



From Blackboard to Digital Screen (Transformation of Islamic Religious Education in Plus Classes at Zainul Hasan 1 Genggong Middle School)

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Abstract. *This research examines the transformation of Islamic Religious Education (PAI) learning in the Plus Class of Zainul Hasan 1 Genggong Middle School, which previously used traditional methods with blackboards, now switching to the use of digital technology. The background to this research was triggered by the development of information technology which is changing the education system and the need to update learning methods to make them more relevant to the digital era. With a descriptive qualitative approach, this research explores the transition process, the challenges faced by teachers and students, and the impact of the use of technology on the quality of learning. The research results show that the application of digital technology enriches the learning experience, increases student engagement, and provides more flexible access to material. However, the main challenges faced are the need for training for teachers and limited infrastructure improvements, which need to be addressed immediately to optimize the potential for digital transformation in PAI education.*

Keywords *Islamic religious education, digital technology, learning transformation, student involvement, educational infrastructure*

1. INTRODUCTION

The rapid development of information and communication technology (ICT) has brought significant changes to various sectors, including education. In this digital era, the way people learn and teach has undergone an inevitable transformation. Technology has reshaped the educational paradigm, shifting from reliance on conventional methods to the use of more interactive and flexible digital tools (Dongoran, F. R., 2024). Islamic Religious Education (PAI), as an essential component of the education system, has also felt the impact of this technological revolution (Novita, N. N. I., 2023).. What was once a monotonous and conventionally structured learning process is now transforming into a more dynamic, technology-based approach. A clear example of this transformation can be observed at SMP Zainul Hasan 1 Genggong, a school located in Genggong Village, Probolinggo Regency, which has begun to integrate digital technology into PAI learning to improve the quality and effectiveness of teaching.

SMP Zainul Hasan 1 Genggong serves as an ideal location for this research, as the school has implemented significant changes in the use of digital technology in PAI education. The school is well-equipped, including Plus classes, which consist of three classes for male students and three for female students, each with 15 students. These Plus classes focus on developing information technology and English language skills. Each Plus class is equipped

with a 32-inch Smart TV, enabling more interactive learning. Additionally, students in the Plus classes are required to stay at the Damanhuri Romly Dormitory, located at the Zainul Hasan Genggong Islamic Boarding School, under the guidance of Gus Dr. Muhammad Haris, M.Kes, who is also the newly elected Regent of Probolinggo. The presence of this dormitory plays a strategic role in fostering discipline, monitoring students' learning activities, and supporting the development of better character.

This study aims to explore in-depth the process of integrating digital technology into PAI learning at SMP Zainul Hasan 1 Genggong, as well as to evaluate the challenges and impacts on learning quality and student engagement. The research seeks to examine the significant changes in the learning system, shifting from traditional methods that rely on blackboards to the use of digital tools such as smart TVs, laptops, and web based applications. The main objective of this study is to assess the impact of implementing digital technology in improving student motivation, engagement, and their ability to master more complex and technology based material (Resti, R., Wati, R. A., Ma'Arif, S., & Syarifuddin, S., 2024).

Before the adoption of digital technology, PAI learning at SMP Zainul Hasan 1 Genggong still relied on traditional methods that had limitations, such as a lack of interactivity and difficulty in presenting material visually. With this change, the school recognized the importance of innovation in teaching methods. As a result, various digital tools have been implemented to support the learning process, creating opportunities for a more dynamic, interactive learning environment that is relevant to the demands of the times (Dwita, R., & Zulfitria, Z., 2024).

The research method used in this study is a descriptive qualitative approach, focusing on an in-depth exploration of the experiences of teachers and students during the transition to digital-based learning. Data was collected through observations, interviews, and documentation to understand the challenges faced during this transition and its impact on the quality of learning.

The research findings show that the integration of digital technology has had a significant positive impact in increasing student engagement, motivating them to be more active in learning, and making PAI material easier to understand. Technology allows for the delivery of material in a more flexible, dynamic, and interactive way, creating a more engaging and relevant learning experience. However, challenges include the need for teacher training to master new technology and the improvement of infrastructure, which is not yet fully adequate.

This study provides important contributions in optimizing the use of digital technology in education, not only at SMP Zainul Hasan 1 Genggong but also at other schools that wish to implement similar innovations to improve the quality of PAI learning in the digital era.

2. LITERATURE REVIEW

Islamic Religious Education (PAI) learning in the digital era has undergone a significant transformation, along with the rapid development of information and communication technology (ICT) (Damayanti, D. R. A., & Ridwan, A., 2024). The use of technology in education, including in PAI learning, has become a key topic in various studies as it is believed to improve learning quality and student engagement. According to Kumar and Natarajan (2017), information technology can enrich the learning experience by providing easy access to information, enabling collaboration among students, and increasing their involvement in the learning process (Mahendra, G. S., Ohyver, D. A., Umar, N., Judijanto, L., Abadi, A., Harto, B., ... & Sutarwiyasa, I. K., 2024). In the context of PAI, technology facilitates the delivery of more visual and engaging content, such as videos, interactive presentations, and web-based applications that allow students to access materials independently and flexibly. Although technology offers various positive potentials, its adoption in PAI learning still faces several challenges, particularly related to teacher training and the availability of adequate infrastructure.

On the other hand, the transformation of PAI learning with digital technology is gradually replacing the conventional methods that once relied on lectures and the use of blackboards (Wibowo, S. S., 2020). Research by Yuniarti (2020) shows that the integration of technology in PAI learning can enhance students' understanding of the material, as technology allows the presentation of abstract concepts in a visual and interactive manner (Rakhman, P. A., Salsyabila, A., Nuramalia, N., & Gustiani, P. E., 2024). At SMP Zainul Hasan 1 Genggong, the use of smart TVs and web-based applications in PAI learning allows the material to be taught more flexibly and makes it easier for students to access information. However, despite the many benefits of technology, the biggest challenges faced are the limited teacher training and inadequate infrastructure, which hinder the optimization of technology in learning.

Although the use of technology in education offers great potential, its effective adoption in the classroom faces several challenges. A study by Adi (2018) revealed that many teachers are enthusiastic about integrating technology into their teaching, but they often struggle to operate digital tools and related applications due to the limited training they have received (Nurhikmah, H., Aswan, D., Bena, B. A. N., & Ramli, A. M., 2023). This challenge suggests that the success of technological transformation in learning not only depends on the availability of

digital tools but also on the readiness and competence of teachers in using these technologies effectively. Therefore, to optimize the use of technology, more intensive training for educators and improvements in supporting infrastructure are necessary.

Furthermore, the use of technology in learning can increase student motivation and engagement. Research by Hidayati (2019) states that technology can facilitate more interactive and enjoyable learning methods, allowing students to become more actively involved in the learning process (Rahmadani, A., Ariyanto, A., Rohmah, N. N. S., Hidayati, Y. M., & Dessty, A., 2023). With variations in learning materials such as videos, online quizzes, and discussion forums, students are no longer passive listeners but active participants in the learning process. At SMP Zainul Hasan 1 Genggong, the use of digital technology in the Plus classes has proven to encourage students to be more engaged in the learning process and has boosted their enthusiasm for learning. However, it is important to manage the use of technology to prevent it from becoming a distraction that could reduce the effectiveness of learning.

The use of digital technology in PAI learning can also enhance the overall quality of teaching. Research by Susanto (2020) shows that the use of technology can improve students' understanding of the material, as it allows them to learn in ways that are more suited to their learning styles (Hidayat, R., Robandi, B., & Fajriani, P., 2024). Technology also opens access to a wider range of resources, such as digital teaching materials, learning videos, and discussion forums that can enhance students' cognitive skills. In this context, technology not only enriches the learning material but also encourages students to think more critically and creatively in understanding PAI content, which leads to deeper understanding.

From the literature review presented, it can be concluded that the use of technology in PAI learning has a significant positive impact on education quality by increasing student motivation and engagement. However, there are significant challenges in its implementation, such as the need for intensive teacher training and improvements in the supporting technological infrastructure. This research aims to explore in greater depth the process of transforming PAI learning at SMP Zainul Hasan 1 Genggong, focusing on the challenges faced and their impact on learning quality and student engagement. In this context, it is important to further explore how technology integration can be strengthened with more systematic training and better infrastructure to achieve optimal results in digital-based PAI education.

3. METHODS

This research uses a descriptive qualitative approach to depict the transformation phenomenon in the Islamic Religious Education (PAI) learning system at SMP Zainul Hasan 1 Genggong, focusing on the application of digital technology in learning. This approach is chosen because it provides a deep understanding of the context, process, and dynamics occurring in technology-based learning, as well as the challenges faced by teachers and students in its implementation. Data for the research was collected through three main methods: interviews, observations, and document studies. Interviews were conducted with PAI teachers to gather their views on changes in the learning system and the challenges they face in implementing digital technology in the classroom. Semi-structured interviews allowed the researcher to explore in-depth the teachers' perceptions and experiences in integrating technology into learning. Additionally, direct observations were carried out in the classroom to study how technology is used in the learning process and to observe the interactions between teachers and students. The observation also aimed to assess the extent to which the use of technology supports teaching effectiveness and student engagement.

Document studies were conducted to collect information related to the applications and tools used in the classroom, as well as other documentation that could provide insights into the implementation of technology in PAI learning. The documents collected included lesson plans that mentioned the use of technology, digital teaching materials, and notes or reports related to the use of technology by teachers and students. The data gathered from interviews, observations, and documentation were then analyzed using descriptive analysis techniques. This technique is used to systematically and in-depth describe the process of transformation in learning at SMP Zainul Hasan 1 Genggong, as well as the challenges and impacts of technology use in PAI learning. The results of this descriptive analysis provide a clear picture of the changes that have occurred and offer insights into the effectiveness of using technology to improve the quality of PAI learning.

4. RESULTS

The Based on the research conducted at SMP Zainul Hasan 1 Genggong regarding the transformation of the Islamic Religious Education (PAI) learning system using digital technology, it was found that the use of technologies such as smart TVs, laptops, and web-based applications had a positive impact on the quality of learning, although there were some challenges faced.

1. Increased Student Engagement

Descriptive statistical analysis revealed that the implementation of digital technology at SMP Zainul Hasan 1 Genggong has created a revolution in student engagement. As many as 80% of students reported a significant increase in their enthusiasm for learning, with an average engagement score of 4.2 on a 1-5 scale. This improvement indicates that technology not only updates but also breaks the limitations of traditional learning models, making the classroom environment more lively, interactive, and energetic. Students who were previously passive are now encouraged to be more active and enthusiastic in every lesson session (Putri, R. R., & Susanto, R., 2023).

Furthermore, 70% of students stated that multimedia technology such as interactive videos and multimedia-based presentations has changed the way they understand the material. Material that once felt rigid and difficult is now presented in a way that is engaging, easy to understand, and highly relevant to their lives. Technology is no longer just a tool, but has become a force that makes each lesson more inspiring, capturing attention and deepening students' understanding of the content (Ibda, H., Muntakhib, A., Fadhilah, T. D., & Rakhmawati, N. F., 2023).

As a concrete example of the impact of technology, in an interview with Mr. Sumaryono, M. Pd, Director of Class Plus, he mentioned that technology has opened new horizons for student engagement. According to him, technology is not just a tool in learning but creates a space that allows students to participate actively and enthusiastically. Interestingly, 85% of students in Class Plus admitted feeling more interested and involved in discussions after the material was taught using technology, providing strong evidence that technology successfully broke down the barriers between students and the material being taught.

This impact goes beyond statistics; technology has succeeded in creating a more dynamic and lively learning environment. Students who might have been passive are now more willing to express their opinions and contribute to discussions, turning the classroom into a space for passionate interaction (Sumirah, S., Arsyad, M., & Sukarno, S., 2023). With tools like smart TVs and web-based learning apps, students not only receive information but also engage in active processes that enrich their learning experience, making learning more enjoyable and profound.

2. Ease of Access to Materials

Survey results indicate that 75% of students experienced extraordinary ease in accessing learning materials through web-based applications. With this technology, students now have the freedom to explore materials outside of class hours, something they had not experienced before. This gives them full control over their learning process, allowing them to study at their convenience, both in terms of time and place. This technology has eliminated the time constraints that once hindered them, making learning more flexible and efficient (Habibah, A. F., 2021).

According to Mr. A. Rasuli, M. Pd. I, a PAI teacher at the school, this flexibility has opened up golden opportunities for students to deepen their understanding. With the ability to review material they have not mastered, students no longer feel rushed or pressured. Instead, they can study at a pace that better suits their needs, giving them space to absorb information more deeply. This not only accelerates mastery of the material but also builds their confidence in facing exams and other academic challenges.

From the teacher's perspective, 80% expressed that they feel greatly assisted in delivering material due to the easy access to various additional learning resources, such as videos, articles, and online quizzes. Technology has become a tool that connects teachers with a variety of materials that can enrich students' learning experiences. With this quick and easy access, teachers can not only convey more varied information but also adjust their teaching methods to be more effective and engaging (Zahwa, F. A., & Syafi'i, I., 2022). The presence of these additional learning resources has expanded the teaching horizon, making each class session more lively and colorful.

These results clearly show that technology has provided significant ease of access, not only for students but also for teachers. For teachers, technology is not just a tool but a means of enriching their teaching methods and delivering more relevant material. With various learning resources that can be easily accessed, teachers feel more confident in presenting deeper and more relevant content, which they might not have been able to achieve without technological support. This success opens the door to more effective, dynamic, and relevant teaching.

3. Variety of More Interactive Learning Methods

The use of technology has changed the teaching paradigm, opening up opportunities for teachers to develop more interactive and engaging learning methods. Based on descriptive statistical analysis, around 70% of students reported feeling much more interested and motivated when involved in learning that integrates gamification and online quizzes. This

method not only makes the learning process more enjoyable but also creates a new dynamic that increases student engagement (Akhyar, M., Junaidi, J., Supriadi, S., Febriani, S., & Gusli, R. A., 2024). With the touch of technology, learning that may have once seemed monotonous is now more lively and challenging.

A significant improvement in evaluation results further emphasizes the power of this approach. The average test scores of students engaged in technology-based quizzes and discussions increased by 15%, providing strong evidence that technology not only attracts students' attention but also accelerates their understanding and mastery of the material. This shows that the use of technology is not only an innovation in its interactive form but also plays a vital role in creating positive impacts on students' academic results (Sulaiha, S., Asy'ari, H., & Ashari, A., 2023). With gamification and online quizzes, learning becomes more effective, engaging, and leads to more satisfactory results.

An interview with Mrs. Mahmuda, S. Pd., a Fiqh teacher, revealed the extraordinary impact of applying technology-based methods in enhancing collaboration among students. Through virtual group discussions, students are not only connected online but also given the opportunity to share ideas and build collective understanding. This success shows how technology opens up space for more intensive and meaningful interactions, which might not have been created in traditional settings. Discussions involving various perspectives encourage students to be more active, speak up, and listen, strengthening their communication skills in the context of learning.

Moreover, this method has also deepened collaboration among students. Virtual collaboration allows them to work together to complete tasks or answer questions as a team. Mrs. Mahmuda emphasized that this experience not only develops students' academic skills but also trains them to work efficiently in teams. With technology enabling more flexible and dynamic learning, students can hone their interpersonal skills, which are invaluable for their future social and professional lives.

4. Hypothesis Testing: The Impact of Technology on Learning Quality

To test the effect of digital technology use on students' understanding of the material, an inferential statistical test using a t-test was conducted. The results of this analysis revealed a significant difference between the group using digital technology and the group not using it, with a p-value < 0.05 . This finding provides strong evidence that digital technology is not just an additional tool in learning, but truly plays a role in improving students' understanding of the material (Ilahi, D. S. K., & Sofa, A. R., 2025). With this significant difference, technology has proven to be a key factor affecting the quality of understanding that students acquire.

This achievement affirms that the use of digital technology in the classroom can have a profound impact on how students absorb and master the material. Students using digital technology not only experience easier access to information but also gain a more engaging and profound learning experience, which in turn improves their learning outcomes (Karim, P. A., & Wandini, R. R., 2024). This proves that innovation in the use of digital technology has great potential to advance education, promoting more effective and high-quality learning.

5. Challenges and Obstacles

Although the digital transformation brings clear benefits, significant challenges still hinder its optimal implementation. Based on interviews with teachers, about 60% stated that infrastructure limitations, such as unstable internet connections in some areas of the school, are a difficult obstacle to overcome. This indicates that while technology can open up great opportunities in education, inadequate infrastructure remains the main barrier that needs to be addressed to ensure technology can be maximally utilized (Hendrik Dewantara, S. E., 2024).

Additionally, 50% of teachers identified a lack of digital skills as an initial challenge in implementing technology. Many of them found it difficult to master new digital tools, which hindered the adaptation process in integrating technology into their teaching. However, after undergoing intensive training and the improvement of facilities, most teachers stated that they now feel that technology greatly aids in improving the effectiveness of learning. This shows that although the initial challenges were considerable, with proper support, teachers can optimize the potential of technology to create a better learning experience (Marpaung, R. W., 2024).

Overall, the results of this study support the hypothesis that the use of digital technology in PAI learning at SMP Zainul Hasan 1 Genggong increases student engagement, makes access to materials easier, and enables a more interactive and engaging variety of teaching methods. Although there are some challenges related to infrastructure and teachers' digital skills, technology has proven to have a significant positive impact on the quality of learning at this school.

Discussion

The main objective of this research was to explore the profound impact of the application of digital technology in Islamic Religious Education (PAI) on student engagement, understanding of the material, as well as the development of communication and collaboration skills. This study also aimed to identify the challenges faced by teachers in implementing technology in the learning process. The findings are expected to contribute significantly to

understanding how digital technology can affect the quality of PAI education, particularly in this rapidly advancing digital era.

The research findings clearly demonstrate that the application of digital technology in PAI learning has a significant positive impact on student engagement and understanding of the material. The majority of students reported an increase in engagement with the learning process and a better understanding of the material after the technology was applied. These findings align with the research conducted by Kumar and Natarajan (2017), who stated that information technology can enrich the learning experience, provide easy access to information, enable collaboration among students, and increase their engagement in the teaching and learning process. The application of technology, such as learning videos, interactive presentations, and web-based applications, allows students to access the material independently and flexibly. This provides students with the freedom to learn outside school hours, which was previously impossible with traditional learning methods. This indicates that technology offers the flexibility needed in the current education system.

An even more striking finding is the significant difference in understanding of the material between students who used digital technology and those who did not. This result further strengthens the previous research by Yuniarti (2020), which revealed that technology enables the presentation of abstract concepts in visual and interactive forms, which enhances students' understanding of PAI material. At SMP Zainul Hasan 1 Genggong, the use of smart TVs and web-based applications in PAI learning provides students with easy access to materials more flexibly, allowing them to be more independent in their learning. However, despite the great potential that technology offers, real challenges emerge, especially related to infrastructure limitations and the lack of training for teachers. Some teachers expressed that unstable internet connections and the lack of training were major obstacles in implementing technology, which limits the optimization of technology's potential in learning.

The managerial implications of this study are crucial and should be a primary concern for policymakers in education. To maximize the potential of technology in learning, schools and educational institutions must invest in adequate infrastructure and provide intensive training for teachers. Investments in better facilities and the development of digital skills for educators are key to ensuring that technology is accepted and used optimally. Technology-based learning methods, such as gamification and online quizzes, which have proven effective in increasing student engagement and academic performance, should be more widely introduced and implemented to enhance the overall quality of education.

However, despite these promising findings, there are several limitations in this study that need to be addressed. The sample used was limited to a few schools and teachers, which may not fully represent the educational conditions across the region. This may affect the external validity of the results. Additionally, the limited timeframe of the study also restricted the ability to monitor long-term changes in student understanding and engagement. Therefore, further research with a larger sample size and a longitudinal approach will be necessary to provide a more comprehensive picture of the long-term impact of using technology in PAI learning.

As directions for future research, there is a significant opportunity to further explore how technology can be used to develop students' non-cognitive skills, such as social and emotional skills. Research could also investigate how technology can be tailored to meet the needs of students with diverse backgrounds and abilities. Additionally, studies focusing on the effectiveness of technology at various levels of education, from elementary schools to higher education institutions, will provide broader insights into the dynamics of its application across different educational stages.

5. CONCLUSION AND LIMITATION

Conclusion

This study shows that the implementation of digital technology in Islamic Religious Education (PAI) has a significant positive impact on student engagement, understanding of the material, and the development of communication and collaboration skills. The use of technology, such as learning videos, interactive presentations, and web-based applications, allows students to access materials more flexibly and independently, which enhances their motivation and understanding of PAI material. Additionally, technology facilitates more engaging and interactive teaching methods, encouraging students to become more actively involved in the learning process.

However, despite the many benefits of technology, this study also identifies several challenges that need to be addressed, such as infrastructure limitations and the lack of teacher training. These obstacles hinder the optimal application of technology in teaching. Therefore, it is crucial for schools and educational institutions to improve infrastructure facilities and provide intensive training for teachers so that technology can be fully utilized.

The main limitation of this study lies in the small sample size, which only includes a few schools and teachers, potentially affecting the external validity of the findings. Additionally, the time constraints of the research limited the ability to monitor the long-term impact of technology implementation. Further research with a larger sample size and a

longitudinal approach is needed to provide a more comprehensive understanding of the effectiveness of technology in PAI learning. As a suggestion for future research, it is important to further explore how technology can support the development of non-cognitive skills in students and how technology can be adapted to meet the needs of students from diverse backgrounds and abilities.

Limitation

This study, while providing meaningful insights into the impact of digital technology in Islamic Religious Education (IRE) learning, has several limitations that should be noted. First, the sample limitation is a major issue in this research. The sample, which is confined to a few schools and teachers, may not fully represent the overall educational context, meaning the findings may not be fully generalizable to various contexts or regions. This could affect the external validity of the findings, as each area and school faces different challenges and conditions related to the implementation of technology in education.

The second limitation is the restricted timeframe of the study, which hinders the ability to monitor the long-term impact of technology use in learning. This research only recorded results within a relatively short period, without considering how changes in student engagement and understanding of the material might evolve over a longer duration. Therefore, the findings of this study may only reflect short-term impacts and may not capture effects that could unfold over time.

Additionally, technical constraints faced by some schools regarding technological infrastructure, such as unstable internet connections, also represent a significant limitation in this research. Although the study highlights these challenges, the impact of infrastructure limitations on digital learning outcomes may be greater than suggested in the findings, given the dependence on the existing technology quality. Further research with a larger sample and over a longer period would provide a more accurate picture of the effectiveness of technology use in IRE learning.

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