovating interactive learning, resulting in low student learning outcomes.

According to the pre-survey results, the completion rate for social studies in one of the classes at SMP N 1 Susukan was 30%. This means that out of 30 students, only 30% or 9 children completed the course, while 70% or 21 children did not. After interviewing the social studies teacher, it was revealed that there were several obstacles encountered during teaching that caused low student learning outcomes, including students talking among themselves during explanations and not concentrating on what the teacher was explaining. In addition, some students also lacked the confidence to express their opinions. Students still have low interest in participating in learning. This was acknowledged by the teacher concerned that the learning model used was not varied and the learning media was boring. Students felt bored, did not participate actively, and did not have the ability to solve problems during learning.

The level of mastery or learning outcomes for social studies in one class at SMP N 2 Susukan was 32.2%. This means that out of 31 students, only 32.2% or 10 students had mastered the material, while 67.8% or 21 students had not. Based on information from teachers and students, social studies learning is boring because it only focuses on workbooks. The models and media listed in the lesson plans are not fully implemented in learning. This is because problem-based learning models and

audio-visual media cannot always be fully implemented by teachers.

The problem-based learning model is a learning model that uses real-life problems as a learning context that will encourage students to think critically in terms of knowledge, skills, and attitudes so that students will actively participate in organizing concepts in their cognitive memory (Rasyid, 2020) and is supported by audio-visual media that is expected to make learning more interactive.

This research is important because solutions are needed for various problems in the field, especially in junior high schools and equivalent schools in Susukan Subdistrict. On the other hand, this research also serves to determine the effect of increasing student learning outcomes with the models and media used, developing effective learning methods, improving the quality of education, providing information for educators, and improving student abilities. Therefore, the researcher is interested in conducting research entitled "The Effect of Problem-Based Learning Models and Audio-Visual Media on the Learning Outcomes of Social Studies Subjects for Junior High School Students in Susukan District."

### Problem Formulation

Based on the above issues, the following problems were identified:

1. Does the use of the Problem-Based Learning (PBL) approach affect the social studies learning outcomes of junior high school students in Susukan Subdistrict?
2. Does the application of audio-visual learning media influence the social studies learning outcomes of junior high school students in Susukan Subdistrict?
3. Do audio-visual media and the Problem-Based Learning method jointly have an impact on the social studies learning outcomes of junior high school students in Susukan Subdistrict?

### Research Objectives

The aims of this study, derived from the aforementioned research questions, are as follows:

1. To assess the influence of the Problem-Based Learning (PBL) approach on the social studies learning performance of

junior high school students in Susukan Subdistrict.

2. To assess the influence of audio-visual instructional media on the social studies learning performance of junior high school students in Susukan Subdistrict.
3. To assess the combined effects of audio-visual media and the Problem-Based Learning approach on the social studies learning performance of junior high school students in Susukan Subdistrict.

### Benefits of Research

This research is expected to be useful in practical and theoretical terms, as described below:

#### Theoretical Benefits:

The researchers anticipate that the findings of this study will offer substantive contributions to scholarly understanding of how audio-visual media and problem-based learning strategies influence social studies learning outcomes. Furthermore, this research is expected to inform and enhance ongoing efforts in developing and applying differentiated instruction-based learning materials in mathematics education.

#### Practical Benefits

**For teachers:** Providing information and instructional development models for junior high school social studies education that incorporate problem-based learning and audio-visual media.

**For students:** Students gain new experiences with diverse learning methods, which are expected to improve their learning outcomes.

**For schools:** This research can also provide policy recommendations for improving the learning process as well as for improving and enhancing the quality of education.

### Research Method

This study was conducted in three junior high schools in Susukan Subdistrict, Banjarnegara Regency, namely MTs Ma'arif NU 01 Susukan, SMP N 1 Susukan, and SMP N 2 Susukan. The selection of locations was based on relevance to the research objectives, data availability, and adequate accessibility. The research was conducted from January to June

2025 in several stages, including preparation, implementation, data collection, data analysis, and thesis writing and examination.

This study employed a quantitative causal research design utilizing multiple linear regression analysis. The two independent variables examined were the use of audio-visual media and the implementation of the Problem-Based Learning (PBL) approach, with the dependent variable being social studies learning outcomes. Each variable was described in operational definitions and measurement indicators that were validated using a Likert scale questionnaire.

The research population consisted of 1,786 students from the three schools. The sample was determined by applying the Slovin formula with an error value of 5%, resulting in a sample of 327 students. Proportionate Stratified Random Sampling was used to take the sample so that it was divided proportionally among the three schools.

Data collection was carried out through questionnaires as primary data, as well as documentation and literature studies as secondary data. The questionnaires were distributed through Google Forms. Measurement of learning outcomes, audio-visual media, and student perceptions and attitudes towards PBL were measured using a Likert scale.

Instrument reliability and validity were evaluated using SPSS version 24. The findings from the validity assessment showed that the majority of the items were suitable and fulfilled the required validity standards. Reliability was tested by applying Cronbach's Alpha, which gave a result of 0.900, meaning that the instrument was reliable.

The initial stage of data analysis was through classical assumption testing, including testing for heteroscedasticity, linearity, normality, and multicollinearity. Hypothesis testing was then carried out, consisting of t-testing for partial effects, F-testing for simultaneous effects, multiple linear regression, and the coefficient of determination to review the amount of contribution given to the dependent variable by the independent variable.

Broadly speaking, the study utilized a quantitative approach that included developing research instruments, collecting data, testing the instruments, conducting classical assumption analyses, and performing regression testing to determine how audio-visual media and the PBL

method influence students' social studies learning outcomes.

## Result

**Table 2. Multiple Linear Regression Test Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	21,345	2,208		9,666	0,000
Problem Based Learning	0,112	0,067	0,087	1,671	0,096
Media Audio Visual	0,471	0,067	0,368	7,074	0,000

Source: Processed Data, 2025

Table 2 above shows the PBL regression coefficient (X1) value that positively affects learning outcomes (Y) with a value of 0.112, indicating that a 1-unit increase in X1, assuming other variables remain constant, can increase learning outcomes by 0.112. Meanwhile, the audio-visual media variable (X2) describes a regression coefficient of 0.471, which means that a 1-unit increase in X2 can increase learning outcomes by 0.471, while assuming that all other variables remain unchanged. Moreover, the constant value of 21.345 implies that if both X1 and X2 are set to zero, the students' learning outcomes would be positioned at an initial level of 21.345, so that in the absence of these two variables, the level of learning outcomes remains at that level.

**Table 3. F Test Results**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	417,865	2	208,932	29,998	0,000
Residual	2257,353	324	6,967		
Total	2675,217	326			

Source: Processed Data, 2025

Table 3 indicates that the degrees of freedom are  $df_1 = 2$  and  $df_2 = 324$  at a significance level of 0.05. The computation also produces an F-table value of 3.023, derived using Microsoft Excel with the formula  $=FINV(0.05;2;324)$ . According to the testing criteria,  $H_a$  is accepted and  $H_0$  is rejected when the calculated F value exceeds the F-table value; conversely,  $H_0$  is accepted when the F-table value is greater. The analysis results reveal that the calculated F value of 29.998 is substantially higher than the F-table value of 3.023, indicating acceptance of  $H_a$  and rejection of  $H_0$ . Thus, it can be concluded that audio-visual media and the PBL method exert a

significant and positive influence on social studies learning outcomes.

**Table 4. T-test Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	21,345	2,208		9,666	0,000
Problem Based Learning	0,112	0,067	0,087	1,671	0,096
Media Audio Visual	0,471	0,067	0,368	7,074	0,000

Source: Processed Data, 2025

The t-table value at a significance level of 0.05 is calculated with a degree of freedom  $df = 324 (n-k-1)$ , using Microsoft Excel through the formula  $=TINV (0.05;324)$ , resulting in a t-table value of 1.967. Based on the testing criteria,  $H_0$  is rejected if  $t\text{-count} > t\text{-table}$  or  $\text{significance} < 0.05$ , and  $H_0$  is accepted if  $t\text{-count} < t\text{-table}$  or  $\text{significance} > 0.05$ . The t-test results show that the t-count for the problem-based learning variable is 1.671, which is smaller than the t-table of 1.967 with a significance of 0.096, so  $H_0$  is accepted, and the effect of this variable is declared positive but not significant. Conversely, the audio-visual media variable has a t-count of 4.817, which is greater than the t-table of 1.967 with a significance of 0.000, so  $H_0$  is rejected, and it can be concluded that audio-visual media has a positive and significant partial effect on social studies learning outcomes.

**Table 5. Simultaneous Determination Coefficient Test Results**

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate
1	0,359a	0,156	0,151	2,639

Source: Processed Data, 2025

Table 5 illustrates the outcome of the simultaneous coefficient of determination analysis. As shown, the R Square value is 0.156 or 15.6%, indicating that audio-visual media and the PBL method jointly explain 15.6% of the variance in students' social studies learning outcomes. The remaining 84.4% is influenced by other variables not addressed within this research.

**Table 6. Partial Determination Test Results**

Component	Contribution	Variable		Amount
		X1	X2	
Effective (EC)		1,4%	14,2%	15,6%

Relative Contribution (RC)	9%	91%	100%
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Source: Processed Data, 2025

Table 6 shows that audio-visual media (X2) and the PBL learning method (X1) have an effective contribution to social studies learning outcomes with values of 1.4% and 14.2%, respectively, with a total contribution of 15.6%, indicating a very low effect. Meanwhile, the relative contributions of X1 at 9% and X2 at 91% indicate that audio-visual media has a much stronger partial influence than the PBL method on improving social studies learning outcomes.

## Discussion

This study provides an overview that there is a positive but insignificant impact was found on the problem-based learning (PBL) variable on social studies learning outcomes partially. This statement is in accordance with the t-test value, where the PBL t-table value of 1.967 is greater than the PBL t-count value of 1.671, and the PBL significance value of 0.096 is greater than 0.05. When analyzed using the t-count and t-table, it can be seen that the implementation of the PBL learning method has a positive but insignificant effect on learning outcomes. Based on this statement, it can be concluded that variable y is partially and positively influenced by variable X1 but is not significant. This is also in line with previous research by Budiman, Wijoyo, and Arwani (2019), who stated that no significant difference was found in learning outcome improvement and the PBL method in the cognitive domain, with an independent sample test value exceeding 0.05.

The effect of X1 on Y can also be seen through the regression line equation test, namely  $Y = 21.345 + 0.112X_1 + 0.471X_2 + e$ , which shows the value of the regression coefficient of the problem-based learning variable to be 0.112. It can be seen that this value is positive, so it can be concluded that every 1-unit increase in the implementation of the PBL learning method will increase learning outcomes by 0.112. This statement shows that the PBL learning method has a positive relationship with social studies learning outcomes.

The Effective Contribution (SE) of the Problem-Based Learning variable (X1) is 1.2%, while its Relative Contribution (SR) is 9%. This shows that the contribution to variable Y is relatively small. Therefore, it can be concluded that the effect is also small. The partial impact between variable Y and X1 is not significantly

influential due to several factors that cause the hypothesis to be rejected. According to Mauludi (2021), several factors that could cause the hypothesis to be rejected are insufficient sample size, inappropriate significance level setting, high data variability, and inappropriate model or method selection.

Based on the researcher's observation, the reason why no significant partial impact was found between learning outcomes and the PBL learning method was the high variability of the data. This was due to the samples coming from different schools, different grade levels, differences in student abilities, and differences in the materials and topics taught, which could lead to many different perceptions among individuals. This is what caused the lack of a significant relationship between the two variables. In addition, teacher competence also influences the success of PBL implementation. Differences in teacher competence when applying this model can also be a factor in the rejection of this hypothesis.

The findings of this study support hypothesis 2, indicating that the use of audio-visual media exerts a significant and positive effect on learning outcomes, both partially and collectively. This is evidenced by the t-count of 4.817 for the regression coefficient, which exceeds the t-table value of 1.967, and a significance level of 0.000, below the 0.05 threshold. Therefore, it can be concluded that audio-visual media significantly and positively influences students' learning outcomes.

The regression line test yielded the equation  $Y = 21.345 + 0.112X_1 + 0.471X_2 + e$ , indicating that the audio-visual media variable has a regression coefficient of 0.471. Since this coefficient is positive, it can be inferred that a one-unit increase in the use of audio-visual media is associated with a 0.471 increase in learning outcomes. This explains that the higher the implementation of audio-visual media, the greater the increase in learning outcomes.

The results of this study's analysis show that the implementation of audio-visual media in social studies learning has a significant and positive impact on learning outcomes, thus accepting Hypothesis 2. This means that if the use of audio-visual media can be maximized, students' learning outcomes in social studies will also improve.

The multiple linear regression analysis produced the equation  $Y = 21.345 + 0.112X_1 + 0.471X_2 + e$ , indicating that the audio-visual

media variable contributes a coefficient of 0.471, whereas the Problem-Based Learning (PBL) variable contributes 0.112. Both variables positively affect the social studies learning outcomes of junior high school students in Susukan Subdistrict. Thus, every increase and decrease of one unit of the audio-visual media and PBL variables will be followed by an increase or decrease in the learning outcome variable. The higher the implementation of audio-visual media and the PBL method, the higher the learning outcomes of students will be, and vice versa. Learning outcomes will reach optimal values if audio-visual media and the PBL method are collaborated together during learning activities because interactive learning activities lead to improved learning outcomes.

The hypothesis testing using the F-test produced an F-table value of 3.023 and an F-count of 29.998. Since the F-count substantially exceeds the F-table value ( $29.998 > 3.023$ ),  $H_a$  is accepted and  $H_0$  is rejected. These findings indicate that audio-visual media and problem-based learning methods, when applied simultaneously, have a significant and positive effect on learning outcomes. The calculation also gives an R Square value of 15.6%. This value indicates that the learning outcomes of junior high school students in Susukan District, particularly in social studies, are influenced by the implementation of audio-visual media and the PBL learning method, while the remaining 84.4% are influenced by other variables or factors not included in the study. This means that the influence of variables  $X_1$  and  $X_2$  on social studies learning outcomes is not very strong, as they only influence 15.6% of the results.

Previous tests have shown that hypothesis 3, namely that audio-visual media and problem-based learning methods have a significant and positive impact when used simultaneously on learning outcomes, has been accepted. However, the level of influence is still relatively low at 15.6%.

The outcomes of this study are reinforced by field survey findings demonstrating that the use of the problem-based learning method characterized by indicators such as critical thinking, problem-solving skills, and active engagement alongside the integration of audio-visual media reflected through indicators of presentation effectiveness, content understanding, and information retention positively contributes to the social studies

learning outcomes of junior high school students in Susukan District.

The problem-based learning method as a whole is able to encourage student development in problem solving, especially when combined with the use of audio-visual media that reinforces understanding of the material. The combination of the two contributes to learning outcomes in the psychomotor, affective, and cognitive aspects by 15.6%. In addition, students assessed that the implementation of this learning model was able to hone their critical thinking skills when supported by audio media. Students also assessed that this model was able to increase active involvement in the learning process, especially when accompanied by good presentation quality and information retention through audio-visual media, thus overall contributing 15.6% to the improvement in learning outcomes.

### Conclusion

The conclusion drawn from the multiple linear regression statistical analysis that has been conducted shows that the problem-based learning model has a positive but insignificant effect on social studies learning outcomes when tested partially. This finding is demonstrated by the t-test results, which accept  $H_0$  and reject  $H_a$ . The inability of teachers to implement problem-based learning results in an insignificant effect, so that

its implementation in junior high schools/equivalent in Susukan Subdistrict has not been optimal and has not been able to contribute significantly to improving social studies learning outcomes. Conversely, audio-visual media has been proven to have a positive and significant effect on social studies learning outcomes. The t-test results show that  $H_0$  is rejected and  $H_a$  is accepted, indicating that audio-visual media are effective in helping students understand the material, convey information more accurately, and improve the quality of material presentation, thereby impacting learning outcomes.

Simultaneously, the problem-based learning model and audio-visual media have a positive and significant effect on students' social studies learning outcomes. The combined effect of these two variables is 15.6%, which, although classified as weak, shows that social studies learning outcomes can be improved through the simultaneous application of both. These findings also indicate that 84.4% of the variation in learning outcomes is influenced by factors other than the problem-based learning model and audio-visual media. Thus, optimizing social studies learning outcomes requires attention to other supporting factors, both from the pedagogical aspect, the learning environment, and student characteristics.

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