Jurnal Iman dan Spiritualitas
eISSN: 2775-4596, Vol 6, No 1, 2026, pp. 177-190
https://doi.org/10.15575/jis.v6i1.49523

Navigating Digital Transformation: Challenges and Strategies for Islamic Religious Education Teachers in Elementary Schools

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Suggested Citation:

Putra, Andriyan Veisyal Seftiana; Suhendi, Endi. (2026). Navigating Digital Transformation: Challenges and Strategies for Islamic Religious Education Teachers in Elementary Schools. *Jurnal Iman dan Spiritualitas*, Volume 6, Number 1: 177–190. https://doi.org/10.15575/jis.v6i1.49523

Article's History:

Received March 2025; *Revised* December 2025; *Accepted* January 2026.

Abstract

The transformation of Islamic Religious Education (PAI) learning in the digital era presents complex challenges for Elementary School teachers, especially in the PAI Teacher Working Group in Babakan Cikao, Purwakarta Regency. This study aims to identify these challenges and explore effective strategies to overcome them, with a focus on increasing teacher commitment to teaching and utilizing 21st-century learning elements, as applied in teaching the Quran. A descriptive qualitative research method was used to explore teachers' experiences and perspectives in depth, focusing on a case study in the Islamic Religious Education Teacher Working Group in Babakan Cikao, Purwakarta Regency; Data were collected through in-depth interviews, classroom observations, and document analysis related to the implementation of PAI learning in the digital era, to be analyzed comprehensively to identify key themes and patterns relevant to the research objectives. This study is expected to provide practical contributions to the professional development of PAI teachers, curriculum improvement, and improving the quality of PAI learning that is adaptive to the demands of the digital era. The results of the study indicate that the challenges faced by teachers in transforming PAI learning in the digital era include adapting to changing curricula, limited digital resources, and improving teachers' competency in using technology. The strategies implemented by the Babakan Cikao District Islamic Religious Education Working Group (KKG PAI) to improve the quality of Islamic Religious Education learning in the digital era include training and workshops on technology utilization, development of interactive learning media, and collaboration with relevant parties to provide relevant and high-quality digital resources.

Keywords: Islamic teachers; learning transformation; digital era; teachers' working group; Islamic Religious Education

INTRODUCTION

Digital transformation has fundamentally changed the educational landscape. This demands significant adaptation from educators, including Islamic Religious Education teachers at the elementary school level (Hariyadi, 2023). Digital transformation in education is a reality that must be responded to adaptively by all parties involved, including Islamic Religious Education teachers. The development of information technology demands a

shift in the learning paradigm from conventional methods to more interactive and participatory digital methods (Lestari & Jupriaman, 2024; Nursyahidin et al., 2021). In the elementary school context, this challenge is even more complex because it is directly related to teacher readiness, students' digital literacy skills, and infrastructure support. Islamic Religious Education teachers are required not only to master the subject matter but also to possess the competence to use technology as an effective learning tool (Purwowidodo, 2016). Teachers play a central role in overseeing the success of the learning transformation, so a deep understanding of the challenges faced and the strategies that can be implemented is crucial (Suwahyu, 2024).

Being a teacher in the digital age presents various challenges, including role and skill development, technology and access gaps, changes in curriculum and learning, digital safety and ethics, and changes in evaluation and assessment. Teachers must be able to integrate technology effectively into the learning process, select and use appropriate software and applications, and develop digital content that is engaging and relevant to students. Teachers must also be able to facilitate distance learning or blended learning, which is becoming increasingly common in this digital age (Fitria & Suminah, 2020). However, in reality, not all teachers are ready or comfortable with technology in their learning (Aulia et al., 2022). This certainly presents a challenge for Islamic Religious Education (PAI) teachers in the digital age, especially for elementary school students.

The professional competence of Islamic Religious Education teachers is becoming increasingly important in the digital era, where teachers are not only the primary source of information but also learning facilitators capable of guiding students in exploring knowledge independently (Arasyiah & Rohiat, 2020). Technological innovation plays an essential role in the transformation of Islamic education in the digital era (Suwahyu, 2024). The use of technology in Islamic Religious Education (PAI) learning opens up opportunities to create more engaging, relevant, and personalized learning experiences. Innovative and creative PAI learning models can motivate students to be more active in the learning process, thereby enhancing their understanding and appreciation of Islamic values.

The role of teachers today is no longer limited to conventional delivery of subject matter, but also serves as facilitators, motivators, and innovators in creating relevant and engaging learning environments for students in the digital age (Sutisna & Safitri, 2022). This transformation presents a series of complex challenges, ranging from teachers' digital competency gaps to limited resources and infrastructure to support technology-based learning. Furthermore, existing PAI curricula are often normative and not fully integrated with the increasingly digital context of students' social lives, necessitating a more innovative and contextual approach (Nasir et al., 2022).

To address these challenges, PAI teachers are required to develop creative and adaptive learning strategies, utilizing digital technology as a tool to improve the quality and effectiveness of learning. These strategies include developing interactive digital teaching materials, utilizing e-learning platforms for distance learning, and utilizing social media and instant messaging applications for communication and collaboration with students and parents. The use of e-learning in PAI learning is expected to increase student interest in learning and facilitate the achievement of predetermined learning objectives (Shodiq, 2023). However, the success of transforming PAI learning in the digital era also depends on support from various parties, including the government, schools, the community, and parents. Active involvement from all parties is crucial to creating an educational ecosystem conducive to the development of digital competencies in teachers and students, and to ensuring that PAI learning remains relevant and meaningful for the younger generation in this digital era.

In this regard, the PAI teacher working group plays a strategic role as a forum for teachers to share experiences, develop competencies, and formulate solutions to various learning challenges they face. The existence of the teacher working group is crucial as a forum for teachers to develop themselves and exchange experiences (Andini et al., 2020). The PAI Teacher Working Group plays a strategic role in improving teacher competency and sharing experiences related to the implementation of PAI learning in the digital era. Artificial intelligence has a significant impact on the field of education, including Islamic Religious Education, where AI technologies such as; *machine learning, chatbot*, And *augmented reality*, can improve the quality of learning by providing personalized and adaptive content according to student needs (Huda & Suwahyu, 2024).

Several previous studies have shown that studies on the transformation of PAI learning at the elementary level in the digital landscape show several common threads: (1) technology integration tends to be reactive, for example during the pandemic, and is not yet fully framed by a mature pedagogical model; (2) the focus of research is often on secondary/vocational schools or madrasahs, while the elementary school/Islamic elementary school context is relatively less explored in depth; and (3) measurement of students' digital-religious learning outcomes/character is still sporadic. Kholifuddin's (2021) research describes “redesign” PAI learning during the

pandemic through the use of digital platforms and emergency curriculum adjustments. This study confirms that the use of ICT in PAI can be accelerated by policies and emergency needs, but the practice still focuses on transferring material (content delivery) rather than comprehensive pedagogical engineering. This finding is important, but the study took place at the secondary/madrasah level and focused on emergency contexts, not on long-term planning in elementary schools (Kholifuddin & Zafi, 2021).

Tsani's (2023) research evaluated the application of blended learning in Islamic Religious Education subjects and found that the combination of face-to-face increased learning engagement when teachers designed activities that linked Islamic values to project-based assignments. While providing positive evidence, the study's scope was limited to high school students and it did not elaborate on a specific strategy typology for elementary school students' characteristics, such as different stages of cognitive/affective development and parental support needs (Tsani et al., 2023).

From the perspective of educator competency, Rosanti et al. (2022) demonstrated the role of Islamic Religious Education teachers in accelerating digital literacy through optimizing digital libraries and electronic resources, resulting in richer access to Islamic materials while also requiring content curation skills. This article emphasizes that improving teachers' digital literacy is a prerequisite for transformation, but it is still limited to the secondary school context and does not yet link in detail to application modules for early elementary school grades (Rosanti et al., 2022).

A more macro-level study of digital literacy trends from an Islamic perspective found an integration gap between technical mastery of devices and internalization of media ethics and religious character development. Adima et al. (2024) highlighted improvements in digital literacy in higher education but noted the need for reinforcement at lower levels to foster values, critical attitudes, and healthy media habits from an early age. This insight serves as a methodological warning for elementary/Islamic elementary schools (SD/MI): strategies must simultaneously address technical competency and character development (Adima et al., 2024).

From a pedagogical framework perspective, recent evidence suggests that the success of technology integration depends on teachers' capabilities in TPACK *(Technological Pedagogical Content Knowledge)* Empirical reviews show that teacher training and practice communities improve their skills in integrating PAI materials, active pedagogy, and digital tools, so that learning is not simply about "using apps" but about designing meaningful learning experiences. This is confirmed by research reports on teachers' TPACK skills, which encourage ongoing development programs such as: *workshop, coaching*, and socialization of good practices, (Arifuddin et al., 2025).

In general, the above studies show significant progress from policy adaptation, trialing mixed models, to strengthening teacher competencies, but research gaps remain apparent in: (a) the lack of specific studies for elementary schools that link TPACK strategies with indicators of religious character and digital ethics achievement; (b) the limited evaluation design that measures not only the achievement of Islamic Religious Education material, but also Islamic media habits, such as digital etiquette, critical literacy, and behavioral traces; and (c) the lack of structured parent-teacher collaboration schemes as part of the digital transformation of Islamic Religious Education in elementary schools.

This article aims to examine in-depth the challenges faced by PAI teachers in the Babakan Cikao cluster, Purwakarta, in integrating technology into their learning, as well as the strategies that have been and can be developed to address these challenges (Huda & Suwahyu, 2024). This research also aims to identify supporting and inhibiting factors in implementing the transformation of PAI learning in the digital era, and to formulate policy and practice recommendations that can improve the effectiveness of PAI learning in elementary schools.

METHOD

The research method used in this case study involved a qualitative approach with data collection through in-depth interviews, participant observation, and document analysis (Lexy J. Moleong, 2018). This approach was chosen to deeply understand the experiences, perceptions, and practices of PAI teachers in facing challenges and implementing learning strategies in the digital era (Subroto et al., 2023). In-depth interviews were conducted with PAI teachers who are members of the PAI Teacher Working Group in Babakan Cikao, Purwakarta Regency, as well as with principals and Islamic education supervisors as key informants (Suhendi, 2024). Participatory observation was conducted in PAI classes at several elementary schools in the Babakan Cikao area to directly observe interactions between teachers and students in the learning process, the use of digital technology, and the implementation of innovative learning strategies. Document analysis was conducted on the PAI curriculum,

digital teaching materials developed by teachers, and reports of Islamic Religious Education Working Group activities to obtain comprehensive data and triangulation.

RESULTS AND DISCUSSION

Challenges for Islamic Education Teachers in the Digital Era

Challenges faced by PAI teachers in learning *online* is the difficulty in achieving learning objectives (Hartono et al., 2022). The era of globalization demands that education continuously improve its quality to compete and meet the challenges of the times (T. Hidayat & Asyafah, 2019). Islamic Religious Education teachers, as the vanguard of Islamic religious education in elementary schools, play a crucial role in shaping students' character and religious understanding in the digital age. However, they also face various complex challenges, including the digital competency gap, limited resources and infrastructure, and changes in curriculum and learning approaches.

Limited resources and infrastructure are also significant obstacles. Digital transformation in PAI learning requires significant investment in hardware and software, such as computers, laptops, projectors, internet access, and learning applications. Furthermore, changes in curriculum and learning approaches require PAI teachers to continuously learn and adapt to technological developments and student needs. Furthermore, adapting to digital technology is crucial in education, as 21st-Century Competency Requirements place the ability to utilize information technology as one of the competencies required of educators (Yusof & Surat, 2021). The development of information and communication technology has brought about significant changes in various aspects of life, including education. Teachers are required to integrate technology into learning to create engaging, interactive, and relevant learning experiences for students (Sa'idah et al., 2021).

The digital competency gap is one of the main challenges faced by PAI teachers. The digital era offers various benefits to education, such as increasingly modern curricula, improved learning outcomes through digital data analysis, an engaging and collaborative learning environment, and easier evaluation of learning outcomes (Ngongo & Hidayat, 2019). Many PAI teachers lack the skills and knowledge to utilize digital technology for learning, such as developing digital teaching materials, utilizing e-learning platforms, or utilizing social media for communication and collaboration with students.

This digital divide has a significant impact on the quality of the learning process. Teachers who have attempted to innovate with online learning platforms or Learning Management Systems (LMS) often find that students are unable to fully participate due to limited data quotas, connection issues, or the lack of compatible devices. This leads to learning loss, particularly in subjects that require spiritual practices such as PAI. Research by Yaqien et al. (2023) shows that the digital divide in Indonesia is not only a technical issue but also has direct implications for disparities in learning outcomes between regions (Yaqin et al., 2023).

Furthermore, limited school infrastructure exacerbates the situation. Many elementary schools still have poorly equipped computer labs, and some lack stable internet connections. This situation often results in ICT-based learning being merely symbolic, failing to truly support students' digital literacy development. Findings by Sadikin & Hamidah (2020) confirm that limited internet access is a major obstacle to online learning, resulting in many students experiencing difficulty understanding the material, including religious instruction, which emphasizes aspects of appreciation and practice (Sadikin & Hamidah, 2020).

Furthermore, family economic factors also widen the gap in access to learning resources. Students from lower-middle-class families tend not to own personal devices, requiring them to share their parents' devices. In some cases, children are forced to miss online classes because devices are being used by other family members working from home. This is reinforced by research by Putri et al. (2020), which found that limited device ownership and internet data costs are major barriers to successful online learning at the elementary school level (Putri et al., 2020).

Thus, limited facilities and infrastructure are not merely technical issues, but also structural ones encompassing socio-economic, geographic, and educational policy aspects. If not addressed promptly, the digital learning transformation will only reinforce inequalities in educational access. Therefore, the role of the government and schools is crucial in providing infrastructure support, quota subsidies, and educational technology equity programs, ensuring effective, inclusive, and equitable PAI learning in elementary schools.

Student Distractions Due to Social Media and Online Games

PAI teachers in elementary schools face significant challenges in maintaining student focus in the digital age. One of the most prominent factors is the increasing distractions caused by the use of social media and online games. Elementary school-aged children tend to be more easily influenced by instant, interactive, and fun digital entertainment content than by learning materials that require concentration. This aligns with the theory *uses and gratification s*in media studies, which explains that individuals, including children, are more likely to choose media that provides short-term emotional satisfaction rather than activities that require higher cognitive effort such as studying.

A 2019 study by Common Sense found that children and adolescents in the digital age spend an average of more than seven hours per day on screen-based media, mostly for entertainment rather than educational purposes. This has led to increased multitasking, decreased motivation to learn, and impaired concentration in both online and face-to-face learning (Common Sense, 2019). Dalam konteks Indonesia, studi Syifa et al. (2023) In the Indonesian context, a study by Syifa et al. (2023) found that unsupervised social media use is closely linked to decreased student academic performance, including in PAI learning, as students use devices more frequently for entertainment than for learning (Syifa et al., 2023).

In addition, online games present their own challenges. The competitive, addictive, and reward-based nature of these games makes it difficult for many students to control their playing time. Kuss & Griffiths (2017) in their study of digital behavioral psychology explained that excessive involvement in online games can trigger *internet gaming disorder* This disrupts the balance between children's learning, social, and spiritual activities. This corroborates the findings of Fitriyani et al. (2020), who emphasized that online gaming is one factor that reduces elementary school students' concentration during online learning during the pandemic (Kuss & Griffiths, 2017).

In the context of PAI learning, this distraction phenomenon requires teachers to take on a role beyond simply delivering religious material. Teachers must also function as facilitators of Islamic digital literacy, guiding students to use media in a healthy, proportionate, and ethical manner. For example, by integrating the value of self-control (*mujahadah al-nafs*) into learning materials, providing educational technology-based assignments, and involving parents in supervising children's gadget use at home. This approach aligns with the ideas of Livingstone & Helsper (2007) who emphasize the importance of *digital literacy* as a provision for children to face the risks and opportunities of the digital world (Livingstone & Helsper, 2007). Thus, distractions caused by social media and online games cannot be viewed solely as technical issues, but also as pedagogical and moral challenges. PAI plays a strategic role in helping students develop critical awareness, self-discipline, and digital etiquette, so that technology can become a means of strengthening faith and knowledge, not simply a source of entertainment that weakens concentration on learning.

Innovative Learning Strategies of Islamic Education Teachers

The transformation of PAI learning in the digital era requires teachers not only to master religious material but also to be able to integrate digital technology creatively, adaptively, and in accordance with Islamic values. The use of Islamic digital applications in PAI learning is a crucial strategy in addressing the challenges of the digital era. The presence of interactive applications such as Kahoot Islami and Quizizz enables PAI teachers to create a more enjoyable and competitive learning environment. For example, students can be tested on their understanding of Islamic faith, worship, and Islamic history through interactive gamification-based quizzes. This approach not only increases student engagement but also provides immediate feedback that helps them assess their level of mastery of the material.

The use of Islamic digital applications such as Kahoot! Quizizz, Google Classroom, and local e-learning platforms has been proven effective in increasing student engagement and motivation when used pedagogically (not simply as a "mode switch"). The theoretical basis of gamification explains why game elements (scores, leaderboards, and immediate feedback) enhance learning *engagement* and retention of material, definitions and early studies of gamification are available in (Deterding et al., 2011). Meta-analyses and systematic reviews indicate that gamified platforms like Kahoot! generally increase engagement, motivation, and often learning outcomes (depending on study design), making them suitable as formative/refresher tools prior to in-depth discussions (Kalleny, 2020; Wang & Tahir, 2020).

In the local context, PAI teachers at the Babakan Cikao Islamic Religious Education Working Group (KKG PAI) have developed innovative strategies through the use of interactive digital teaching materials. These materials are packaged in the form of animated videos, infographics, interactive quizzes, and educational games to increase student learning interest. A study by Mokoagow et al. (2021) showed that interactive digital media-

based learning can increase student participation and strengthen conceptual understanding in value-based subjects (Mokoagow et al., 2021). This is in line with research by Meriyanti et al. (2021) which emphasized that the transformation of learning in the technological era requires teachers to optimize various digital platforms to improve the effectiveness of the teaching and learning process, including in PAI subjects (Meriyanti et al., 2021).

In addition to gamification applications, PAI teachers are increasingly using e-learning platforms such as Google Classroom and Edmodo, as well as local Islamic boarding school-based applications that provide digital books, interactive interpretations, and Islamic discussion forums. Social media is also used as a communication bridge and learning reinforcement, where teachers can provide additional material in the form of short studies, hadith quotations, and daily prayer reminders packaged in attractive visuals. Studies by Bahruddin et al. (2022) and Rizal and Husni (2023) show that the use of social media in PAI learning has the potential to expand students' learning space, provided it remains within the corridor of Islamic digital values and ethics. In addition to interactive quizzes, the use of digital teaching materials such as animated videos, infographics, and interactive modules (specifically designed for elementary Islamic Religious Education) improves conceptual understanding and learning interest (Bahruddin et al., 2022; Rizal & Husni, 2023). Thus, the use of Islamic digital applications is not merely a technological adaptation but also a form of pedagogical transformation. Islamic Religious Education teachers are required to design interactive, inspiring, and relevant learning experiences for students' digital world, while maintaining the main objectives of Islamic Religious Education, namely to shape noble morals, spirituality, and Islamic character.

To improve the digital competence of PAI teachers, the Babakan Cikao Islamic Religious Education Working Group (KKG PAI) regularly holds training and workshops on the use of digital technology in learning. This skill development is crucial considering that almost all school activities utilize computer technology, both in the learning process and administration (Ariyana et al., 2023). These activities aim to equip PAI teachers with the knowledge and skills needed to effectively integrate digital technology into learning. PAI teachers are also actively involved in professional development activities, such as training, workshops, and seminars, to improve their digital competence and knowledge of innovative learning approaches (Wijanarko et al., 2022).

Development of TPACK-based lesson plans

The Technological Pedagogical Content Knowledge (TPACK) model is a conceptual framework developed to address teachers' needs in the digital era. This model integrates three main aspects: content mastery (*content knowledge*), pedagogical strategies (*pedagogical knowledge*), and utilization of technology (*technological knowledge*) (Koehler et al., 2013). In the context of PAI learning, the application of TPACK allows teachers to not only deliver material cognitively, but also integrate spiritual values with a more innovative and modern pedagogical approach.

Developing a TPACK-based Lesson Plan (RPP) has significant implications for PAI learning in elementary schools. For example, teachers can design learning activities that utilize interactive videos about the Prophet's story, digital Quran applications equipped with simple interpretations for children, and online discussion platforms that foster students' reflective skills regarding moral values. Thus, the RPP serves not only as an administrative guide but also as a learning tool *blueprint* integrative that combines religious content, creative learning methods, and digital media as a means of strengthening spiritual understanding.

Several studies have confirmed the relevance of the TPACK model in the context of education in Indonesia. Ananda et al. (2022) found that teachers who implemented TPACK in their learning design demonstrated increased effectiveness in using digital media, while simultaneously making students more active in the learning process (Ananda et al., 2022). Meanwhile, W. N. Hidayat et al. (2023) in their study showed that Islamic Religious Education teachers who integrated TPACK through technology-based learning were able to increase student engagement and make religious material more contextual to everyday life (W. N. Hidayat et al., 2023). Furthermore, Amelia et al. (2025) in their study of Islamic Religious Education teachers in elementary schools confirmed that implementing TPACK principles helped teachers deliver more participatory learning (Amelia et al., 2025). For example, when discussing the topic of morality, teachers not only gave lectures but also invited students to watch educational video clips, discuss real-life cases through online forums, and then connect these with the teachings of the Quran and Hadith. This approach has been proven to improve *engagement* students while strengthening their understanding of Islamic values.

Furthermore, research by Rahmawati & Khoirurrosyid (2022) at a Muhammadiyah elementary school (MIM) in Miri District showed that teachers who designed TPACK-based lesson plans were more adaptive to the needs of digital native students, as they were able to utilize simple technologies, such as WhatsApp groups,

Google Classroom, or interactive quiz applications, to strengthen learning interactions. This proves that the implementation of TPACK is not only effective in high-tech schools but can also be adapted to schools with limited resources (Rahmawati & Khoirurrosyid, 2022). Thus, the development of TPACK-based lesson plans in PAI in elementary schools has great potential to provide holistic, adaptive, and relevant learning in the digital era. Teachers are not only required to master religious content but also to act as creative learning designers capable of integrating technology within an Islamic pedagogical framework.

Implementation of Blended Learning and Flipped Classroom

The blended learning model, a combination of face-to-face and online learning, is increasingly relevant in PAI in elementary schools in the digital era. This model provides flexibility for teachers and students to explore learning materials in greater depth and context. For example, teachers can provide videos of Islamic jurisprudence (fiqh) lessons on worship or moral studies for students to study at home (the flipped classroom concept). Then, during face-to-face meetings at school, students are invited to participate in discussions, practice worship, and engage in Q&A sessions, making the class more interactive and student-centered.

According to Graham & Halverson (2023), blended learning has been proven to be effective in improving learning outcomes, collaborative skills, and student motivation because it allows for a combination of synchronous and asynchronous learning experiences (Graham & Halverson, 2023). In the Indonesian context, research by Fauzi & Sastra Khusuma (2020) shows that the implementation of flipped classrooms in elementary schools has a positive impact on students' conceptual understanding, including in Islamic Religious Education. They found that students were better prepared for face-to-face classes because they had previously gained knowledge through digital materials provided by teachers (Fauzi & Sastra Khusuma, 2020).

Besides *blended learning* The flipped classroom model is considered effective in optimizing face-to-face time to focus more on practical activities and critical discussions. Thus, students are not merely passive recipients of information but are also active in constructing knowledge through learning experiences. Research by Arizona et al. (2020) confirms that flipped classrooms encourage independent learning, foster self-regulated learning, and improve students' ability to utilize technology productively (Arizona et al., 2020).

Furthermore, PAI teachers in several schools have also begun integrating digital technology-based Project Based Learning (PjBL) into blended learning. PjBL encourages students to collaborate, think critically, and solve problems through projects relevant to everyday life. According to research by Kokotsaki, Menzies, & Wiggins (2016), the PjBL model improves students' communication skills, time management, group work, and self-reflection. In the context of PAI, projects can include creating a da'wah vlog, an infographic on ablution procedures, or a digital exhibition on noble morals. In this way, religious values are not only taught theoretically but also practiced through technological media that are close to students' daily lives (Kokotsaki et al., 2016).

Innovations in learning models such as blended learning, flipped classrooms, and PjBL are crucial for transforming PAI learning in the digital era. As emphasized by Rachmawati, Zulela, & Suryadi (2023), educational innovation is key to adapting learning systems to the challenges of the times while maintaining the essence of Islamic educational values. Therefore, PAI teachers are required not only to master Islamic material but also to possess digital literacy, creative pedagogy, and instructional design skills relevant to 21st-century needs (Saekan Muchith, 2023).

Collaboration with Parents in Digital Supervision

Transforming learning in the digital age cannot be solely the responsibility of teachers or schools. Parents play a crucial role as strategic partners in ensuring the continuity of learning, especially when children interact extensively with technology at home. In the context of PAI in elementary schools, parental involvement is increasingly crucial, as it concerns not only material mastery but also character development and the reinforcement of Islamic values.

Collaboration between teachers and parents in digital supervision can be understood through the concept *parental mediation*, namely parental supervision strategies for children's media use. Livingstone et al. (2018) explain that *parental mediation* can be in the form of restrictions (*restrictive mediation*), active assistance with discussion (*active mediation*), as well as shared use (*co-use*). Approach *active mediation* And *co-use*is considered more effective because it not only prevents exposure to harmful content but also teaches children critical thinking and instills moral values in technology use (Livingstone et al., 2018). This is particularly relevant in PAI, as discussions between parents and children about digital content can be a means of instilling Islamic etiquette, such as communication ethics on social media or responsibility in sharing information.

Various studies have shown that parental involvement has a positive impact on children's learning outcomes. Desforges & Abouchaar (2003) emphasized that parental support contributes significantly to children's academic achievement, motivation, and behavior (Desforges & Abouchaar, 2003). used the model *school–family–community partnership* also emphasizes the importance of partnerships between schools and families in building a conducive educational ecosystem (Epstein, 2018). In the context of PAI learning, this partnership can be realized through daily worship support at home, discussions about the moral values of the material taught by teachers, and digital habits that align with religious guidance.

Furthermore, Nikken and Jansz (2014) found that active parental supervision of children's digital activities is closely related to safer and more targeted media use (Nikken & Jansz, 2014). In Indonesia, the Ministry of Education and Culture (2020) and UNICEF (2020) also emphasize the importance of parental involvement in distance learning and the use of digital technology at home, especially as a measure to mitigate the risks of distraction, exposure to age-inappropriate content, and decreased learning motivation (Kementerian Agama Kab. Pangandaran, 2020; UNICEF, 2020). Thus, collaboration between teachers and parents in digital supervision is not only supportive but also an integral part of the success of learning transformation in the digital era.

In practice, Islamic Religious Education teachers can engage parents through various strategies. For example, establishing regular communication with parents through class WhatsApp groups not only to deliver announcements but also to share short materials, daily prayers, or digital etiquette guidelines for families. Furthermore, schools can host Islamic parenting webinars or workshops that equip parents with skills to monitor their children's technology use while integrating religious values into digital activities. Teachers can also develop a practical module called an "Islamic Digital Etiquette Guide" for parents, containing simple rules such as limiting screen time, praying before using devices, and tips for discussing digital content with children.

Furthermore, the implementation of digital family contracts or *family media agreement* can also help parents and children understand the rules of device use. PAI teachers can support this by assigning collaborative assignments involving parents, such as creating a digital etiquette journal or a family project on prayer habits. Through these strategies, parents not only act as supervisors but also as primary educators at home, maintaining the continuity of religious values. With active parental involvement, the transformation of PAI learning in the digital era not only addresses the challenges of technology use but also ensures that technology truly serves as a means to enrich the learning experience and instill Islamic values in students. This collaboration will ultimately create synergy between school and home in educating a digital generation that is not only academically proficient but also virtuous.

Strengthening the Digital Competence of Islamic Education Teachers

The transformation of PAI learning in the digital era will not be effective without improving teachers' digital competencies. As the spearhead of the educational process, PAI teachers need to develop capabilities in three aspects: mastery of religious material (content knowledge), pedagogical approaches (pedagogical knowledge), and learning technology (technological knowledge). The concept of Technological Pedagogical Content Knowledge (TPACK) by Mishra & Koehler (2006) explains how these three elements must synergize, rather than stand alone, for optimal integration of technology in learning. TPACK is an important framework that emphasizes that teachers must be able to balance content, methods, and digital learning media for effective transfer of religious knowledge (Mishra & Koehler, 2006).

The relevance of TPACK implementation in the field is evident in research that evaluates the combination of technology-based teaching and pedagogical strategies as more effective than conventional approaches. For example, Koehler et al. (2013) presented those teachers trained in TPACK-based learning design were able to create more authentic and meaningful learning activities. However, in Indonesia, real challenges remain due to the low digital literacy of teachers, particularly PAI teachers in elementary schools, both in small towns and villages (Koehler et al., 2013). Local publications have also found similar results. Rahmadi (2019) measured geography teachers' TPACK skills and found that several subcomponents, such as Technological Content Knowledge (TCK) and Technological Pedagogical Knowledge (TPK), still need strengthening. Although not specifically PAI, these findings reflect similar challenges for Islamic Religious Education teachers at earlier levels (Rahmadi, 2019; Schmidt et al., 2009).

Integration of Islamic Character Education in the Digital Ecosystem

In addition to mastering technological aspects, the transformation of PAI learning in the digital era must not ignore the Islamic character dimension. Technology will only be effective if placed within a proper moral

framework. Therefore, students should not only be guided to be proficient in using digital devices but also be instilled with digital etiquette (*digital etiquette*) in accordance with Islamic values. This digital etiquette encompasses ethical communication on social media, selective and wise information sharing, and the ability to think critically about the flow of online content, which often mixes facts and hoaxes.

According to Al-Ali (2020), integrating digital literacy and character education is a crucial strategy for preparing a younger generation who is not only technically proficient but also possesses a solid moral foundation. Digital literacy based on character values can help students navigate the digital space safely, ethically, and productively (Al-Ali, 2020). This aligns with Ribble's (2015) ideas in his book*Digital Citizenship in Schools*which emphasizes the importance of teaching the principles of digital citizenship from an early age so that students become responsible digital citizens (Ribble, 2015).

In the Indonesian context, the integration of Islamic character education with technology is highly relevant. Research by Ismail (2016) shows that religious-based character education supported by digital media can strengthen spiritual awareness while preventing deviant behavior resulting from uncontrolled internet use. The study confirms that teachers who integrate religious values with online learning can foster religiosity, discipline, and moral awareness in elementary school students (Ismail, 2016). Furthermore, research by Wandari & Rohana (2023) revealed that the implementation of digital-based character education in elementary schools increases students' awareness of using social media in a healthy and Islamic manner, for example by avoiding hate speech (*hate speech*) and hoaxes. This proves that faith-based character education and digital literacy complement each other in shaping a generation that is both moral and technologically literate (Wandari & Rohana, 2023).

Thus, it can be emphasized that digital-based PAI learning must prioritize Islamic character education as its primary foundation. Mastery of technology without strengthening morals will produce a generation vulnerable to technology misuse. Conversely, integrating digital competencies with Islamic character values will produce students who are not only *digital native*, but also *digital wise* able to utilize technology for good, preaching, and self-development in an Islamic manner.

Optimizing the Learning Management System (LMS) Platform for Islamic Education

The transformation of PAI learning in the digital era also requires optimal utilization of a Learning Management System (LMS) as a means of structured learning management. An LMS enables PAI teachers to systematically design, organize, and evaluate learning through digital features such as Islamic discussion forums, online quizzes, project-based assignments, and religious reflection in the form of digital journals. With an LMS, PAI learning takes place not only in the classroom but can also be expanded into a continuous learning experience in the digital space. According to Hrastinski (2019), the use of an LMS integrated with the principles of *student-centered learning* can increase active student participation and encourage collaborative engagement in the learning process (Hrastinski, 2019). In the context of religious learning, an LMS can be combined with Islamic applications such as a digital Quran or an e-morals module to enrich the learning experience.

Research in Indonesia by Rohmiati (2025) found that the use of LMSs such as Google Classroom and Moodle in PAI learning positively contributed to the regularity of material delivery, student discipline in completing assignments, and increased understanding of religious material (Rohmiati, 2025). The results of this study reinforce the view that the integration of digital technology in Islamic Religious Education is not only limited to quizzes or interactive videos, but also needs to be managed within a more comprehensive digital ecosystem through an LMS. Thus, optimizing an LMS can be an important strategy to ensure that the transformation of Islamic Religious Education learning is more effective, structured, and oriented towards strengthening Islamic digital literacy. An LMS is not only a tool for distributing materials, but also a forum for character building, interaction, and spiritual reflection that supports the growth of students with noble morals in the digital era.

Conclusion and Recommendations

Based on the research results and discussion, it can be concluded that Islamic Religious Education teachers in the Babakan Cikao Islamic Religious Education Working Group (KKG PAI) face various challenges in transforming learning in the digital era, including digital competency gaps, limited resources and infrastructure, and changes in curriculum and learning approaches. Nevertheless, they have also developed various innovative learning strategies to overcome these challenges, such as the development of interactive digital teaching materials, the use of e-learning platforms and social media, and continuous professional development. To increase the effectiveness of Islamic Religious Education learning transformation in the digital era, it is

recommended that the government and schools provide greater support to Islamic Religious Education teachers in the form of training, mentoring, and the provision of adequate resources and infrastructure.

PAI teachers also need to continuously improve their digital competencies and knowledge of innovative learning approaches, as well as collaborate with other teachers and education stakeholders to develop more effective and relevant learning practices to meet students' needs in the digital age. The use of Artificial Intelligence (AI) can enrich the learning process, although challenges such as technology dependence and privacy concerns must be considered.

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