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Problem-Based *Learning* and Audio Visual Media Learning Model in Class XI Academic Madrasah Aliyah Negeri 2 Banyumas.

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Abstract
Background. Classroom learning using conventional methods often bores students and is reflected in relatively low grades. Efforts need to be made to further liven up the classroom atmosphere so that students are enthusiastic about learning.
Purpose. This study aims to evaluate the effectiveness of problem-based learning and audiovisual media learning models in enhancing student learning outcomes.
Method. The method used is experimental research. Statistical testing encompasses tests for the validity and reliability of research instruments, sample homogeneity, and the use of Kolmogorov-Smirnov and Shapiro-Wilk normality tests. To test the hypothesis, the N Gain Score Test was used.
Result. The research instruments used were valid and reliable; the samples used in this study were homogeneous; and the N Gain test showed a significant difference between the treatment and control groups.
Conclusion. The value of economics subjects in the treatment group, which utilized the problem-based learning model and visual and audio media, was higher than that of the control group.
Implementation. Problem-based learning models and audiovisual media can be applied in various schools to enhance student learning outcomes.

Keywords: problem-based learning, media, audiovisual

INTRODUCTION

Learning outcomes are the most important component of the learning process and are a metric to measure how well students master the subject matter during the learning process (Ananda, 2017). The achievement of learning objectives is a measure of learning success, not learning activities, which are an important part of the process of achieving learning outcomes.

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The learning outcomes achieved by students over a specified period are known as learning success (Tang, 2017).

How students understand the lessons given by the teacher is known as learning outcomes. Learning outcomes are typically represented by letter or number scores that students receive after taking exams or tests. In practice, teachers and students frequently encounter challenges in achieving optimal learning outcomes. Student learning outcomes can be influenced by several variables, including the quality of instruction, the models employed, and the individual characteristics of students. Teaching models that do not match students' learning styles can have a negative impact on student learning outcomes (Windasari & Sofyan, 2019).

LITERATURE REVIEW

Problem-Based Learning

Problem-Based Learning (also known as "Problem-Based Learning" in English) is a learning approach that begins with solving a problem, but students need new knowledge to solve it. This new learning model begins by providing students with contextual problems to learn and find solutions (Kusumaeardani, 2022).

Learning Media

By utilizing learning media, the learning model can make students more interested in paying attention to the explanations. Text-based literacy is not in demand by the current generation, who are more interested in multimedia content that contains moving images and sound, such as video and animation. The use of learning videos in this context is a means to ensure that learning proceeds smoothly and students gain a thorough understanding of the lesson (Cahyani & Jayanta, 2021).

By utilizing learning media, teaching and learning activities can become more engaging and effective, referring to both the present and the future, allowing them to adapt to the changing times. Arsyad (2014) defines learning media as everything, including tools, environments, and types of activities designed to increase knowledge, change attitudes, or instill skills in everyone who uses them (Wiryani, 2021).

According to Andayani (2014), audio-visual media is a combination of audio media and visual media, also known as audio-visual media. This combination makes the presentation of the subject matter more complete. Audio-visual media is a tool for learning that helps convey ideas, attitudes, and knowledge through a combination of written and spoken words. Audio-

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visual media are very helpful in improving the quality of learning. Audio-visual media, as a combination of audio and visual elements, provide a more complete and effective way to convey information, knowledge, and ideas to students. This media makes teaching and learning activities more engaging, clear, and relevant to the times. Audio-visual media, which combine audio and visual elements, provide a more comprehensive and effective way to convey information, knowledge, and ideas to students (Wati, 2016).

Problem-Based Learning and Audiovisual Media Learning Model

Previous studies have demonstrated that problem-based learning models and audiovisual learning media enhance student learning outcomes. This indicates that classroom learning activities employing a problem-based learning model can enhance student learning outcomes (Djonomiarjo, 2018). However, research conducted by Puspitasari et al. (2020) found no interaction between the Problem-Based Learning model and early ability on students' cognitive learning outcomes.

There is a positive and significant relationship between the use of audio-visual media and science learning outcomes of grade IV students of SD Duri Kepa 05. This shows that the use of audio-visual media can improve student learning outcomes. However, according to Wijayanti et al. (2024), the learning outcomes of listening to stories among fourth-grade students of SDN 4 Mataram are not affected by the use of audio-visual media. This finding aligns with Windasari and Sofyan's (2019) study, which also found that the learning outcomes of listening to stories among fourth-grade students of SDN 4 Mataram were not impacted by the use of audio-visual media.

The researcher aims to investigate the impact of problem-based learning models and audio-visual media on the economic learning outcomes of students in Class XI at Akademik MAN 2 Banyumas. Therefore, this study aims to explain and demonstrate the impact of problem-based learning models and audio-visual media on the economic learning outcomes of students in Class XI of Academic MAN 2 Banyumas.

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METHOD

The method used in this study is a quantitative experimental method. There are two class groups: the treatment group and the control group. The treatment group was assigned to a Problem-Based Learning and Audio Visual Media learning model, whereas the control group was not. The research was conducted in Class XI at MAN 2 Banyumas.

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Nonequivalent Research Design Qontrol Group Design

Group	***Pretest***	**Treatment**	***Posttest***
Experiment	O_1	X	O_2
Control	O_3	-	O_4

Information:

O_1 : *Pretest* in the experimental group
O_2 : *Posttest* in the experimental group
X : Treatment given to the experimental group
O_3 : *Pretest* in the control group
O_4 : *Posttest* in the control group

Quasi-Experimental *Design*

Class	Pretest	Variable	Posttest
Experiment	Y1	X1	Y2
Control	Y1	X2	Y2

Information:
X1: Learning using *Problem-Based Learning* Model and Audio-Visual Learning Media
X2: Conventional learning
Y1: Pretest
Y2: Posttest

DISCUSSION

Initial observations and interviews with economics teachers of MAN 2 Banyumas obtained information that student learning outcomes in economics subjects are still relatively low because many students have not been able to achieve the score of the Learning Goal Achievement Criteria (KKTP), this is because learning activities still use the lecture model, when applying the class lecture model it feels boring for students and many do not pay attention to what the teacher conveys so that impact on learning outcomes listed in the following table.

Table 1. Data on Daily Exam Scores for Economics Subjects for Grade XI Academic Students of MAN 2 Banyumas for the 2024/2025 Academic Year

No.	**Class Name**	**Sum student**	**Average Value**	**CD**
1.	Academic XI 1	43	71	72
2.	Academic XI 2	45	71,3	72
3.	Academic XI 3	43	71	72
4.	Academic XI 4	42	70,7	72
5.	Academic XI 5	43	68,4	72
6.	Academic XI 6	44	70,8	72
	Sum	**260**	**423,2**	

Source: Data from economics teachers of MAN 2 Banyumas

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The problem of student learning outcomes remains low, as evidenced by the grades below the set standards. Students have not shown the ability to analyze problems and draw conclusions during the learning process, lack confidence in expressing their opinions during conversations and when conveying the results of their talks, and the use of learning media is not optimal. The limitations of these educational resources have a negative impact on student learning outcomes, causing learning to be uninteresting because the media used primarily relies on books. Teachers' problems also need to be addressed in order to overcome the issue of low learning outcomes by employing an engaging and relevant learning approach that can enhance students' academic achievement. The learning model that has the potential to improve student learning outcomes is problem-based learning, also known as PBL.

Test Results of Research Instruments

The test results of the instruments used in this study are valid and reliable. The data is shown in Table 2.

Table 2. Test of Validity and Reliability of Research Instruments

Statement	R_{hitung}	R_{tabel}	Information
P.1	0.483	0.304	Valid
P.2	0.539	0.304	Valid
P.3	0.510	0.304	Valid
P.4	0.492	0.304	Valid
P.5	0.601	0.304	Valid
P.6	0.461	0.304	Valid
P.7	0.461	0.304	Valid
P.8	0.477	0.304	Valid
P.9	0.537	0.304	Valid
P.10	0.486	0.304	Valid

Validity Test

Variabel	Alpha Cronbach	Syarat	Keterangan
Hasil	0.658	>0.60	Reliabel

Reliability Test

The research instrument was then used to test both treatment groups, and the results are presented in Table 3.

Table 3. Pretest Score and Post Test Score

Class Pretest	High Score	Lowest Score	Mean
Eksperiment	70	20	38,8
Control	50	20	37,9

Score Pretest

Class Postest	High Score	Lowest Score	Mean
Experiment	100	80	87,8
Control	90	50	73,2

Score Posttest

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The average pretest score for the treatment group was 38.8, and for the control group, it was 37.9. After the class action study was conducted, the post-test results for the treatment group were 87.8, which were higher than those for the control group, at 73.2.

The results of the Kolmogorov-Smirnov and Shapiro-Wilk normality tests indicate that the p-value of 0.000 is below 0.05, suggesting that the data is not normally distributed. The results of the normality test of this study are listed in Table 4.

Table 4. Normality Test Results

Tests of Normality

	Kelas	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hasil Belajar	Pretest Eksperimen	.211	42	.000	.909	42	.003
	Posttest Eksperimen	.244	42	.000	.795	42	.000
	Pretest Kontrol	.254	43	.000	.861	43	.000
	Posttest Kontrol	.252	43	.000	.861	43	.000

The homogeneity test shows that the results of this study are homogeneous. The test results are shown in Table 5.

Table 5. Pretest and Posttest Homogeneity Test

Homogenitas Pretest

Test of Homogeneity of Variance

Levene Statistic	df1	df2	Sig.
2.742	1	83	.102

Homogenitas Posttest

Test of Homogeneity of Variance

Levene Statistic	df1	df2	Sig.
1.920	1	83	.170

The results of the homogeneity test showed that the sample used in this study was homogeneous.

The results of the Mann-Whitney U and Wilcoxon tests showed a significance level of 0.000, indicating a statistically significant difference between the treatment and control groups. The test results are shown in Table 6.

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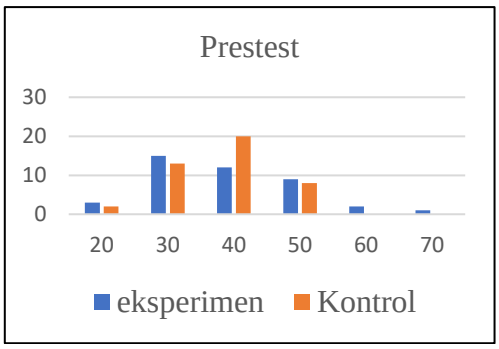
Table 6. Mann-Whitney U and Wilcoxon Statistical Test Differences

Test Statistics	
	Result Study
Mann-Whitney U	214.000
Wilcoxon W	1160.000
Z	-6.305
Asymp. Sig. (2-tailed)	.000
a. Grouping Variable: Kelas	

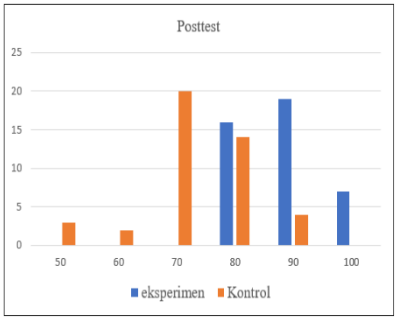
Mann-Whitney U

Test Statistics Wilcoxon		
	Postest Eksperimen - Pretest Eksperimen	Posttest Kontrol - Pretest Kontrol
Z	-5.687[b]	-5.756[b]
Asymp. Sig. (2-tailed)	.000	.000
a. Wilcoxon Signed Ranks Test		
b. Based on negative ranks.		

Wilcoxon



Graph of the Minimum Pretest Completeness Score



Postest Minimum Completeness Value Chart

Figure 1. Minimum Completeness Value Graph

The results of this study showed that the treatment group produced higher scores compared to the control group. The results are shown in Graph 1 and Table 7.

The Gain test results for the experimental class were 80% in the high category and 56.5% in the medium category for the control class. Pretest results of the control class 20-50 and the experimental class 20-70, Posttest results of the control class 50-90 and the experimental class 80-100.

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Table 7. Gain Score Test Results.

Descriptives					
	Group			Statistic	Std. Error
NGain_Percent	Eksperimen	Mean		80.0085	1.95466
		95% Confidence Interval for Mean	Lower Bound	76.0610	
			Upper Bound	83.9560	
		5% Trimmed Mean		80.2740	
		Median		81.6667	
		Variance		160.470	
		Std. Deviation		12.66767	
		Minimum		50.00	
		Maximum		100.00	
		Range		50.00	
		Interquartile Range		14.29	
		Skewness		-.105	.365
		Kurtosis		-.372	.717
	Control	Mean		56.5338	2.36478
		95% Confidence Interval for Mean	Lower Bound	51.7615	
			Upper Bound	61.3061	
		5% Trimmed Mean		56.8260	
		Median		57.1429	
		Variance		240.464	
		Std. Deviation		15.50691	
		Minimum		16.67	
		Maximum		85.71	
		Range		69.05	
		Interquartile Range		16.67	
		Skewness		-.200	.361
		Kurtosis		-.184	.709

CONCLUSION

The learning outcomes of students in Economics who use the Problem-Based Learning and Audio-Visual Media learning model (average score of 8.75) are better than those who do not use the model (average score of 73.2) in Class XI Academic MAN 2 Banyumas.

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IMPLEMENTATION

The Problem Based Learning and Audio Visual Media learning model can be used as a model to improve learning outcomes in various schools.

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