

Fostering digital adaptation in Islamic religious education through digital park space: Evidence from a secondary school

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Abstract: Digital transformation has become an imperative in contemporary education, yet the readiness of teachers, students, and digital infrastructure remains a significant challenge, particularly in IRE (Islamic Religious Education), where technology integration is often limited. This study aims to examine the implementation of a digital park as a digital adaptation space for IRE learning through a comprehensive and in-depth analysis. A qualitative case study was conducted at SMAN 1 Babat using in-depth interviews, participant observation, and document analysis. Data were analyzed through thematic analysis and triangulation to enhance credibility and contextual validity. The findings reveal that the digital park functions as a digital adaptation ecosystem that supports the transformation of IRE learning by integrating physical spaces, technology, and digital systems. Its implementation encompasses planning, execution, and evaluation processes, contributing to the development of students' digital literacy, collaboration, communication, and self-directed learning skills. However, disparities in teachers' digital competencies and limitations in internet infrastructure remain key challenges. Sustainable implementation therefore requires strengthened digital infrastructure, continuous professional development for teachers, and the adoption of more adaptive and dynamic digital pedagogies. Although this study is limited to a single case and does not quantitatively assess program effectiveness, it offers practical and conceptual insights for schools and policymakers seeking to advance technology-enhanced IRE learning.

INTRODUCTION

The rapid evolution of information and communication technology has reshaped contemporary society and significantly influenced educational practices worldwide. This development has accelerated the integration of digital technologies into learning environments to enhance instructional effectiveness, improve educational outcomes, and support sustainable educational innovation (Princess, 2023). Consequently, digital literacy has become a fundamental twenty-first-century competency that should be developed from an early age, as it enables learners to access, evaluate, and utilize information critically while preparing them to address the complexities of an increasingly digitalized world. In the context of IRE, digital transformation

provides opportunities to create more interactive, student-centered, and adaptive learning experiences through the integration of digital media and interdisciplinary pedagogical approaches that reflect the characteristics of contemporary learners. Furthermore, the transition toward an inclusive, equitable, and technology-enhanced educational system underscores the strategic role of digitalization in improving the quality, accessibility, and relevance of IRE, enabling it to respond effectively to the evolving demands of modern education and society.

Nevertheless, the implementation of technology in PAI learning still faces various challenges, such as limited infrastructure, low digital competence of teachers and students, resistance to change, and the dominance of conventional learning methods that are less interactive (Inayah et al., 2024). Internet access gaps, differences in digital literacy levels, and potential distractions due to the use of gadgets also complicate the process of technology integration in the educational environment (Haq et al., 2023). On the other hand, the development of the digital era provides a great opportunity to develop IRE learning through digital media, simulations of Islamic practices, project-based approaches, and access to more comprehensive learning resources. Therefore, a systematic and sustainable strategy is needed to optimize the use of technology while overcoming various obstacles, so that digital transformation can increase the effectiveness and relevance of IRE learning in the contemporary era.

In practice, digital learning often encounters obstacles and challenges, the urgency of in-depth analysis of students' readiness to face digital literacy-based learning is crucial. Because digital literacy is not only about accessing information, but about how to filter, evaluate, create, and utilize wisely (Karengga & Suti'ah, 2025). This analysis not only serves to map the objective conditions of students in the field, but also plays a role in designing learning strategies that are in line with students' potential and needs. With a comprehensive understanding of the level of readiness of students in utilizing media as an educational tool, educational institutions and educators can implement a more targeted and effective approach in technology-based learning methods.

On the other hand, the digital readiness of educators is still a challenge in the implementation of technology-based learning. This is evidenced by the fact that 40.8% of teachers are in the low digital competency category, while only 4.1% reach the very high category, indicating that there is still limited teacher readiness in integrating technology into learning (Masnun et al., 2025). In addition, only 67% of teachers have adequate digital competence and 32% have participated in digital competency training, so some teachers still face difficulties in optimizing digital learning (Masnah et al., 2024).

A number of studies on digital learning have been conducted by several researchers, including Irwahand et al., (2022) which successfully combines technology in learning in a

systematic and continuous manner. However, research Irwahand et al., (2022) It is still limited to physical and spiritual subjects. On the other hand, Jusu (2026) concludes that the implementation of digital technology has been proven to increase the understanding of abstract religious concepts through audiovisual media. However, the effectiveness of digital learning still faces obstacles in the form of limited teacher competence in integrating technology, as well as infrastructure obstacles such as limited electricity and unstable internet networks. This is in line with the results of research by Prayogo et al., (2015) which emphasized that educational facilities are an important factor in supporting the learning process. Meanwhile, the development of information technology not only presents convenience, but also challenges and opportunities in the use of the internet for learning (Dewi et al., 2025). In contrast to the three studies, this study focuses on the study of active-collaborative involvement between students and teachers in utilizing digital infrastructure in IRE learning.

Despite the growing body of research on technology integration, the effectiveness of digital media, and the role of technological infrastructure in education, limited attention has been given to the systematic implementation of digital learning environments in IRE as a strategy for fostering students' digital adaptation. Existing studies have predominantly focused on isolated aspects of educational technology, while comprehensive investigations into the planning, implementation, and evaluation of digital learning ecosystems in IRE remain scarce. Addressing this gap, the present study offers a novel perspective by examining the implementation of a digital park as an integrated digital learning environment for IRE and exploring the factors that facilitate or hinder its effectiveness.

This study aims to provide a comprehensive and in-depth analysis of the implementation of digital parks as a space for digital adaptation in IRE learning. Theoretically, it contributes to the expanding body of knowledge on digital pedagogy in IRE by developing a holistic understanding of digital park implementation, encompassing the stages of planning, execution, and evaluation, as well as the enabling factors and challenges that influence its successful adoption. Practically, the findings are expected to serve as valuable insights for teachers, school administrators, and policymakers in optimizing the use of digital learning environments, strengthening educators' digital competencies, and formulating strategies and infrastructure that support the sustainable transformation of technology-enhanced IRE learning.

METHOD

This study employed a qualitative approach with a case study design to investigate the implementation of the Digital Park as a space for digital adaptation in IRE learning. A qualitative case study was considered appropriate because it enables an in-depth exploration of the planning,

implementation, and evaluation processes involved in the Digital Park initiative. Through this design, the study examines how teachers and students experience, interpret, and engage with digital learning practices within the Digital Park environment. As argued by Creswell, (2023) and Yin, (2018) qualitative inquiry provides a critical framework for uncovering not only observable practices but also the underlying meanings, perspectives, and social contexts that shape educational processes and instructional decision-making.

The study was conducted at SMAN 1 Babat, Indonesia, from January to March 2026. Participants were selected using purposive sampling based on their roles, experiences, and direct involvement in the implementation of the Digital Park, ensuring that the data collected were information-rich and relevant to the research objectives. A total of 12 informants participated in the study, comprising one principal, one vice principal for curriculum affairs, two IRE teachers, and eight students. The diversity of participants enabled a comprehensive understanding of the implementation of the Digital Park from multiple perspectives, including educational leadership, instructional practices, student engagement, teachers' digital competencies, and the challenges associated with technology integration in IRE learning.

Data were collected through classroom and field observations, semi-structured in-depth interviews, and document analysis to develop a comprehensive understanding of the implementation of digitally oriented IRE learning. Observations focused on the ways in which the Digital Park was integrated into instructional activities, the interactions between teachers and students, and its influence on student engagement and learning experiences. In-depth interviews were conducted to explore participants' perceptions, experiences, and reflections on the implementation process, while relevant documents were analyzed to triangulate the findings and enhance the credibility of the study.

Furthermore, the researcher conducted in-depth face-to-face interviews with informants to explore their professional experiences and reflections during the implementation of digital parks in IRE learning (Kvale & Brinkmann, 2009). The researcher documented the results in the form of a transcript that represented the informant's perspective. In addition, the researcher analyzed the documentation to reinforce and verify the findings from observations and interviews (Herdiansyah, 2010). These documents include learning planning documents, materials, media, reflection notes, and school policies related to digital-oriented learning. Through this analysis, the researcher evaluates the consistency between planning, implementation, and evaluation.

Data analysis using thematic analysis (Morgan, 2022). The process begins with data recognition through repeated reading of interview transcripts and field notes, followed by initial coding to identify meaningful data units. The code is then categorized into broader themes that

represent student engagement during the implementation of the digital park, student collaboration, individual characteristics, and teacher strategies. Themes are reviewed, refined, and interpreted in relation to existing theoretical frameworks to ensure analytical rigor. The integration of multiple data sources allows for analytical triangulation, improving the reliability of interpretation.

To ensure trust, the study applied credibility, transferability, dependability, and confirmability (Ahmed, 2024). Credibility is strengthened through member checking, where participants review interview summaries to confirm accuracy. Prolonged engagement and constant observation increase contextual validity. Discussions with fellow researchers were conducted to minimize subjective bias in data interpretation. Transferability is addressed by providing an in-depth description of the research context, while dependability and confirmability are ensured through the maintenance of audit trails of research procedures, field records, and analytical decisions. Through this systematic procedure, the research method shows validity and reliability in presenting reliable findings.

RESULTS AND DISCUSSION

Implementation of the Digital Park as a Digital Adaptation Space for IRE Learning

The implementation of the digital park at SMAN 1 Babat has proven effective as a digital adaptation space for IRE learning. Its function extends beyond serving as a technological facility, evolving into a dynamic learning environment that promotes discussion, collaboration, and the exploration of diverse digital learning resources by students, both within and beyond the classroom setting. As an integral component of the IRE instructional process, the digital park supports the meaningful integration of digital technology into teaching and learning activities, fostering more interactive, student-centered, and technology-enhanced pedagogical practices. Consequently, the digital park can be conceptualized as a holistic digital learning ecosystem that facilitates the development of students' digital competencies while supporting the broader transformation of IRE in the digital era. The implementation of the digital park as a digital ecosystem for IRE learning is summarized in the following table.

Table 1. Stages of Digital Park Implementation as a Digital IRE Learning Ecosystem

No	Learning Stages	Activities	Impact
1	Planning	Teachers design instructional activities, prepare digital learning materials, using interactive media, and integrate the Learning Management System (LMS) with online learning resources.	Digital Park used as a digital adaptation space with support for internet access, LMS, and various digital learning resources to support learning readiness.
2	Implementation	Teachers introduce learning objectives, facilitate discussions, guide students in exploring digital resources, and supervise	Digital Park provides an interactive learning ecosystem that integrates face-to-face instruction,

		collaborative learning activities. Students access digital content, search for additional references, engage in group discussions, and complete individual and collaborative tasks	collaborative learning, digital media utilization, and real-time access to information
3	Evaluation	Teachers provide feedback and assess learning outcomes through presentations, discussions, digital quizzes, assignments, and LMS-based assessments. Students present their work, complete digital assessments, and reflect on their learning experiences	Digital Park, supported by the LMS, enables flexible and continuous assessment by allowing students to revisit learning materials, submit assignments, and receive feedback regardless of time and location constraints

The implementation of the Digital Park in IRE learning takes place through three main stages, namely planning, implementation, and evaluation. In the planning stage, teachers prepare learning materials that will be delivered through various digital media and learning resources available on the LMS. Teachers also determine the learning activities that will be carried out in the Digital Park, including the division of discussion groups, assignments, and exploration activities of digital learning resources. After all the learning tools are prepared, the teacher directs students to use the Digital Park facility as a digital adaptation space integrated with the school's internet network and digital platform.

In the implementation stage, students access learning materials through their respective digital devices that are connected to the school's LMS and other online learning resources. The teacher provides an introduction to the material, then directs students to explore information, read digital learning resources, watch learning videos, or work on assignments that are available on the LMS. Furthermore, students discuss individually and in groups to analyze the material studied, look for additional references from various digital sources, and compile the results of the discussion to be presented. During the process, teachers act as facilitators who guide students in accessing information, solving problems, and ensuring that the use of technology remains in harmony with learning objectives. The facilitative role of teachers contributes to increasing student independence, engagement, and learning success in a digital learning environment (Ramey & Stevens, 2023).

Meanwhile, the use of digital parks that focus on strengthening discussion, collaboration, and exploration of digital learning resources flexibly indicates the formation of an innovative digital learning ecosystem. This condition is reflected in the statement of HW, an IRE teacher, who revealed that the digital park has been well integrated in the implementation of IRE learning as follows.

“The Digital Park is not only used as an ordinary learning place, but has become part of the IRE learning process. Students can access materials, discuss, and search for references directly using the digital devices they have at their disposal effectively and efficiently.” (HW Interview - Teacher, 14-01-2026)

The availability of adequate digital infrastructure makes it easier for teachers to apply various interactive media in IRE learning. Learning materials can be distributed to students through various interesting and interactive media, thereby increasing learning motivation and encouraging students to be more active in understanding IRE materials. Although the results of this study are in line with the findings Mubarokah et al., (2025) about the use of various digital learning media can increase student motivation and participation, but learning media that are implemented as an ecosystem in IRE learning have not been studied in depth.

Researchers also found the practice of peer learning, which is when students who have a better understanding of a material help explain to their friends who are having difficulties. This condition shows that the digital park not only functions as an individual learning space, but also as a social learning space that allows for the exchange of knowledge naturally. These findings are consistent with the findings of the Kharismatunisa, (2023) that IRE learning integrated with technology has proven to be effective in increasing student engagement and understanding of their religious teachings. However, digital park learning does not only focus on increasing student involvement, more than that digital park builds a religious digital learning ecosystem.

The existence of LMS integrated in IRE learning shows the sustainability of the Digital Park-based learning ecosystem. Initially, the school developed an independent LMS called *SMANBA-Merdeka*, then collaborated with *the Pijar platform* to increase the effectiveness and stability of digital learning and provide access to teaching materials for students. The use of LMS provides various conveniences for students, including accessing learning materials, doing assignments, participating in learning evaluations, and obtaining various learning resources flexibly without being limited by space and time. These findings show that the success of the implementation of learning through digital parks is not only determined by the existence of physical infrastructure and technological facilities, but also by the support of an optimally integrated digital system. The following is an image of the LMS used in schools.

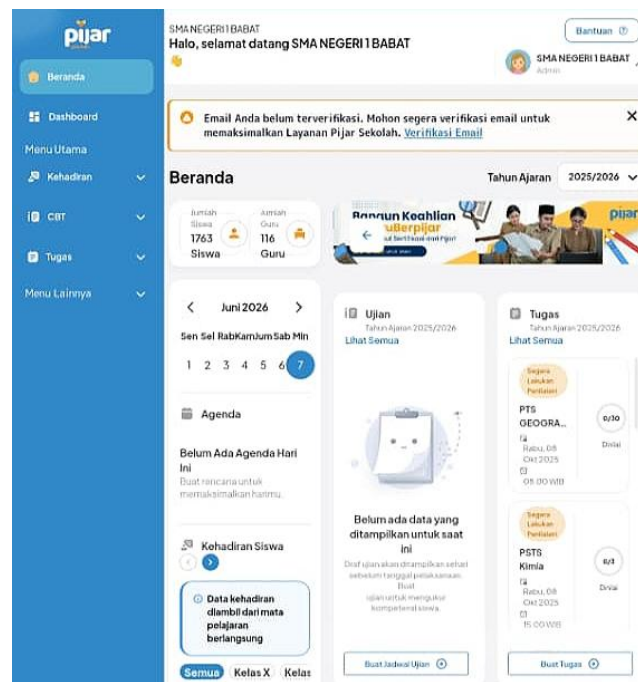


Figure 1. LMS Application Dashbord Display at SMAN 1 Babat

Although most studies have focused on the effectiveness of LMS as a digital platform (Nkomo et al., 2021; Saputro et al., 2021; Sholeh, 2023), this study shows that the success of learning is not only determined by the quality of the digital system, but also by its integration with the physical learning environment specially designed through the digital park. Thus, the synergy between LMS, network infrastructure, and conducive learning spaces results in a more holistic digital learning ecosystem in supporting digital literacy and IRE learning. This finding expands the Shearer et al., (2024) that the effectiveness of digital learning will be more optimal when technology, pedagogy, and learning spaces are developed in an integrated manner.

The final stage of learning is carried out through presentation, reflection, and evaluation activities. Students submit the results of discussions or assignments that have been done, then get feedback from teachers and peers. Learning evaluations are carried out directly or through LMS, such as quizzes, assignment collection, or digital-based assessments. After the learning activities are completed, students can still access the materials, assignments, and learning resources available on the LMS to deepen their understanding independently. These findings show that the use of Digital Parks not only supports technology-based face-to-face learning processes, but also expands learning opportunities through integration between physical learning environments and sustainable digital learning systems.

Based on the facts of the research above, it shows that IRE learning at SMAN 1 Babat has really been integrated with technology. As according to Shah, (2022) that technology-integrated learning is able to support the learning process in a large school environment with diverse student characteristics. This condition is in accordance with the characteristics of students at SMAN 1

Babat which are diverse and classified as large groups. This is evidenced by HW's statement as follows.

"The availability of various technologies in IRE learning makes it easier for us to use various interactive media. Due to the large and heterogeneous group of students in this school, the use of interactive media is very efficient in achieving the set learning objectives. In addition, students become more motivated, active, and easier to understand the material presented." (HW Interview - Teacher, 12-01-2026)

The digital park creates an atmosphere conducive to social interaction and collaboration between students. This condition shows that digital parks play an important role in increasing student involvement and participation during the learning process. In line with the results of the research Baars et al., (2023) that a flexible, comfortable, and collaborative environment has been proven to encourage active participation and strengthen their learning experience. However, the findings at SMAN 1 Babat show a more specific characteristic, namely the integration of beautiful open spaces with digital infrastructure that supports academic activities. In contrast to studies Detyna et al., (2025) which emphasizes more on the influence of space design and technology on active learning. The following is a summary of the research results visualized through the mind map below.

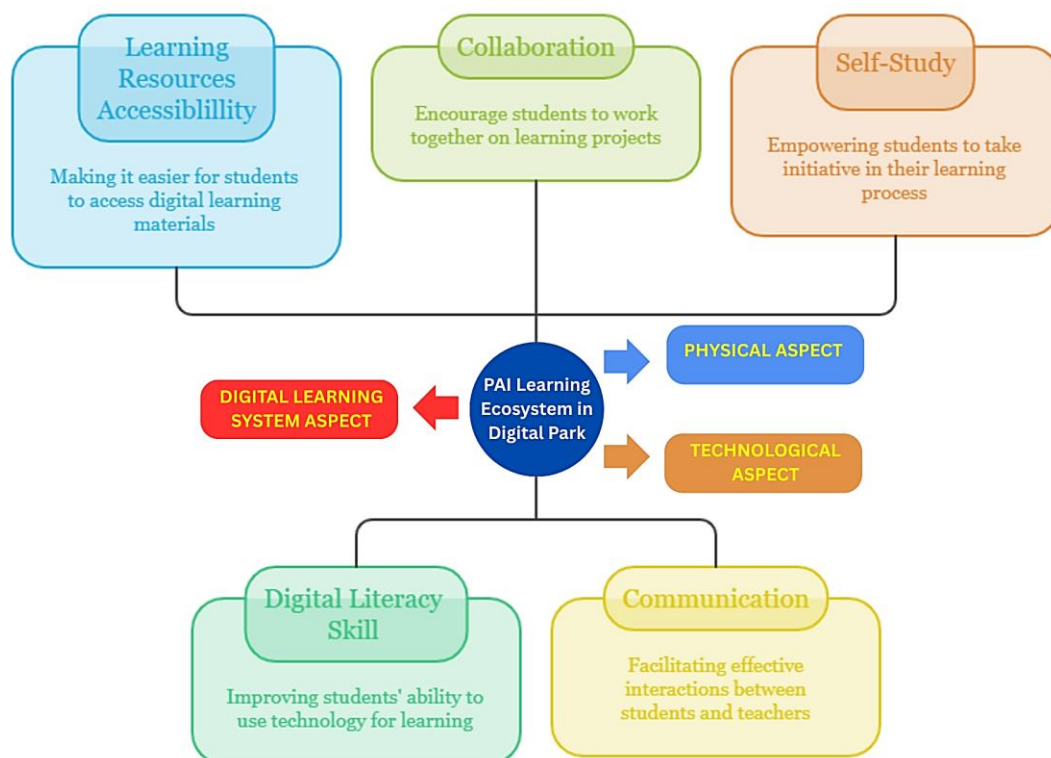


Figure 2. IRE Learning Ecosystem in Digital Park

Based on Figure 2, the findings of this study indicate that the digital park represents an educational innovation that effectively integrates physical, technological, and digital learning dimensions into a cohesive and mutually reinforcing ecosystem. Beyond enhancing access to digital

learning resources, the Digital Park fosters the development of students' essential twenty-first-century competencies, including digital literacy, collaboration, communication, and self-directed learning within the context of IRE. These findings suggest that the digital park functions not merely as a technological facility but as a holistic learning ecosystem that supports student-centered and technology-enhanced pedagogical practices. Consequently, the Digital Park can be regarded as a promising model for technology-based learning environments, with the potential to facilitate educational transformation and promote sustainable digital innovation in the contemporary educational landscape.

Challenges and Enabling Factors in the Implementation of the Digital Park for IRE Learning

Although overall the digital park acts as an effective digital learning ecosystem in increasing student participation, collaboration, and digital literacy in IRE learning, in fact, researchers also found a number of obstacles in its implementation stage. Based on the observation results, students' concentration will decrease during learning due to the increased distraction of device use and access to information outside the learning material. This is also strengthened by DV's statement which reveals that his attention is interrupted by other information while operating the digital space as follows.

"Learning in the digital space makes us freer to look for additional references. However, this freedom is also a challenge because there is a lot of other information that can distract attention. So, we have to be more disciplined in using digital devices during learning." (DV Interview – Student, 06-02-2026)

In addition to technological accessibility, effective participation in digital learning environments requires students to possess strong self-regulation skills. Teachers emphasized that while the Digital Park provides students with extensive opportunities to engage with diverse digital learning resources, its educational benefits largely depend on students' ability to manage their learning behaviors and maintain focus on instructional objectives. As one teacher explained.

"The Digital Park provides opportunities for students to learn independently through various digital sources. However, we also see that students need to have good self-regulation skills because access to information can be a distraction if not directed properly." (SF Interview – Teacher, 06-02-2026)

This finding is consistent with the work of Bergdahl et al., (2020), who argued that digital learning environments may increase distractions and reduce student engagement when learners lack adequate self-regulation skills. However, the present study extends this perspective by challenging the assumption that students' digital competencies alone determine the success of technology-enhanced learning. The findings suggest that the effectiveness of digital learning is

equally influenced by the quality of technological infrastructure and the design of digital learning environments, both of which shape students' learning experiences and engagement.

Another significant challenge identified in this study is the instability of internet connectivity during simultaneous use, which disrupts access to digital learning materials and online platforms. These findings indicate that the success of digital-based learning depends not only on the availability of technological resources but also on the reliability of supporting infrastructure and effective learning management. This observation supports the argument of Irwahand et al., (2022), that educational digital transformation requires systematic and sustainable technology integration to improve learning quality.

Furthermore, this study found that variations in teachers' digital competencies influence the optimization of the Digital Park's implementation. Interview data revealed that while some teachers effectively integrate a wide range of digital applications and platforms into their instructional practices, others still require support in utilizing more advanced digital learning tools. This disparity highlights the critical role of human resource readiness in the successful implementation of technology-based educational innovations. Similarly, students identified unstable internet access as a major obstacle that directly affects the continuity and effectiveness of the learning process. These findings corroborate previous studies, which have identified inadequate digital infrastructure, unreliable internet connectivity, and disparities in human resource capacity as persistent challenges to the successful adoption of educational technology (Fatma Febriyanti et al., 2025; Hendarwati et al., 2021; Ntorukiri et al., 2022).

Despite these challenges, observational evidence indicates that the digital park provides a more flexible, interactive, and student-centered learning environment. Students were observed to engage more actively in independent information seeking, collaborative discussions, and group-based learning activities. Interviews with teachers further revealed that the Digital Park has facilitated a pedagogical shift from traditional knowledge transmission toward more exploratory and participatory learning approaches. By providing access to diverse digital learning resources, the Digital Park enables students to develop critical thinking, digital literacy, communication, and collaboration skills, which are widely recognized as essential competencies for twenty-first-century learning.

Despite persistent challenges such as inadequate infrastructure, limited teachers' digital competencies, and the scarcity of digital learning resources, which have been identified as major barriers to technology integration in IRE (Sunarya, 2024), SMAN 1 Babat has proactively addressed these issues through the implementation of the Digital Park initiative. The school has adopted a range of systematic and sustainable strategies to support digital transformation in

learning. According to interviews with school administrators, internet connectivity has been enhanced through collaboration with Pijar Telkom, providing high-speed network capacity capable of supporting simultaneous digital learning activities. In addition, the school regularly conducts professional development programs for teachers, organizing digital competency workshops three times each semester, or six times per academic year. These programs focus on equipping teachers with the skills to utilize emerging educational applications, integrate digital platforms into classroom instruction, develop digital-based teaching materials, and adapt to ongoing advancements in educational technology.

Observational findings indicate that the school's professional development programs have significantly enhanced teachers' confidence and competence in integrating technology into their instructional practices. As a result, the integration of the Digital Park into the curriculum has demonstrated considerable effectiveness, reflecting the school's successful efforts to optimize digital facilities as innovative learning spaces that support technology-enhanced education. These findings underscore the importance of continuous capacity building and institutional support in fostering sustainable digital transformation in Islamic Religious Education (IRE). A summary of the key findings is presented in the following table.

Table 2. Framework of Challenges, Enablers, and Strategic Solutions in Digital Park Utilization

No	Main Aspect	Criteria	Strategy
1	Challenges Factors	Students' unstable self-control, teachers' competence in managing heterogeneous digital platforms, and students' freedom to explore digital spaces beyond their learning objectives.	- Strengthening self-regulation and adequate pedagogical oversight is needed. - Strong and sustainable infrastructure support is needed.
2	Enabling Factors	External collaboration with internet providers, improving the quality of digital infrastructure, and workshops.	- Continuous improvement of teachers' digital competencies. - Support for school leadership and management in the ongoing digital transformation of education.

CONCLUSION

This study demonstrates that the implementation of the digital park at SMAN 1 Babat serves as an effective digital adaptation space that facilitates the transformation of IRE learning. Its implementation is systematically organized through the stages of planning, execution, and evaluation, thereby establishing a digital learning ecosystem that integrates the physical environment, digital technologies, and learning management systems into the instructional process.

Such an ecosystem contributes to the development of students' twenty-first-century competencies, particularly digital literacy, collaboration, communication, and self-directed learning. Nevertheless, the effectiveness of its implementation is influenced by several challenges, including disparities in teachers' digital competencies and limitations in internet connectivity. Addressing these issues requires strengthening digital infrastructure, enhancing teachers' professional capacity through continuous digital literacy and pedagogical training, and developing more adaptive and dynamic learning models to optimize the integration of technology in IRE instruction.

From a practical perspective, the findings suggest that a digital learning ecosystem integrating physical, technological, and digital dimensions can serve as an innovative model for IRE and potentially for other subject areas. This model provides a valuable reference for educational institutions seeking to create learning environments that are more interactive, creative, and responsive to the demands of educational transformation in the digital era. Theoretically, this study contributes to the growing body of knowledge on digital adaptation in Islamic education by conceptualizing the digital park as a holistic learning ecosystem that supports technology-enhanced pedagogy. However, this research is limited to exploring the implementation process and does not empirically assess the model's impact on students' learning outcomes or competency development. Future studies are therefore recommended to employ quantitative or mixed-methods approaches to evaluate the effectiveness of digital parks and to investigate their applicability across diverse educational settings and levels, thereby extending the generalizability and practical relevance of the proposed model.

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