

## ENHANCING CHARACTER EDUCATION THROUGH AI-BASED LEARNING VIDEOS AND ISLAMIC ANIMATION

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### ABSTRACT

*This study examines the comparative effectiveness of Artificial Intelligence (AI)-based video learning and Syamil Dodo Islamic animation in improving students' learning outcomes in Islamic Education (IRE) and Character Education at SDI Panggentungang Utara. Employing a quantitative quasi-experimental design, this research involved two sixth-grade classes: class VI/A receiving AI-based video instruction and class VI/B utilizing Syamil Dodo animation. Data were collected through achievement tests and learning motivation questionnaires and analyzed using descriptive and inferential statistics. The findings reveal that both media significantly improved students' learning outcomes; however, AI-based video learning demonstrated greater effectiveness in increasing average scores and reducing learning disparities, while Syamil Dodo animation showed stronger contributions to conceptual understanding and learning motivation. The significance of this study lies in its empirical evidence on the differentiated pedagogical roles of adaptive AI-based media and culturally grounded Islamic animation within IRE learning. This research contributes to the discourse on technology-enhanced Islamic education by highlighting that strategic integration of AI-driven and value-based animation media can simultaneously support academic achievement, character development, and equitable learning in elementary education.*

## INTRODUCTION

Education is the main foundation in forming individual quality and the progress of a nation (Murthada, 2025; Ridwan et al., 2023). In the era of globalization and rapid development of digital technology, the learning process is required to adapt to the characteristics of today's students (Taneo & Nomlana, 2022). Learning can no longer rely solely on conventional, one-way methods; innovations are needed to create active, engaging, and meaningful learning. This challenge is increasingly apparent in Islamic Religious Education and Character Education, which focuses not only on the transfer of religious knowledge but also on character building, noble morals, and the internalization of moral values in everyday life. (Ardiyansyah et al., 2025) However, the limited availability of innovative learning media often leads to low student participation and suboptimal

learning outcomes in Islamic Religious Education and Character Education (Arif, 2020; Wahyudi & Kurniasih, 2022).

Several recent studies have shown that the use of digital technology-based learning media can improve the quality of learning and student engagement. Educational animation media has proven effective in helping students understand abstract concepts through engaging visualizations and narratives, especially at the elementary school level (Elinda Putri Novita Sari et al., 2025; Mayer, 2020). In addition, the use of learning videos has also been reported to increase conceptual understanding and learning motivation because it presents material in a contextual and concrete manner (Saada & Magahlah, 2021). The development of artificial intelligence (AI) in the field of education is increasingly strengthening the potential of digital learning media by providing adaptive and personalized learning according to the needs, learning styles, and learning speed of students (Holmes et al., 2019; Zawacki-Richter et al., 2019).

However, these studies generally still treat AI-based animation and video learning media as separate entities and focus more on improving the cognitive aspects of learning outcomes. Studies that comprehensively compare the effectiveness of these two media in the context of Islamic Religious Education (IRE) and Character Building, particularly at the elementary school level, are still very limited. Furthermore, most previous research has not explicitly examined how the integration or comparison of AI-based learning media with Islamic animation media, which is rich in moral and character values, can contribute to strengthening students' character education. In fact, Islamic Religious Education (IRE) learning is not only oriented towards mastering religious knowledge but also on the process of internalizing moral values, religious attitudes, and character building in everyday life. These limitations indicate a significant research gap between the development of technology-based learning media and the pedagogical needs of Islamic Religious Education and Character Education in elementary schools. Therefore, research is needed that not only tests the effectiveness of digital learning media separately but also compares and analyzes the role of AI-based learning videos and Islamic animations in supporting learning outcomes and developing student character. This study aims to fill this gap by providing empirical evidence regarding the differences and pedagogical contributions of both media in the context of Islamic Religious Education and Character Education learning at the elementary school level (Amin et al., 2025; Aryanti et al., 2022; Nugroho, 2024).

Based on these gaps, this study aims to examine the effect of the use of Syamil Dodo animation and AI-based learning videos on Islamic Religious Education and Character Education learning outcomes. The focus of this study includes conceptual understanding, learning motivation, and internalization of character values in students. The novelty of this study lies in the integration of Islamic animation media with educational nuances and moral values with adaptive AI-based learning video technology in the context of Islamic Religious Education and Character Education learning in elementary schools. The results of this study are expected to provide theoretical contributions to the development of Islamic education studies as well as practical contributions in formulating innovative, effective, and relevant Islamic Religious Education and Character Education learning strategies to meet the demands of the digital era.

## **METHODS**

This study uses a quantitative approach with a quasi-experimental design to examine the effect of using Syamil Dodo animated learning media and Artificial Intelligence (AI)-based learning videos on Islamic Religious Education (IRE) and Character Building learning outcomes. The quasi-experimental design was chosen because it is suitable for testing cause-and-effect relationships in the context of formal education when full randomization of subjects is not possible, especially in classes that have been administratively formed by the school. This design allows researchers to conduct

systematic comparisons between two treatment groups with relatively equivalent characteristics so that the research results can be interpreted objectively and measurably (Creswell & Creswell, 2018; Harris et al., 2006; Sugiyono, 2012).

The study was conducted at SDI Panggentungang Utara, Gowa Regency, South Sulawesi. The study population included all students enrolled in Islamic Religious Education (IRE) and Character Education (Budi Pekerti) classes at the elementary school level. The sample was determined using a purposive sampling technique, taking into account equivalence in initial academic characteristics, grade level, curriculum used, and the background of the subject teachers. Based on these considerations, class VI/A was designated as the group receiving the learning treatment using AI-based learning videos, while class VI/B was designated as the comparison group using Syamil Dodo animation media. The selection of these two classes was based on the similarity in the number of students, age range, and relatively comparable initial academic achievements, thus minimizing the potential for bias due to differences in subject characteristics (Arikunto, 2010; Etikan et al., 2016).

Data collection was conducted through tests, questionnaires, and documentation. Tests were used to measure students' cognitive learning outcomes before and after treatment (pretest and posttest). The questionnaire was constructed using a Likert scale to measure students' perceptions, attitudes, and learning motivation towards the use of animation and AI-based learning media. The research instrument was developed based on Islamic Religious Education (IRE) and Character Education learning indicators, and underwent validity and reliability testing before use to ensure measurement accuracy, as recommended in quantitative educational research (Azwar, 2018; Taherdoost, 2016). Documentation in the form of report card grades, attendance lists, and teacher notes are used as supporting data to strengthen the interpretation of research results and provide a more comprehensive picture of learning conditions (Bowen, 2009).

The research procedures were carried out in stages and systematically, encompassing preparation, implementation, and data analysis. The preparation phase included the development and validation of research instruments and the processing of research permits. The implementation phase involved providing learning treatments using AI-based video media in grade VI/A and Syamil Dodo animation media in grade VI/B, accompanied by data collection through tests and questionnaires. All research procedures were explained in a coherent and operational manner to allow for replication in similar contexts and with similar subjects. Data analysis was conducted using descriptive and inferential statistics. Descriptive statistics were used to describe data trends, such as average values, percentages, and distribution of student learning outcomes. Inferential statistics were used to test research hypotheses and determine the significance of the influence of learning media on Islamic Religious Education (IRE) and Character Education learning outcomes. A t-test was used to determine differences in learning outcomes between groups, while regression analysis was used to identify the direction and magnitude of the influence of learning media use. All analyses were conducted objectively and measurably to ensure the consistency, accuracy, and validity of the research findings (Field, 2018; Pallant, 2020).

## **RESULTS AND DISCUSSION**

This section presents the results of research on the effect of using Artificial Intelligence (AI)-based learning videos and Syamil Dodo animations on the learning outcomes of Islamic Religious Education (IRE) and Character Building students at SDI Panggentungang Utara. The results are presented based on descriptive and inferential statistical analyses obtained from pretest and posttest data. The initial overview of students' abilities before being given Artificial Intelligence (AI)-based learning treatment shows that their Islamic Religious Education (IRE) and Character Education (Culture) learning outcomes are still moderate and uneven. The average pretest scores obtained by students, accompanied by a relatively wide distribution of scores, indicate heterogeneity in material

mastery among students. This condition can be observed through the descriptive statistics of pretest scores presented in Table 1:

**Table 1. Pretest Learning Outcomes in AI-Based Video Learning Class**

No.	Interval	Frekuensi	Persentase
1	47-53	2	9,52%
2	54-60	3	14,29%
3	61-67	5	23,81%
4	68-73	4	19,04%
5	74-80	5	23,82%
6	81-87	1	4,76%
Total		21	100%

After implementing AI-based learning videos, there was a significant increase in learning outcomes. The distribution of posttest scores was dominated by the mid-to-high range, indicating equitable learning outcomes. These findings indicate that AI media helps students understand the material in a structured, visual, and interactive way.

**Table 2. Posttest Learning Outcomes in AI-Based Video Learning Class**

No.	Interval	Frekuensi	Persentase
1	47-53	1	4,76%
2	54-60	1	4,76%
3	61-67	1	4,76%
4	68-73	1	4,76%
5	74-80	9	42,86%
6	81-87	5	23,81%
7	88-93	3	14%
Total		21	100%

The results of a simple linear regression test showed a significant effect of the use of AI-Based Learning Videos on student learning outcomes ( $p = 0.010 < 0.05$ ). The positive relationship formed indicates that the more optimal the use of AI media, the higher the learning outcomes. The coefficient of determination ( $R^2 = 0.136$ ) indicates that 13.6% of the variation in student learning outcomes is explained by the use of AI media, while the remainder is influenced by other factors.

**Table 3. T-Test Results of the Use of AI-Based Learning Videos on Islamic Religious Education and Character Education Learning Outcomes Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	28.936	24.685		1.172	.256
	Ai	.520	.300	.369	1.731	.010

a. Dependent Variable: learning outcomes

In classes using Syamil Dodo animation, students' initial understanding of Islamic Religious Education (IRE) and Character Building materials also showed limitations. Some students still struggled to explain basic concepts and demonstrated low learning motivation. This led to the selection of Syamil Dodo animation as a visual learning alternative capable of presenting material in a concrete and engaging manner.

After implementing Syamil Dodo animation, student learning outcomes improved. The shift in score distribution from pretest to posttest indicated improved understanding of the material. Animation, which presents stories, illustrations, and simple material delivery, helps students remember concepts more easily and increases engagement in the learning process.

**Table 4. Syamil Dodo Animation Posttest Results**

No.	Intervals	Frequency	Percentage
1	47-53	0	0,00%
2	54-60	0	0,00%
3	61-67	1	4,76%
4	68-73	4	19,05%
5	74-80	5	23,81%
6	81-87	7	33,33%
7	88-93	4	19%
Total		21	100%

The results of a simple linear regression test showed a significant effect of the Syamil Dodo animation on learning outcomes (Sig. = 0.000 < 0.05) with a contribution of 18.5%. This finding

confirms that educational animation media can increase motivation, engagement, and understanding of Islamic Religious Education (IRE) and Character Building concepts.

A comparison of posttest results showed a significant difference between the AI-Based Learning Video class and the Syamil Dodo animation class. The AI-Based Learning Video class had a higher posttest average and a more homogeneous distribution of scores than the animation class. This indicates that AI media not only improves academic achievement but also minimizes the gap in material mastery among students.

**Table 5. Comparison of Learning Outcomes between AI-Based Learning Videos and Syamil Dodo Animations**

Posttest treatment	Distribution	Statistics
Video based learning AI VI A	Mean	80,5
	Median	81
	Range	32
	standar deviasi	7,794
	Minimum	61
	Maximum	93
	Animasi Syamil Dodo VI B	Mean
Median		78,56
Range		46
standar deviasi		10,315
Minimum		47
Maximum		93

The t-test showed a significant difference between the two groups (Sig. = 0.021 < 0.05), so it can be concluded that AI-based learning videos are more effective than Syamil Dodo animations in improving Islamic Religious Education and Character Building learning outcomes. AI media allows for a more interactive, adaptive, and student-centered presentation of material, while Syamil Dodo animations serve as reinforcement for basic understanding.

Overall, the analysis results show that the use of Artificial Intelligence (AI)-based learning videos and Syamil Dodo animations both have a positive influence on students' Islamic Religious Education (IRE) and Character Building learning outcomes. However, the results of the posttest and t-test comparison indicate that the class using the AI-based learning videos obtained higher average scores with a more homogeneous score distribution than the class using the Syamil Dodo animation. This finding confirms the difference in effectiveness between the two learning media as shown by the results of the inferential statistical analysis.

## DISCUSSION

### The Influence of Artificial Intelligence (AI)-Based Learning Videos

The use of Artificial Intelligence (AI)-based learning videos in Islamic Religious Education (IRE) and Character Education (Budi Pekerti) learning has significantly contributed to improving student learning outcomes at SDI Panggentungang Utara. The initial condition of students before the AI video application showed a moderate level of understanding and a relatively heterogeneous distribution of scores, indicating variations in the ability to understand the material among students. Pretest results showed that some students had difficulty understanding the concept of zakat, while others were able to answer questions correctly. This initial distribution underpins the need for adaptive, interactive learning media that can adjust to the students' learning pace, thus AI-based videos were chosen as the primary medium in this study (Fatmawati & Raharjo, 2024)

After implementing AI-based learning videos, significant improvements were seen in learning outcomes, both quantitatively and qualitatively. The average posttest score increased compared to the pretest, and the distribution of scores tended to be more homogeneous, indicating that this medium was effective not only in improving average learning outcomes but also in minimizing disparities between students (Arif et al., 2021). AI-based videos enabled students to learn the material in a visual and structured way, provided an adaptive approach tailored to each student's needs, and provided interactivity in the form of online quizzes and discussions. This aligns with the findings of (Kruse, 2018) which states that AI-based learning enables students to learn independently, flexibly, and can adjust the learning speed according to their individual abilities (Arif, 2025).

From an affective and psychomotor perspective, students demonstrated active engagement in the learning process. They were able to access videos, take quizzes, participate in discussions, and express their understanding of the concept of zakat through polite and appropriate comments. This affective aspect is important because students' motivation and positive attitudes have been shown to influence learning success, as stated in the statement (Santrock, 2014) that emotional engagement and learning interest have a direct impact on academic outcomes. Simple linear regression analysis supports this finding, showing that the use of AI videos significantly impacts learning outcomes ( $p < 0.05$ ), although the coefficient of determination of 13.6% indicates that other factors such as teacher competence, teaching strategies, and the learning environment also influence overall learning outcomes. Thus, AI-based learning videos serve as a medium that supports more effective, adaptive learning, and is oriented towards equitable student achievement (Jesica Dwi Rahmayanti & Muhamad Arif, 2021).

The Influence of Syamil Dodo AnimationThe use of Syamil Dodo animation as a learning medium also demonstrated a positive impact on student learning outcomes at SDI Panggentungang Utara. This medium provides a narrative and contextual approach, enabling students to concretely understand Islamic Religious Education (IRE) and Character Building concepts through engaging and illustrative stories (Arif, 2024). Descriptive analysis showed an increase in posttest scores compared to pretests, demonstrating that educational animation can enhance students' conceptual understanding and learning motivation. The shift in score distribution to higher intervals indicates that students are better able to internalize the material, especially for those who require visual representations to understand abstract concepts such as zakat and morals.

In addition to cognitive enhancement, Syamil Dodo animation also impacts affective and psychomotor aspects. Students who are less proficient in direct communication can express their understanding through watching the animation and writing reflective journals. These activities strengthen the interaction between educators and students and support maximum mastery of the material. These results align with research (Humaerah & Munandar, 2019) which shows that animated media makes a positive contribution to biology learning in the subject of faith and morals at MI. In addition, this research (Andriyani & Indra, 2020) emphasizes that watching animation can improve

students' reflection skills through journal writing, so that understanding of the material is deeper and more critical. Statistical analysis also showed a significant effect of the Syamil Dodo animation on student learning outcomes ( $p = 0.000$ ), contributing 18.5% to the variation in learning outcomes. This finding confirms that educational animation not only increases engagement and motivation to learn but also makes a significant contribution to the understanding of Islamic Religious Education (IRE) and character building concepts. This media emphasizes strengthening basic understanding and learning motivation, making it highly useful as a support for interactive and contextual learning in the classroom.

### **The Difference in the Effects of AI Video and Syamil Dodo Animation**

The influence of the two learning media showed a significant difference in effectiveness in improving student learning outcomes. The results of the t-test on the posttest showed that the class using Artificial Intelligence (AI)-based learning videos had a higher average posttest score and a more homogeneous distribution of scores compared to the class using the Syamil Dodo animation, with a score  $t_{hitung} = 2,373$  exceed  $t_{table} = 2,004$  ( $Sig. = 0,021 < 0,05$ ). These findings indicate that AI-based learning videos are more effective in improving average learning outcomes while simultaneously reducing the achievement gap between students. Furthermore, Syamil Dodo's animation appears superior in enhancing conceptual understanding and learning motivation, particularly for students who respond more strongly to narrative and visual representations in learning (Rashid et al., 2024)

These differences in effectiveness can be understood from the characteristics of each learning medium. AI video offers an adaptive and interactive approach, leveraging technology to deliver material systematically and personally according to students' learning needs. This approach aligns with findings that AI-based learning technologies can increase learning engagement and provide real-time feedback, thereby helping students with varying initial abilities achieve more consistent understanding. (Zawacki-Richter et al., 2019) Meanwhile, Syamil Dodo's animation emphasizes storytelling, narrative illustration, and emotional engagement, which has proven effective for students who need visual representation and real context to understand concepts, strengthen memory, and increase intrinsic motivation in learning (Rashid et al., 2024)

This analysis is in line with opinion (Rusman, 2020) which states that the success of AI-based learning depends heavily on technology access, student motivation, and their skills in utilizing the media. Meanwhile, story-based and visual media such as animation are highly effective in learning contexts that require concrete representation and student emotional engagement, which also impacts the affective and psychomotor components (Santrock, 2014). Thus, although both media have their respective strengths, their use must be tailored to the desired pedagogical objectives.

The results of this study confirm that the selection of learning media must consider the learning objectives and context. To improve equitable learning outcomes and digital interactivity, AI-based learning videos are an appropriate choice due to their ability to accommodate individual learning needs. Meanwhile, animations such as Syamil Dodo remain relevant, especially in strengthening conceptual understanding and increasing student motivation through engaging narrative visuals. Therefore, the integration of both media can provide a more comprehensive learning approach, combining adaptive, interactive, contextual, and motivational aspects, thus optimally improving the quality of students' Islamic Religious Education (IRE) and Character Building learning processes and outcomes.

The difference in effectiveness between AI-based learning videos and Syamil Dodo animations indicates that no single learning medium is completely superior across all dimensions of Islamic Religious Education (IRE) and Character Building (Budi Pekerti). AI videos excel in

improving academic achievement and equitable learning outcomes, while Syamil Dodo animations are more effective in strengthening conceptual understanding and values-based learning motivation. These findings broaden the discourse on technology in Islamic education by emphasizing that the effectiveness of learning media must be understood multidimensionally, encompassing cognitive, affective, and value aspects. Conceptually, this study positions technology-based Islamic Religious Education (IRE) learning not as a substitution for conventional media, but as an integrative effort between technological innovation and a values-based pedagogical approach. The integration of AI-based learning videos and Islamic animations opens up space for adaptive and contextual Islamic Religious Education (IRE) learning models that can address the challenges of the digital era without neglecting the primary goal of Islamic education, namely the formation of morals and character.

## **CONCLUSION**

This study underscores that the use of technology-based instructional media plays a strategic role in enhancing the quality of Islamic Religious Education (IRE) and Character Education learning. Artificial Intelligence (AI)-based instructional videos were found to have a positive and significant effect on students' learning outcomes, not only by increasing average academic achievement but also by promoting a more equitable distribution of learning mastery among students. The shift from an initially heterogeneous score distribution to a more homogeneous pattern indicates that adaptive AI-based learning approaches are effective in addressing differences in students' prior abilities. Meanwhile, the Syamil Dodo animated media also demonstrated a positive contribution to improving students' learning outcomes, particularly in strengthening conceptual understanding and learning motivation through contextual storytelling and visual narrative approaches. This medium supports students in comprehending IRE and Character Education content in a more concrete and meaningful manner, although the equalization of learning outcomes was not as pronounced as that achieved through AI-based video instruction. These findings suggest that Islamic educational animation possesses strong pedagogical value in the affective and conceptual domains, which constitute a fundamental foundation for values-based education. A comparative analysis of the two instructional media indicates that AI-based instructional videos are more effective in enhancing academic achievement evenly across students, whereas Syamil Dodo animation is more effective in fostering motivation and conceptual understanding. This distinction highlights that the selection of instructional media in Islamic education cannot be separated from the pedagogical objectives to be achieved. For goals related to the equalization of learning outcomes and the enhancement of digital interactivity, AI-based video instruction represents a relevant and effective option. Conversely, for strengthening values, contextual understanding, and learning motivation, animation grounded in Islamic narratives remains highly significant.

From a practical perspective, the findings of this study offer important implications for educators and administrators in Islamic education. IRE teachers are encouraged not to rely on a single instructional medium, but rather to integrate AI-based instructional videos and Islamic educational animations in a complementary manner, aligned with the characteristics of the learning content, instructional objectives, and students' conditions. Islamic educational institutions are also advised to promote the development of teachers' digital competencies, enabling them to utilize AI technologies pedagogically, critically, and in harmony with Islamic values. For future research, it is recommended that similar studies employ broader experimental designs and involve more diverse samples to enhance the generalizability of the findings. Further investigations should also explore the long-term effects of AI-based instructional media and Islamic animation on value internalization, character formation, and students' religious practices. In addition, qualitative or mixed-methods studies may be conducted to examine students' and teachers' learning experiences in greater depth, thereby enabling a more comprehensive and sustainable understanding of the contribution of technology to Islamic education.

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