

The Influence of Islamic Religious Education Learning Based on Digital Wordwall Applications on the Character Education of Madrasah Aliyah Students

Pengaruh Pembelajaran Pendidikan Agama Islam Berbasis Aplikasi Digital Wordwall terhadap Pendidikan Karakter Peserta didik Madrasah Aliyah

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Abstract

This study aims to assess the effect of using digital Wordwall applications in Islamic Religious Education Learning (PAI) to strengthen students' character education in MAN 2 Majalengka. The background of this study departs from the importance of innovation in Islamic Religious Education Learning to strengthen the character of learners effectively and contextually. This study uses a quantitative approach with a quasi-experimental design in the form of a pre-test-post-test control group. The sample consisted of 70 students of Class XI who were divided into two groups: the experimental group (n=36) who participated in Wordwall-based Islamic Religious Education Learning, and the control group (n=34) who received conventional Islamic Religious Education Learning. Data collection was conducted through questionnaires that measured the five main indicators of strengthening Character Education (PPK), namely religious, nationalist, Independent, mutual aid, and integrity. Questionnaires were administered before and after treatment in both groups. The results of the data analysis showed that there was an increase in character in both groups, but the increase in the experimental group was statistically more significant than the control group ($p < 0.05$). These findings indicate that using the Wordwall application can positively contribute to the formation and strengthening of the character of learners. Therefore, the application of interactive digital learning media such as Wordwall is highly recommended to be integrated into Islamic Religious Education Learning in madrasah as an effort to build character education that is more effective and fun.

Keywords: *Islamic religious education, wordwall, character education.*

Abstrak

Penelitian ini bertujuan untuk mengkaji pengaruh penggunaan aplikasi digital Wordwall dalam pembelajaran Pendidikan Agama Islam (PAI) terhadap penguatan pendidikan karakter peserta didik di MAN 2 Majalengka. Latar belakang penelitian ini berangkat dari pentingnya inovasi dalam pembelajaran PAI untuk memperkuat karakter peserta didik secara efektif dan kontekstual. Penelitian ini menggunakan pendekatan kuantitatif dengan desain quasi experiment berupa pre-test dan post-test control group. Sampel terdiri atas 70 peserta didik kelas XI yang dibagi ke dalam dua kelompok: kelompok eksperimen (n=36) yang mengikuti pembelajaran PAI berbasis Wordwall, dan kelompok kontrol (n=34) yang menerima pembelajaran PAI secara konvensional. Pengumpulan data dilakukan melalui kuesioner yang mengukur lima indikator utama Penguatan Pendidikan Karakter (PPK), yaitu religius, nasionalis, mandiri, gotong royong, dan integritas. Kuesioner diberikan sebelum dan sesudah perlakuan pada kedua kelompok. Hasil analisis data menunjukkan bahwa terjadi peningkatan karakter pada kedua kelompok, namun peningkatan pada kelompok eksperimen secara statistik lebih signifikan dibandingkan kelompok kontrol ($p < 0,05$). Temuan ini menunjukkan bahwa penggunaan aplikasi Wordwall mampu memberikan kontribusi positif dalam pembentukan dan penguatan karakter peserta didik. Oleh karena itu, penerapan media pembelajaran digital yang interaktif seperti Wordwall sangat dianjurkan untuk diintegrasikan dalam pembelajaran PAI di madrasah sebagai upaya membangun pendidikan karakter yang lebih efektif dan menyenangkan.

Kata Kunci: Pendidikan agama islam, wordwall, pendidikan karakter.

1. Introduction

A key component in improving the quality of human resources and creating a more advanced society is education (Dito & Pujiastuti, 2021). Through education, people learn moral and social values necessary for social life in addition to information and skills (Pare & Sihotang, 2023). Quality education plays a role in producing a highly competitive generation that has a critical mindset and is able to adapt to the times (Abidah et al., 2022). Furthermore, one of the main drivers of a country's social and economic welfare is education (Alijaya & Zaenudin, 2024). With a good education system, people can more easily access various opportunities in the world of work and a better social life (Basri, 2023). Therefore, an ideal education system not only focuses on academic achievement Kulsum et al. (2024), but also seeks to develop children's character so that they have integrity, responsible attitudes, and the ability to have a positive impact on their environment (Judrah et al., 2024).

In Indonesia's education context, character education is one of the main pillars of the learning system (Maisaroh & Untari, 2024). Character education aims to form individuals who are noble, ethical, and have high moral awareness (Maulidin et al., 2025). Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi (Kemendikbudristek) in its annual report in 2024, confirmed that character education has become a priority in the Merdeka Curriculum, with an emphasis on strengthening religious values, nationalism, cooperation, integrity, and independence (Mukaromah et al., 2025). However, in its implementation, there are still various challenges, such as the lack of utilization of technology in character learning and limited methods that can attract students' interest (Purnomo et al., 2025).

The current phenomenon shows that the implementation of character education still faces various obstacles (Pattiasina et al., 2022). Many learners still have difficulties in internalizing character principles in their daily lives, according to research by the Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi (2024) (Ampat & Muzakki, 2024). As reinforcement, data from UNESCO (2023) shows how integrating technology into the classroom can increase learning effectiveness and learner engagement by up to 40% (Andrea et al., 2024). However, the success of this integration relies heavily on appropriate learning design that is relevant to learners' needs (Baharuddin & Hatta, 2024). It is important to note that the challenge of internalizing character values is not only caused by the lack of engaging methods, but also by the influence of the digital environment that often contradicts these values (Harizi et al., 2025). Therefore, a holistic approach is needed that not only integrates technology, but also equips learners with the ability to filter and critique the information they receive digitally (Hudha et al., 2024).

In addition, the rapid development of technology has brought new challenges in education (Fricticarani et al., 2023), where students spend more time with digital devices, but have not been fully directed to support positive character building (Amelia, 2023). Therefore, in the context of character education, the use of digital applications can be an innovative solution to overcome these obstacles as a means to strengthen character education (Karsim et al., 2024). In this context, it is important to consider that technology integration should be supported by a clear pedagogical framework (Yusuf, 2024). The use of digital devices should not simply replace conventional methods, but should be strategically integrated into the curriculum (Aisyah & Komarudin, 2025). Teachers need to have a deep understanding of how to utilize technological features to achieve specific character learning objectives (Anggraini et al., 2025).

One solution that can be applied is the utilization of digital applications in the character learning process (Syifa & Ridwan, 2024). Technology allows learners to access more varied and flexible learning resources according to the needs of the times. At MAN 2 Majalengka, the

Wordwall application can be applied as a learning support medium (Prastika et al., 2025). With the help of Wordwall's interactive platform, educators can design interesting lessons that suit the needs of their students (Kusnadi & Azzahra, 2024). Furthermore, incorporating digital tools such as Wordwall can encourage the growth of 21st-century skills such as critical thinking, teamwork, and communication (Nursaya'bani et al., 2025). Interactive features in Wordwall can be designed to promote group discussions, joint problem-solving, and personal reflection, all of which contribute to comprehensive character building (Alfian, 2025). Thus, technology is not only a tool, but also a means to effectively instill character values (Fahmi et al., 2024).

Character education is one of the main focuses in the development of human resources in Indonesia. President Joko Widodo, through the Ministry of Education and Culture established the Penguatan Pendidikan Karakter (PPK) program or movement which states that of the 18 character values, 5 characters must be prioritized based on Pancasila (Pramesty et al., 2025). These five characters are not characters that develop and stand alone but are still connected with 18 characters so as to form personal wholeness (Muttaqin et al., 2023; Pratomo, 2023). The following are the 5 main values of PPK priority characters which are also indicators in assessing the character of students in this study, namely: (1) religion, (2) nationalism, (3) integrity, (4) independence, (5) cooperation (Khalifatun et al., 2024).

Several previous studies have examined the importance of character education in the education system (Ulfan & Hasan, 2023). A study conducted by Hidayatulloh (2024) showed that character education implemented through conventional learning methods is quite effective in shaping students' morals, but has limitations in the aspect of active student involvement. Meanwhile, research by Hendra (2024) revealed that experiential learning can improve the understanding of moral values, but still requires innovation to make it more attractive to students in the digital era. Research by Sumianto et al. (2024) also found that technology-based learning methods can increase students' motivation to internalize character values. However, it has not been optimally applied in the context of character education.

Based on the results of the analysis of previous research gaps and the phenomenon of character education implementation in the digital era, researchers consider it necessary further to examine the effectiveness of technology integration in learning. This study focuses on the subject of Islamic Religious Education, specifically through the utilization of the Wordwall digital application as a learning medium in the character building of grade XI students at MAN 2 Majalengka. The main purpose of this study is to explore the relationship between the use of Wordwall application in Islamic Education learning and the character building of students. Specifically, this study aims to determine whether there is a significant influence of Islamic Religious Education Learning based on Wordwall application on the character of students, the extent of the influence, and whether the influence is positive or negative. These three aspects become the basis in the formulation of research objectives, the selection of quantitative approaches with experimental methods, as well as in the process of data collection and analysis carried out systematically in order to obtain valid and scientifically accountable results.

2. Literature Review

Various character education theories emphasize the importance of strengthening moral and ethical values in the learning process, especially at the secondary education level. However, the implementation of this theory in the digital era faces serious challenges, such as the lack of learner involvement, the limited contextual approach, and the lack of integration of digital media in learning practices (Abidah et al., 2022; Dito & Pujiastuti, 2021). Previous research generally

highlights the importance of character education. However, much of it is still normative, not explaining how a character can be effectively shaped through an applicable and interactive digital approach (Alijaya & Zaenudin, 2024). This creates a gap between the idealism of character education and its actual practice in the classroom context, especially in madrasah.

This study presents a novelty in the form of an empirical approach to measure the effectiveness of Wordwall application in learning Islamic Religious Education on strengthening students' character. Unlike previous studies that focused more on cognitive aspects or learning motivation, this study specifically examines the impact of technology integration on the five main indicators of Strengthening Character Education, namely religion, nationalism, integrity, independence, and cooperation.

The urgency of this research lies in the pressing need for a character learning model that is relevant to the digital generation. In practice, teachers often do not optimally utilize technology in character education, so empirical evidence is needed to support changes in learning approaches in madrasah. The research gap that this study fills is the lack of studies that integrate the Wordwall digital application in the context of Islamic Religious Education Learning specifically, as well as the lack of quantitative data that shows the direct influence of technology on aspects of student character. Thus, this research not only enriches the literature on character education, but also offers strategic alternatives that can be practically implemented in the madrasah environment.

2.1. Interactive Learning Based on Wordwall Digital App

Digital app-based interactive learning is a learning approach that utilizes digital technology to create a learning experience that is more participatory, fun, and oriented towards active student engagement. Digital applications such as Wordwall act as auxiliary media that allow teachers to deliver materials in an innovative and accessible way for learners. Digital learning media can increase the effectiveness of the teaching-learning process, especially in terms of motivation, participation, and retention of material. Wordwall is a web-based application that allows teachers to create various types of interactive learning activities, such as multiple choice quizzes, matching pairs, true/false, anagrams, and other educational games. Wordwall is designed to support active learning, both individually and in groups. Based on the opinion of (Prastika et al., 2025), Wordwall is proven to be effective in increasing students' enthusiasm and concentration in learning, because it combines visual elements, games, and direct evaluation.

2.2. Character Education

Character education is a process of forming students' personalities that includes the development of moral values, ethics, and positive behavior rooted in noble cultural and religious values. According to Komara (2018), character education is a deliberate effort to help someone understand, feel, and perform core ethical values such as honesty, responsibility, respect, and caring. Meanwhile, the Ministry of Education and Culture (2017) defines character education as a process of internalizing the nation's noble values in the practice of daily life, which aims to form a generation with noble character, resilience, and love for the country. In the Strengthening Character Education (PPK) program initiated by the Ministry of Education and Culture of the Republic of Indonesia, five main values are the focus, namely: 1) Religion: The values of spirituality, interfaith tolerance, and worship; 2) Nationalist: Love for the country, respect for diversity, and maintaining unity; 3) Independent: Independence in thinking and acting responsibly; 4) Gotong Royong: Cooperation, solidarity, and social care; and 5) Integrity: Honesty, responsibility, and moral exemplary. These five values are expected to be internalized in

all learning activities, both directly through teaching materials and indirectly through role models and the school environment.

3. Research Methods

This study used a quantitative approach with a quasi-experimental design of pre-test and post-test control groups to analyze the effect of learning Islamic Religious Education based on Wordwall digital application on the character education of students at Madrasah Aliyah Negeri (MAN) 2 Majalengka (Laili et al., 2024). In this study, the sampling technique used was total sampling. That is, all students of class XI MAN 2 Majalengka became the research sample. This approach was chosen because the number of students in class XI who became the population of this study was less than 100 people. Thus, every grade XI learner participated as a respondent. The sample of this study consisted of 70 students of grade XI MAN 2 Majalengka, who were then randomly divided into two groups, namely the experimental group (Learning with Wordwall) and the control group (conventional Learning) (Andini, 2022).

The research instrument used was a character education questionnaire given before (pre-test) and after (post-test) (Subhaktiyasa, 2024). This questionnaire is designed to measure the level of character education of students, covering five main dimensions, namely religiosity, nationalism, integrity, independence, and cooperation. Each dimension is measured by 5 statement items, so that overall this questionnaire consists of 25 questions. In this study, the questionnaire used is a list of statements using a Likert scale, with the answer options Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS), and Strongly Disagree (STS). Researchers chose this questionnaire because it is an efficient and effective tool for collecting quantitative data from a large number of respondents in a short time, as well as enabling accurate statistical analysis. The questionnaire has been tested for validity and reliability, ensuring that the questions accurately measure the character attributes in question and provide consistent results. The research team of this study developed the questionnaire based on relevant quantitative research questionnaires.

The research procedure was conducted in three main stages: pre-test, intervention, and post-test. In the pre-test stage, the character education questionnaire was administered to both groups before the learning intervention began. Furthermore, the intervention stage lasted for 2 weeks or 8 meetings, where learning using the Wordwall application was applied in class XI 6 with 36 students as the experimental group, while in class XI 5 with 34 students, the conventional method was applied as the control group. Finally, the post-test stage was conducted after the intervention was completed (Hidayanti et al., 2022). The stages of making learning media using Wordwall include material identification, selection of activity types, design, and implementation on the Wordwall platform, as well as initial trials and revisions if needed. The data obtained from the questionnaire were analyzed using the independent t-test to compare the difference in character education scores between the two groups (Darmuki et al., 2023). The significance level used was $p < 0.05$ to determine whether there was a significant difference between the experimental and control groups after the intervention (Putri et al., 2023).

4. Results and Discussion

4.1. Research Results

The data obtained from this study were analyzed quantitatively to determine the effect of Islamic Religious Education Learning based on the Wordwall digital application on the character

education of grade XI students of MAN 2 Majalengka. The initial analysis involved presenting descriptive data related to the character education scores of students in the experimental group (who received learning with Wordwall) and the control group (who received conventional learning) before and after the implementation of the learning intervention. Table 1 summarizes these descriptive statistics, which include the number of learners in each group (N), the mean character education score, as well as the spread of the data measured through standard deviation. This information provides an initial picture of the condition of learners' character education before and after treatment in the two groups being compared.

Table.1. Descriptive Data of Learners' Character Education Score

Group	Test	N	Average	Standard Deviation
Experiment	Pre-test	36	75.28	8.55
Experiment	Post-test	36	88.72	7.12
Control	Pre-test	34	74.59	7.98
Control	Post-test	34	79.41	8.25

(Source: Research data 2025).

Based on the data presented in Table 1, there is a change in the average score of character education in both groups after the intervention. In the experimental group, the average pre-test score of 75.28 indicates the initial character education level of students before the use of Wordwall. After the implementation of Wordwall-based learning, the average post-test score increased significantly to 88.72. This increase was accompanied by a decrease in standard deviation from 8.55 to 7.12, indicating that the distribution of scores in the experimental group became more homogeneous after the intervention. Meanwhile, the control group also showed an increase in the average character education score from 74.59 in the pre-test to 79.41 in the post-test. However, this increase appeared smaller compared to the experimental group, and the standard deviation was relatively stable (7.98 in the pre-test and 8.25 in the post-test), indicating that the variation in scores did not change much.

To statistically test whether the difference in character education improvement between the two groups was significant, the gain score, which is the difference between the post-test and pre-test scores for each learner, was calculated. Next, an independent t-test was conducted on the average gain scores of the two groups. Table 2 presents the results of this statistical test. The average gain score of character education in the experimental group was 13.44, with a standard deviation of 6.88, which indicates a considerable average improvement and variation in improvement among learners in the experimental group. In contrast, the average gain score in the control group was only 4.82, with a standard deviation of 5.95, indicating a smaller increase and a relatively smaller variation in improvement compared to the experimental group.

Table.2. Results of Independent t-Test on Learner Character Education Gain Score

Variable	N	Average Gain	Standard Deviation	t	df	Sig. (2-tailed)
Experiment Group	36	13.44	6.88	6.752	68	0.000
Control Group	34	4.82	5.95			

(Source: Research Data 2025).

The calculated t value of 6.752 with degrees of freedom (df) 68 is shown in the independent t-test findings, compiled in Table 2. The significance value obtained is 0.000 (Sig. 2-tailed). The

average improvement of learners' character education in the experimental and control groups is statistically significantly different, as indicated by the significance value that is smaller than the set significance level ($p < 0.05$). In other words, the improvement in character education experienced by students who learned using the Wordwall digital application was significantly higher than the improvement experienced by students who followed conventional learning.

The application of Islamic Religious Education Learning based on the Wordwall digital application has a strong and beneficial impact on the development of character education of Grade XI students of MAN 2 Majalengka, based on the test study results. This can be seen from the average score of the experimental group, which is higher than the control group, so the use of Wordwall as a learning media is more effective in developing the characters assessed in this study. Thus, this finding supports the research hypothesis that there is a positive and significant effect of Wordwall-based Islamic Religious Education Learning on students' character education.

4.2. Discussion

Based on the main findings, students who participated in Islamic Religious Education Learning using the Wordwall program had a significantly greater increase in character education scores than students who received traditional learning. This result reinforces the findings of previous studies by [Meilinda et al. \(2025\)](#), which confirmed that the integration of technology in the learning process if designed with the right pedagogical framework, has great potential to provide substantial positive impacts on various aspects of education. The advantage of Wordwall lies in its interactive features that are able to transform the learning environment into a more dynamic and interesting one, thus inherently increasing the motivation and active participation of learners in absorbing the learning materials and character values inserted ([Puspitasari et al., 2024](#)). This view is in line with the argument of [Resti et al. \(2024\)](#), who highlighted Wordwall's capability to present a personalized and engaging learning experience for each learner.

Furthermore, the observed improvement in the five core values of religion, nationalism, integrity, independence, and cooperation in the experimental group underscores that Wordwall does more than just increase learners' engagement in general ([Rizandhi et al., 2024](#)). The app specifically proved effective in instilling the character values that are the main focus of this study. Wordwall's ability to facilitate constructive group discussions, present problem-solving challenges through an engaging game format, and encourage self-reflection through various interactive activities ([Utia et al., 2024](#)), provides richer opportunities for learners to internalize these noble values through deeper and more meaningful learning experiences. These active interactions and relevant experiences become an important bridge in linking abstract concepts of character values with practical applications in learners' daily lives ([Jumati, 2023](#)).

The practical implications of the findings of this study are significant for the development of Islamic Religious Education Learning strategies at the Madrasah Aliyah level. Educators are encouraged to actively consider the integration of innovative digital applications such as Wordwall as one of the promising approaches in the effort to improve learners' character education. Wordwall's potential to create learning that is more relevant to learners' learning preferences in this digital era can be optimally utilized. In addition, schools and other educational institutions play an important role in facilitating its implementation by providing thorough training to instructors and allocating sufficient funds for things such as reliable internet connection and required equipment. Thus, investing in technology integration is not only about modernizing learning, but also about empowering teachers and improving the quality of character education sustainably.

The results of this study have a specific context in the XI grade students of MAN 2 Majalengka. So, it cannot be concluded that the same results will be found in other classes, other schools, and even in other regions. Because, of course, every class, school, or region must have different characteristics, be it from the environment, culture, or other social factors. However, similar results may be found, as evidenced by similar studies with the same results, even though the samples are different. One recommendation for future research is to expand the scope of research by studying a larger population. As a suggestion for future research, if possible, the research should be conducted on a larger population, thus expanding the scope of the research.

5. Conclusion

This study reflects the importance of innovation in learning Islamic Religious Education, especially in shaping and strengthening the character of students. Through the application of Wordwall digital application, Islamic Education learning in class XI MAN 2 Majalengka showed significant results in the development of 5 (five) main indicators of character, namely religion, nationalism, integrity, independence, and cooperation. The learning provided to the experimental group clearly had a positive impact compared to the conventional method received by the control group. The results of the analysis showed that the character improvement score in the experimental group was much higher, with a strong statistical significance value ($p < 0.05$). This finding confirms that the utilization of interactive technology such as Wordwall not only increases students' cognitive engagement, but also strengthens the affective dimension in religious learning. However, the effectiveness of character learning is not entirely dependent on digital media. Other factors such as a conducive learning environment, social interaction patterns in the classroom, and individual characteristics of learners also play an important role in shaping students' personalities holistically. Therefore, Wordwall should be viewed as one of the supporting instruments in a more comprehensive Islamic Religious Education Learning strategy, not as the only solution. A reflective, contextual, and sustainable pedagogical approach should accompany technology integration.

6. References

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