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The Effectiveness of Diorama-Based Learning Media on Students' Achievement in Islamic Cultural History: A True Experimental Study in Islamic Secondary Education

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Abstract

This study aims to examine the effectiveness of diorama-based learning media in improving students' learning outcomes in Islamic Cultural History. The study addresses the challenge of low student engagement and difficulty in understanding abstract historical content by proposing a visual and experiential learning approach. This study employed a quantitative approach using a true experimental design with a pretest–posttest control group model. The population consisted of 391 seventh-grade students at MTs PPMI As-Salam Sukoharjo, Central Java, with a sample of 60 students selected through simple random sampling. The sample was divided into an experimental group and a control group, each consisting of 30 students. Data were collected using learning achievement tests and analyzed using IBM SPSS Statistics 26, including normality tests, homogeneity tests, and hypothesis testing with the Mann–Whitney U test. The results showed that the experimental group achieved significantly higher learning outcomes compared to the control group. The mean posttest score of the experimental group was 75.33, while the control group scored 43.00, with a difference of 32.33 points. Hypothesis testing revealed a significance value of 0.000 ($p < 0.05$), indicating a statistically significant effect of diorama-based learning media on students' learning outcomes. This study provides empirical evidence on the effectiveness of diorama-based learning media specifically in the context of Islamic Cultural History at the madrasah tsanawiyah level using a true experimental design, which has been rarely explored in previous studies. This study contributes to the development of innovative learning media in Islamic education by demonstrating that visual and three-dimensional instructional approaches can enhance students' understanding of abstract historical concepts. It also offers practical implications for teachers and curriculum developers in designing more engaging and effective learning environments.

Keywords: Diorama-based learning media, learning outcomes, Islamic cultural history, experimental study, visual learning.

Introduction

Islamic Cultural History is a strategic subject in Islamic education at the junior secondary level (*madrasah tsanawiyah*) that functions not only to transmit historical knowledge but also to internalize Islamic spiritual, moral, and civilizational values (Fachrudin, 2023). Through Islamic Cultural History learning, students are expected to understand the dynamics of Islamic history while also being able to actualize these values in their daily lives (Lubis, Manik, Mardianto, & Anas, 2021). From the perspective of contemporary Islamic education, history learning should not be limited to memorizing facts but should also promote critical, reflective, and contextual thinking skills (Wineburg, 2001; Seixas & Morton, 2013). Therefore, Islamic Cultural History plays an essential role in shaping students' Islamic identity and character in response to contemporary challenges.

However, in practice, Islamic Cultural History is often perceived as less engaging by students. The material is typically narrative, text-heavy, and abstract, which reduces students' motivation to read and understand the content (Muzakki, Wijaya, & Prasetyo, 2017). This condition is further exacerbated by the dominance of conventional teacher-centered methods and the limited use of innovative instructional media, resulting in a one-way learning process with minimal student engagement (Dita, 2022). Previous research indicates that low-quality classroom interaction significantly affects students' learning outcomes (Hattie, 2009). In addition, the lack of visual media integration in history learning makes it difficult for students to construct meaningful mental representations of complex historical events (Mayer, 2009).

These problems were also identified at MTs PPMI As-Salam Sukoharjo. Based on an interview with the Islamic Cultural History teacher, it was found that the learning outcomes of seventh-grade students had not fully reached the Minimum Mastery Criterion (Kriteria Ketuntasan Minimal), which is set at 74 (Interview, November 13, 2025). Several students still scored below this standard, indicating a gap between expected and actual learning outcomes. This condition highlights the need for innovation in instructional strategies and learning media, particularly those that can transform abstract historical content into more concrete and understandable forms.

One potential solution to this problem is the use of three-dimensional visual learning media, such as diorama. A diorama is a learning medium that presents miniature representations of events or situations in a concrete and visual form, enabling students to build understanding through contextual learning experiences (Husna, Nasokah, & Hidayat, 2021). According to the multimedia learning theory, visual media can enhance cognitive processing by integrating verbal and visual information (Mayer, 2009). Furthermore, three-dimensional media support constructivist learning approaches that emphasize active student engagement in knowledge construction (Piaget, 1970; Vygotsky, 1978). Recent studies also indicate that interactive visual

learning media can significantly improve students' learning outcomes in Islamic education (Muhaidhori, Fauzi, & Hadi, 2025).

Several previous studies have demonstrated the effectiveness of diorama media in improving students' understanding and learning outcomes. Husna, Nasokah, and Hidayat (2021) found that diorama media improved students' comprehension of historical material by providing concrete visualization. This finding is supported by Baiti, Jamiatul Hamidah, and Lestari (2024), who reported a significant increase in students' learning outcomes after the implementation of diorama-based learning. In addition, Askiya, Guru, Ibtidaiyah, Ilmu, and Islam (2022) emphasized that visual media play an important role in helping students understand abstract material by engaging both cognitive and affective aspects. Other studies also confirm that three-dimensional visual media enhance students' engagement and learning interest (Undi Permanawati & Dhanu Dharma Mahendra, 2024; Napisya & Alfurqan, 2023).

Despite these findings, several limitations remain. First, most previous studies have focused on general history subjects or elementary education contexts and have not specifically examined the implementation of diorama media in Islamic Cultural History at the madrasah tsanawiyah level. Second, prior research tends to emphasize students' motivation and interest rather than rigorously measuring learning outcomes using robust experimental designs. Third, the integration of innovative learning media in Islamic education still requires stronger empirical evidence to support its effectiveness (Fauzi, Zawawi, & Shopiah, 2025). In this context, the development of innovative learning strategies is essential to improve the overall quality of Islamic education (Shopiah, Fauzi, & Zawawi, 2025).

Based on these gaps, this study offers novelty by empirically examining the effectiveness of diorama-based learning media in improving students' learning outcomes in Islamic Cultural History at the madrasah tsanawiyah level using a pretest–posttest control group experimental design. This study contributes not only to the development of visual learning media but also to strengthening evidence-based practices in Islamic education. Therefore, the objective of this study is to analyze the effect of diorama-based learning media on the learning outcomes of seventh-grade students in Islamic Cultural History.

Method

This study employed a quantitative approach with an experimental research design aimed at empirically examining the effect of diorama-based learning media on students' learning outcomes. A quantitative approach was selected because it allows objective measurement of variables using numerical data and hypothesis testing through inferential statistical analysis (Aji et al., 2015; Hermawan Iwan, 2019). In educational research, experimental methods are considered the most rigorous approach for identifying causal relationships between treatment variables and learning outcomes, as they enable systematic

control of extraneous variables (Creswell & Creswell, 2018; Shadish, Cook, & Campbell, 2002).

The research design applied in this study was a true experimental design using a pretest–posttest control group model. This design involved two groups, namely an experimental group and a control group, which were randomly assigned to enhance the internal validity of the study (Sugiyono, 2019). Both groups were administered a pretest to measure students' initial abilities. Subsequently, the experimental group received treatment in the form of diorama-based learning media, while the control group was taught using conventional instructional methods without the use of diorama media. After the treatment, both groups were given a posttest to examine differences in learning outcomes resulting from the intervention (Jannah et al., 2017). This design minimizes selection bias and provides a more accurate estimation of treatment effectiveness (Fraenkel, Wallen, & Hyun, 2012).

The population of this study consisted of all seventh-grade students of MTs PPMI Assalaam Sukoharjo in the 2025/2026 academic year, totaling 391 students. The sampling technique used was probability sampling with a simple random sampling method, ensuring that each member of the population had an equal chance of being selected (Firmansyah & Dede, 2022). The sample comprised 60 students, representing approximately 16.6% of the population, with 30 students assigned to the experimental group and 30 students to the control group. This sample size is considered adequate for experimental research in educational settings and meets the requirements of representativeness and statistical power (Waruwu et al., 2025; Cohen, Manion, & Morrison, 2018).

The research procedure consisted of three main stages: preparation, treatment implementation, and evaluation. During the treatment phase, the experimental group participated in Islamic Cultural History learning using diorama media as a visual instructional tool designed to facilitate concrete understanding of historical concepts. Meanwhile, the control group received instruction through lecture and discussion methods without the use of diorama media. The treatment was conducted over several sessions in accordance with the school's instructional schedule. The diorama used in this study consisted of three-dimensional miniature representations of Islamic historical events, such as the early propagation of Islam by the Prophet Muhammad and the Battle of Khandaq. The diorama was constructed using materials such as cardboard, styrofoam, and colored paper, and was complemented with miniature structures, defensive trenches, and historical figures to enhance students' engagement and comprehension.



Figure 1. Diorama Learning Media Used in This Study

The research instrument consisted of a learning achievement test comprising 15 items, including 10 multiple-choice questions and 5 essay questions. The test items were developed based on the core competencies and basic competencies of Islamic Cultural History and aligned with the learning objectives (Musfirah & Rasyid, 2025). The instrument was used to measure students' cognitive achievement before and after the treatment (Nitko & Brookhart, 2011).

Instrument validity was assessed to ensure that the test accurately measured the intended construct. Content validity was established through expert judgment, while empirical validity was tested using item-total correlation analysis (Ramadhan et al., 2024). An instrument is considered valid if it meets the required correlation criteria (Matondang, 2014). Reliability testing was conducted to determine the internal consistency of the instrument using reliability coefficients such as Cronbach's alpha. The instrument is considered reliable if the reliability coefficient is at least 0.70 (Ulum, 2016; Tavakol & Dennick, 2011).

Data analysis was conducted in several stages, including prerequisite tests and hypothesis testing. The prerequisite tests included normality and homogeneity tests to determine the appropriate statistical analysis technique. If the data were not normally distributed, non-parametric tests were applied; otherwise, parametric tests were used (Field, 2013). Hypothesis testing was performed to determine whether there were significant differences in learning outcomes between the experimental and control groups after the treatment. All statistical analyses were conducted using IBM SPSS Statistics version 26 to ensure accuracy and efficiency in data processing.

Results and Discussion

Results

This study examined the effect of diorama-based learning media on students' learning outcomes in Islamic Cultural History among seventh-grade students at MTs PPMI Assalaam Sukoharjo, Central Java. Data were collected through pretest and posttest assessments and analyzed using IBM SPSS Statistics 26.

Normality Test

The normality test was conducted to determine whether the data followed a normal distribution. The results of the Shapiro–Wilk test are presented in Table 1.

Table 1. Normality Test Results

Variable	Group	Kolmogorov–Smirnov			Shapiro–Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest Scores	Control	0.298	30	0.000	0.785	30	0.000
	Experimental	0.295	30	0.000	0.810	30	0.000
Posttest Scores	Control	0.194	30	0.005	0.928	30	0.045
	Experimental	0.210	30	0.002	0.903	30	0.010

Note: Lilliefors Significance Correction applied.

The results indicate that the significance values of the pretest data for both the control and experimental groups were 0.000. Similarly, the posttest data showed significance values of 0.045 for the control group and 0.010 for the experimental group. Since all values are below 0.05, it can be concluded that the data were not normally distributed. Therefore, non-parametric statistical analysis was applied in the subsequent analysis.

Homogeneity Test

The homogeneity test was conducted to examine whether the variance between groups was equal. The results are presented in Table 2.

Table 2. Homogeneity Test Results

Test Type	Significance Value (Sig.)	Interpretation
Pretest	0.524 (> 0.05)	Homogeneous
Posttest	0.800 (> 0.05)	Homogeneous

The results show that the significance values for both pretest (0.524) and posttest (0.80) are greater than 0.05. This indicates that the data are homogeneous, meaning that the variance between the experimental and control groups is statistically equivalent.

Hypothesis Testing

The hypothesis test was conducted to determine whether there was a significant difference in learning outcomes between the experimental and control groups. Since the data were not normally distributed, the Mann–Whitney U test was used. The results are presented in Table 3.

Table 3. Hypothesis Test Results

Test Type	Significance Value (Sig.)	Interpretation
Pretest	0.371 (> 0.05)	No significant difference
Posttest	0.000 (< 0.05)	Significant effect

The results show that the significance value for the pretest is 0.371, which is greater than 0.05. This indicates that there is no significant difference between the experimental and control groups before the treatment. In contrast, the posttest results show a significance value of 0.000, which is less than 0.05. This indicates a significant difference between the two groups after the treatment.

Furthermore, the mean posttest score of the experimental group was 75.33, while the control group obtained a mean score of 43.00. The difference of 32.33 points indicates a substantial improvement in the experimental group. These findings suggest that the use of diorama-based learning media has a significant effect on students' learning outcomes.

Discussion

The findings of this study demonstrate that diorama-based learning media significantly improve students' learning outcomes in Islamic Cultural History. This result can be explained through the lens of multimedia learning theory, which emphasizes that learning becomes more effective when information is presented through both visual and verbal channels. Visual representations, such as diorama, help learners organize information, reduce cognitive load, and enhance memory retention (Mayer, 2009). In this context, the three-dimensional nature of diorama enables students to visualize historical events more concretely, thereby facilitating deeper conceptual understanding.

From a constructivist perspective, the effectiveness of diorama-based learning can also be attributed to its ability to promote active engagement. Students are not merely passive recipients of information but actively construct knowledge through interaction with visual materials. This aligns with Vygotsky's theory, which highlights the importance of social interaction and mediated learning in cognitive development (Vygotsky, 1978). The use of diorama provides a meaningful learning environment where students can connect prior knowledge with new information, thus strengthening their understanding of historical concepts.

The substantial difference in posttest scores between the experimental and control groups also indicates a strong practical impact of the intervention. This suggests that diorama-based learning not only produces statistically significant results but also has meaningful educational implications. In educational research, such practical significance is essential for determining the real-world effectiveness of instructional interventions (Cohen, 1988). The improvement observed in this study reflects the ability of visual and interactive media to enhance students' cognitive engagement and learning performance.

These findings are consistent with previous studies that have highlighted the effectiveness of visual and interactive learning media. For instance, Mayer (2009) emphasized that multimedia learning environments significantly improve students' understanding by integrating visual and verbal information. Similarly, Moreno and Mayer (2007) demonstrated that interactive multimedia environments enhance learners' engagement and comprehension. In the context of Islamic education, Muhaidhori, Fauzi, and Hadi (2025) found that interactive visual learning media significantly improved students' learning outcomes. Furthermore, Shopiah, Fauzi, and Zawawi (2025) reported that innovative learning strategies contribute to increased student motivation and engagement, which ultimately affect learning achievement.

In addition, the findings of this study support the argument that the integration of innovative learning media is essential in addressing the challenges of abstract and text-heavy subjects such as Islamic Cultural History. Traditional teaching methods often fail to provide meaningful learning experiences, whereas visual media such as diorama can transform abstract content into concrete representations. This transformation is crucial in history learning, where understanding requires the ability to visualize events, contexts, and relationships.

This study also contributes to the existing literature by providing empirical evidence using a true experimental design, which strengthens the validity of the findings. Many previous studies in this area have relied on quasi-experimental or descriptive approaches, which limit causal inference. By employing a rigorous experimental design, this study offers stronger evidence regarding the effectiveness of diorama-based learning media in improving students' learning outcomes (Shadish, Cook, & Campbell, 2002).

However, several limitations should be acknowledged. First, the study was conducted in a single institution with a relatively limited sample size, which may restrict the generalizability of the findings. Second, the study focused only on cognitive learning outcomes and did not examine affective or psychomotor domains. Future research is recommended to include larger and more diverse samples, as well as to explore the impact of diorama-based learning on broader aspects of student development, including motivation, engagement, and higher-order thinking skills.

In addition to its empirical contribution, this study highlights the pedagogical significance of integrating visual and experiential learning media

into Islamic education. Diorama-based learning not only enhances cognitive achievement but also fosters meaningful learning experiences by bridging the gap between abstract historical content and students' real-world understanding. This approach aligns with the growing demand for innovative, student-centered learning environments that emphasize active engagement, critical thinking, and contextual understanding. Therefore, the integration of diorama media can be considered a practical and scalable instructional strategy for improving the quality of Islamic Cultural History learning, particularly in contexts where traditional teaching methods remain dominant.

Furthermore, the findings of this study provide important implications for educators, curriculum developers, and policymakers in Islamic education. Teachers are encouraged to adopt and adapt innovative visual media to create more interactive and effective learning environments, while curriculum designers should consider incorporating experiential and multimedia-based approaches into instructional frameworks. At a broader level, this study reinforces the importance of evidence-based instructional practices in enhancing educational quality. Future research should explore the long-term impact of diorama-based learning, including its effects on higher-order thinking skills, students' motivation, and character development, as well as its integration with digital technologies to further enrich the learning experience.

Conclusion

This study found that the use of diorama-based learning media had a greater impact on students' learning outcomes in Islamic Cultural History than previously expected. The experimental group achieved significantly higher posttest scores compared to the control group, with a mean difference of 32.33 points (75.33 vs. 43.00). The Mann–Whitney U test also confirmed a statistically significant difference ($p < 0.05$), indicating that the intervention was effective. These findings challenge the conventional assumption that history learning in Islamic education is inherently less engaging and difficult to improve, and they open new avenues for discussion on the role of innovative visual media in enhancing students' understanding.

From a scientific perspective, this study strengthens previous findings regarding the effectiveness of visual and interactive learning media in improving students' academic achievement. At the same time, it questions the adequacy of traditional teacher-centered approaches that rely heavily on text-based instruction. Furthermore, this study introduces diorama-based learning as a practical and contextually relevant instructional innovation that enriches the discourse on pedagogical strategies in Islamic education, particularly in teaching abstract historical content.

However, this study has several limitations. It was conducted with a relatively small sample size and within a specific institutional context, which limits the generalizability of the findings. Therefore, future research is recommended to involve larger and more diverse samples to obtain a more

comprehensive understanding of the effectiveness of diorama-based learning media. In addition, further studies should explore its impact on other learning domains, such as students' motivation, engagement, and higher-order thinking skills, as well as its integration with digital learning technologies to enhance its scalability and effectiveness.

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