

INTEGRATION OF TECHNOLOGY AND ISLAMIC VALUES IN STRENGTHENING LEARNING IN MADRASAH

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Abstrak

Penelitian ini bertujuan menganalisis integrasi teknologi dan nilai-nilai Islam dalam memperkuat pembelajaran di madrasah. Penelitian menggunakan pendekatan kualitatif dengan desain deskriptif yang dilaksanakan di MTs Al Washliyah Gedung Johor Medan. Data dikumpulkan melalui observasi, wawancara semiterstruktur, dan dokumentasi yang melibatkan kepala madrasah, guru, dan peserta didik. Analisis data menggunakan model interaktif Miles dan Huberman yang meliputi reduksi data, penyajian data, serta penarikan dan verifikasi kesimpulan. Hasil penelitian menunjukkan bahwa integrasi teknologi melalui presentasi PowerPoint, video pembelajaran, aplikasi digital, dan sumber belajar berbasis internet berkontribusi terhadap peningkatan motivasi, partisipasi, interaksi, dan pemahaman peserta didik terhadap materi pembelajaran. Teknologi juga memungkinkan guru menciptakan pembelajaran yang lebih menarik, kontekstual, dan berpusat pada peserta didik. Meskipun demikian, pemanfaatan teknologi tetap diintegrasikan dengan misi pendidikan Islam melalui pengawasan guru, pembinaan moral, dan penguatan nilai-nilai Islam dalam aktivitas digital peserta didik. Penelitian juga menemukan beberapa kendala berupa keterbatasan fasilitas teknologi, koneksi internet yang belum stabil, perbedaan kompetensi digital guru, dan keterbatasan pelatihan. Penelitian menyimpulkan bahwa teknologi dapat memperkuat efektivitas pembelajaran di madrasah apabila diintegrasikan secara strategis dengan nilai-nilai Islam, kompetensi guru, infrastruktur memadai, dan dukungan pedagogis berkelanjutan.

Kata Kunci: Integrasi Teknologi, Nilai-Nilai Islam, Pembelajaran, Madrasah

Abstract

This study aims to analyze the integration of technology and Islamic values in strengthening learning at madrasah. The research employed a qualitative approach with a descriptive design conducted at MTs Al Washliyah Gedung Johor Medan. Data were collected through observation, semi-structured interviews, and documentation involving the head of the madrasah, teachers, and students. Data were analyzed using the interactive model of Miles and Huberman, consisting of data reduction, data display, and conclusion drawing and verification. The findings indicate that technology integration through PowerPoint presentations, instructional videos, digital applications, and internet-based learning resources contributes to increased student motivation, participation, interaction, and understanding of learning materials. Technology also enables teachers to develop more attractive, contextual, and student-centered learning experiences. Nevertheless, technology utilization remains closely connected to the mission of Islamic education through teacher supervision, moral guidance, and the reinforcement of Islamic values in students' digital activities. Several challenges were identified, including limited technological facilities, unstable internet connectivity, differences in teachers' digital competencies, and limited training opportunities. The study concludes that technology can strengthen learning effectiveness in madrasah when integrated strategically with Islamic values, teacher competence, adequate infrastructure, and continuous pedagogical support.

Keywords: Technology Integration, Islamic Values, Learning, Madrasah

INTRODUCTION

The rapid development of digital technology has fundamentally transformed the educational landscape, including the ways in which knowledge is accessed, communicated, and constructed in learning environments. Information and communication technologies have increasingly shifted from being merely supplementary instructional tools to becoming integral components of contemporary educational ecosystems. In Islamic education, this transformation provides significant opportunities while simultaneously creating important pedagogical and ethical challenges. Digital platforms, multimedia, educational applications, online resources, and internet-based communication can expand access to learning materials, facilitate interaction, and create more flexible and engaging learning experiences. Suhiroh and Zuhri (2021) emphasize that information and communication technology can function as both a learning medium and a learning resource in Islamic Religious Education, facilitating the achievement of learning objectives and encouraging students to become more motivated and independent in accessing educational information. Similarly, Putriana et al. (2024) argue that digital transformation in Islamic education can improve learning quality by expanding opportunities for innovation and interaction, although its implementation requires appropriate teacher competence and supporting infrastructure.

The significance of technology integration, however, cannot be separated from the distinctive objectives of Islamic education. Islamic education is not merely concerned with the transmission of knowledge and the achievement of academic competencies but also with the development of faith, morality, character, responsibility, and spiritual awareness. Consequently, technology integration in Islamic education should not be evaluated solely according to its technical effectiveness or its capacity to make learning more attractive. It must also be examined in terms of whether technology contributes to the formation of students who are intellectually competent and digitally capable while remaining grounded in Islamic ethical principles. Recent research emphasizes that digital technology can enhance learning quality and student engagement in Islamic education when it is integrated with appropriate curriculum design, digital content, teacher preparation, and institutional support (Firdaus et al., 2023). This perspective establishes an important conceptual foundation for understanding technology as an educational instrument whose value depends on the pedagogical and moral framework within which it is used.

Madrasah occupies a particularly strategic position in this transformation because it combines general education with religious education and therefore carries a dual responsibility: preparing students to respond to contemporary developments while preserving Islamic identity and values. The increasing familiarity of students with smartphones, social media, online video, search engines, and digital applications has changed their expectations and patterns of interaction with learning. This situation requires madrasah to reconsider conventional instructional practices and develop learning strategies that correspond to the characteristics of digitally oriented learners. Digital technology can facilitate more visual, interactive, collaborative, and contextual learning experiences, thereby creating opportunities to increase students' participation and

motivation. Nevertheless, technology integration should not simply mean replacing printed materials or conventional presentations with digital devices. Rather, it should involve a pedagogical transformation in which technology is deliberately selected and used to support learning objectives, meaningful interaction, critical thinking, and character formation.

The effectiveness of such integration is strongly influenced by teacher competence. Mintasih et al. (2024), in their qualitative study of Islamic Religious Education learning in secondary schools, found that digital technologies such as Google Classroom, Moodle, and Edmodo were already being utilized, but teachers still faced limitations in infrastructure and digital competence, particularly in developing interactive digital content. Their findings demonstrate that technology availability does not automatically result in innovative learning because teachers remain central actors in determining how technology is pedagogically employed. This argument is reinforced by Cheng et al. (2021), who found that teachers' competence beliefs and perceptions of the usefulness and value of technology significantly influence technology integration. Their findings indicate that technology adoption is shaped by complex interactions between teachers' competencies and pedagogical beliefs rather than by access to technological tools alone. Thus, strengthening digital learning in madrasah requires not only hardware and internet connectivity but also continuous professional development that enables teachers to integrate technological, pedagogical, and content knowledge effectively.

The relationship between teacher competence and the institutional environment is equally important. Lai et al. (2022) demonstrated that technological pedagogical content knowledge, school culture, and professional development are important predictors of teachers' technology adoption, with institutional culture and professional development playing a significant role in supporting meaningful technology use. This finding suggests that technology integration should be viewed as an institutional process rather than an individual responsibility imposed exclusively on teachers. Madrasah leaders have an important role in establishing supportive policies, providing adequate infrastructure, facilitating professional development, and developing a school culture that encourages responsible innovation. Consequently, the success of digital transformation depends on the interaction between teacher competence, institutional support, technological resources, and pedagogical orientation.

Another important dimension concerns students' digital literacy. Access to digital information does not necessarily guarantee the ability to use information critically, ethically, and responsibly. This issue becomes particularly significant in Islamic education because students increasingly encounter religious information through websites, social media, video-sharing platforms, and other digital channels. Rusadi and Aripin (2023) found that Islamic Education students demonstrated generally good religious digital literacy, including abilities related to information selection, critical evaluation, communication, collaboration, and digital safety. Nevertheless, the study also highlights the importance of developing students' capacity to evaluate religious information because digital environments contain information whose validity and interpretation cannot always be taken for granted. Digital literacy in madrasah should therefore encompass not only operational skills but also critical, ethical, cultural, and religious

dimensions. Students need to learn how to distinguish credible information from misleading content, communicate respectfully in digital spaces, and use technology in ways consistent with Islamic ethics.

The integration of technology can also contribute directly to student engagement and learning motivation. Firdaus et al. (2023) found that digital technology can improve the quality of Islamic education and increase student engagement when supported by appropriate digital content, curriculum design, teacher preparation, and infrastructure. More recent empirical evidence from Islamic Religious Education contexts also indicates that technology utilization can strengthen students' motivation and participation. Ardyanti et al. (2025) examined technology integration in Islamic Religious Education at the elementary school level and found that digital technology was associated with learning motivation, while also identifying infrastructure, access, and digital competence as important contextual factors. These findings support the argument that technology can make learning more engaging, but its educational value remains dependent on the quality of implementation and the conditions in which it is introduced.

At the same time, digitalization presents potential risks for Islamic education. Students may become excessively dependent on technology, encounter unreliable information, or engage with digital content that is inconsistent with religious and moral values. Fadhilah and Sunhaji (2025), for example, found that the transformation of Islamic Education through digital technology could improve learning effectiveness, but its implementation needed to be considered in relation to the religious culture of the educational environment. This issue demonstrates why technology and Islamic values should not be treated as separate dimensions of education. Instead, digital learning in madrasah should integrate technological competence with ethical awareness, religious literacy, self-discipline, and responsible digital behavior. The objective is not simply to produce students who are technologically proficient but students who can use technology wisely and productively within an Islamic moral framework.

The need for such integration is particularly relevant at the Madrasah Tsanawiyah level because students are undergoing an important stage of intellectual, emotional, social, and moral development. At this level, digital exposure can provide extensive opportunities for exploration and independent learning, but students also require guidance in interpreting information and regulating their behavior. Technology-supported learning should therefore be accompanied by teacher supervision and value-based guidance. The teacher remains an essential facilitator who connects digital resources with learning objectives and Islamic principles. Recent research on teacher digital pedagogical competence confirms that systematic experimentation, reflection, collaborative problem-solving, and institutional support can significantly strengthen teachers' ability to integrate technology into teaching practices (Pratama et al., 2026). This indicates that professional development should move beyond basic technical training toward reflective and pedagogically meaningful technology integration.

Within this broader context, MTs Al Washliyah Gedung Johor Medan provides a relevant setting for examining the integration of technology and Islamic values in actual madrasah

learning practices. The use of presentation media, instructional videos, digital applications, and internet-based resources provides teachers with opportunities to make learning more attractive and accessible to students. However, such implementation may also encounter limitations related to technological facilities, internet connectivity, teacher competence, student readiness, and the alignment between digital resources and Islamic educational objectives. These contextual conditions are important because technology integration cannot be understood adequately through generalized assumptions derived from schools with different institutional cultures and resources. The particular characteristics of each madrasah influence how teachers adopt technology, how students respond to it, and how Islamic values are incorporated into digital learning.

Although previous studies have extensively examined digital technology in education, several gaps remain. First, much of the literature focuses on the technical effectiveness of digital media, online learning platforms, or general educational technology rather than examining technology integration as part of a value-based Islamic educational process. Second, studies concerning Islamic education have frequently concentrated on higher education, general schools, or broad conceptual discussions, while empirical investigations at the Madrasah Tsanawiyah level remain comparatively limited. Third, technology integration is often evaluated from the perspective of access, motivation, or learning outcomes without sufficiently examining how Islamic values are preserved and strengthened during technology-mediated learning. The emerging literature confirms the importance of this issue. Kurniawan et al. (2026), for instance, identify digital transformation in madrasah as both a strategic opportunity and a challenge, emphasizing that comprehensive technology integration requires improvements in teacher competence, infrastructure, digital content, and institutional implementation. Lachner et al. (2024) similarly conceptualize teacher technology integration as a complex process involving professional competence, professional vision, instructional processes, and learning outcomes rather than a simple act of adopting technological tools.

The present study therefore seeks to address this gap by examining the integration of technology and Islamic values in strengthening learning at MTs Al Washliyah Gedung Johor Medan. The study focuses on how technology is utilized in classroom learning, how teachers incorporate Islamic values into technology-mediated instruction, how students respond to digital learning experiences, and what challenges influence the implementation process. Its academic significance lies in connecting two dimensions that are frequently examined separately: digital transformation and value-based Islamic education. Its practical significance lies in providing contextual insights that can assist madrasah administrators and teachers in designing learning strategies that are technologically adaptive without weakening the moral and spiritual foundations of Islamic education. The novelty of this study consequently rests not simply on documenting the use of digital technology but on examining how technological innovation can operate within an Islamic value framework to strengthen learning. Such an approach positions technology as a means of pedagogical improvement while maintaining the fundamental mission of madrasah to cultivate students who are knowledgeable, digitally competent, morally responsible, spiritually grounded, and capable of responding critically and constructively to the demands of the digital era.

METHOD

This study employed a qualitative approach with a descriptive research design to obtain an in-depth understanding of the integration of technology and Islamic values in strengthening learning in madrasah. A qualitative approach was considered appropriate because the study focused on exploring educational practices, experiences, interactions, and contextual conditions occurring naturally within the learning environment. The descriptive design was used to systematically describe how technology was integrated into learning activities and how Islamic values were maintained and strengthened through technology-mediated instruction (Moleong, 2021; Sugiyono, 2022).

The research was conducted at MTs Al Washliyah Gedung Johor Medan. The site was purposively selected because the madrasah has implemented various forms of digital technology in learning while maintaining its institutional orientation toward Islamic education. The research subjects consisted of the head of the madrasah, teachers, and students who were directly involved in technology-supported learning activities. Participants were selected purposively based on their relevance to the research focus and their ability to provide information regarding the implementation, benefits, challenges, and value-based dimensions of technology integration.

Data were collected through observation, semi-structured interviews, and documentation. Observation was conducted to examine the actual use of technology during learning activities, teacher–student interactions, student participation, and the incorporation of Islamic values into classroom practices. Interviews were conducted with the head of the madrasah, selected teachers, and students to obtain detailed information concerning their experiences, perceptions, strategies, and challenges related to technology integration. Documentation was used to complement the observational and interview data through relevant learning materials, photographs, institutional documents, and other records associated with technology-supported learning (Sugiyono, 2022).

Data analysis followed the interactive model developed by Miles and Huberman (1994), consisting of data reduction, data display, and conclusion drawing and verification. Data reduction involved selecting, organizing, and focusing the collected information according to the research objectives. The reduced data were then presented thematically to facilitate interpretation of patterns concerning technology utilization, learning effectiveness, Islamic values, and implementation challenges. Conclusions were subsequently formulated by identifying relationships and recurring patterns across the data and continuously verifying them against the available evidence. Data credibility was strengthened through triangulation of observation, interview, and documentation findings.

RESULTS AND DISCUSSIONS

Technology Integration in Strengthening Learning Effectiveness

The findings of observations, interviews, and documentation at MTs Al Washliyah Gedung Johor Medan indicate that technology integration has become an increasingly important component of classroom learning. Teachers utilize various forms of digital technology, including PowerPoint presentations, instructional videos, educational applications, internet-based learning

resources, and other multimedia devices. The use of these technologies has contributed to a learning environment that is more varied, interactive, and responsive to students' learning needs. Compared with conventional lecture-oriented instruction, digital media enables teachers to present learning materials through combinations of verbal explanations, visual representations, audio, animation, and video. This finding is consistent with the principles of multimedia learning, which emphasize that appropriately designed combinations of words and visual representations can facilitate students' cognitive processing and understanding of instructional materials (Mayer, 2021). Technology therefore functions not merely as a substitute for conventional instructional media but as an instrument for enriching the ways in which students encounter and process knowledge.

The use of PowerPoint and visual presentations, for example, allows teachers to organize complex materials systematically while simultaneously presenting key concepts in a concise and visually accessible form. Instructional videos provide opportunities for students to observe processes, examples, or situations that may be difficult to demonstrate directly in the classroom. Similarly, internet-based resources expand the range of learning materials beyond textbooks and teacher explanations. Such practices demonstrate that technology integration has shifted the learning process from a predominantly teacher-centered model toward a learning environment in which students can interact with multiple sources of information. Newby et al. (2020) explain that instructional technology can support learning when it is deliberately selected and integrated according to instructional objectives, learner characteristics, and pedagogical strategies. Thus, the effectiveness of technology does not originate from the technological device itself but from the quality of its pedagogical utilization.

The findings also show that technology contributes to students' understanding of learning materials. Students reported that materials presented through images, videos, animations, and digital explanations were easier to understand and remember. This observation is particularly relevant for learning materials that contain abstract concepts or require contextual illustrations. Multimedia provides opportunities for students to construct mental representations through complementary verbal and visual information. Mayer's (2021) cognitive theory of multimedia learning suggests that learners process information through interacting verbal and pictorial channels, although these channels have limited cognitive capacity. Consequently, digital media must be used selectively and systematically to prevent excessive information from becoming a cognitive burden. The findings at the madrasah therefore suggest that technology is most useful when teachers select media that directly support the learning objectives rather than simply incorporating technology for the sake of modernization.

The effectiveness of technology integration is also closely associated with teacher competence. The findings indicate that teachers have begun to develop their ability to select and operate digital learning media, although their level of competence remains varied. This condition demonstrates the relevance of the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the interaction between technological knowledge, pedagogical knowledge, and content knowledge. Effective technology integration requires teachers to

understand not only how a technological tool works but also why it should be used, how it should be incorporated into instructional activities, and how it relates to the subject matter. Research on TPACK-based teacher development similarly demonstrates that teachers require opportunities to understand the relationship between technology, pedagogy, and subject content in order to create meaningful technology-enriched learning environments.

The findings further demonstrate that technology has contributed to more active student participation. Students become more willing to ask questions, participate in discussions, search for additional information, and respond to instructional materials presented through digital media. This pattern suggests that technology can create conditions for more participatory learning, particularly when teachers combine digital resources with discussion, inquiry, and collaborative activities. From a constructivist perspective, learning occurs when students actively construct knowledge through interaction with experiences and their environment. Technology can provide students with opportunities to explore information, compare sources, formulate interpretations, and communicate their understanding. However, this potential can only be realized when teachers design activities that require active intellectual engagement rather than using technology simply to deliver information.

The findings are therefore consistent with the broader understanding that effective learning requires meaningful interaction between teachers, students, learning resources, and learning environments. Gagné et al. (2005) emphasize that instructional design should connect learning objectives, learner characteristics, instructional processes, assessment, and the affordances of available technologies. In the context of MTs Al Washliyah Gedung Johor Medan, technology integration has begun to fulfill this function by providing teachers with additional means to present content and students with alternative ways to access and explore information. Nevertheless, technology should remain subordinate to instructional objectives. When digital tools are aligned with content, pedagogy, and students' needs, they can strengthen learning effectiveness; when used without pedagogical planning, they may add complexity without producing meaningful educational benefits.

Integration of Islamic Values in Technology-Mediated Learning

The second major finding concerns the integration of Islamic values into technology-supported learning. The research demonstrates that the use of digital technology at MTs Al Washliyah Gedung Johor Medan is not treated as an independent technological activity but remains connected to the broader mission of Islamic education. Teachers continue to provide guidance, supervision, and moral direction when students use digital resources. This practice is significant because Islamic education has objectives that extend beyond the acquisition of knowledge and academic achievement. It seeks to cultivate individuals who possess knowledge, faith, appropriate conduct, responsibility, and moral awareness. Therefore, technological innovation in madrasah must be integrated with a value framework that ensures digital learning contributes to students' intellectual and moral development simultaneously.

The findings indicate that teachers encourage students to use technology for educational and constructive purposes. Students are directed to search for relevant information, access instructional materials, and use digital resources to support learning rather than merely for entertainment. Teachers also supervise students' interaction with digital information and emphasize responsible technology use. Such practices illustrate that digital learning in Islamic education requires an ethical dimension. Technology provides access to vast quantities of information, but not all available information is necessarily accurate, appropriate, or consistent with Islamic principles. Consequently, students need guidance in evaluating information, selecting credible sources, communicating respectfully, and maintaining appropriate digital behavior.

This finding corresponds with Putra et al. (2025), who argue that Islamic education in the digital era needs to integrate digital literacy with moral and character education. Their research identifies the importance of combining technological competence with Islamic character development because digital transformation can simultaneously create opportunities for educational improvement and challenges for moral development. The implication is that digital competence in madrasah should not be reduced to operational skills such as operating devices, searching the internet, or using educational applications. It should also include the ability to use technology responsibly, critically, ethically, and in accordance with Islamic values.

The integration of Islamic values is also evident in the role assumed by teachers. Teachers do not merely function as operators of digital media but as moral educators who guide students in understanding how technology should be used. This role is consistent with the fundamental orientation of Islamic education toward the development of *adab*. In this context, technology becomes an instrument through which educational objectives can be achieved, while teachers remain responsible for directing students toward appropriate patterns of behavior. The findings therefore challenge an overly technological conception of digital education in which educational quality is measured only by the number of devices, applications, or digital platforms used. In madrasah, the quality of technology integration must also be assessed by its contribution to character, discipline, responsibility, and spiritual development.

Salisah et al. (2024) similarly emphasize the strategic role of Islamic Religious Education in developing students' character in the digital era. Their literature review demonstrates that technological developments influence students' patterns of thought, behavior, and social interaction, thereby increasing the importance of Islamic education as a means of strengthening moral and ethical foundations. This finding reinforces the empirical evidence from MTs Al Washliyah Gedung Johor Medan that technological learning needs to be accompanied by continuous moral guidance. The integration of technology and Islamic values should consequently be understood as mutually reinforcing rather than competing dimensions. Technology expands learning opportunities, while Islamic values provide the ethical direction necessary to ensure that those opportunities are used appropriately.

The findings also reveal that teachers attempt to connect learning content with Islamic principles when using digital media. This approach is important because Islamic values should

not be confined to religious subjects alone. Instead, values such as honesty, responsibility, discipline, respect, cooperation, and intellectual integrity can be incorporated into learning activities regardless of the subject being taught. For example, students can be encouraged to acknowledge digital sources honestly, avoid plagiarism, communicate respectfully in online discussions, verify information before sharing it, and use digital resources responsibly. Such practices transform Islamic values from abstract concepts into concrete habits within students' daily learning activities.

The importance of this integration becomes even clearer when considering the risks associated with uncontrolled digital exposure. Students can encounter misinformation, inappropriate content, excessive entertainment, and unhealthy online interactions. Without sufficient guidance, technology may therefore undermine rather than strengthen educational objectives. The findings demonstrate that teacher supervision serves as an important protective mechanism. Rather than restricting technology completely, teachers guide students toward responsible and productive use. This approach reflects a balanced educational strategy: students are encouraged to benefit from technological opportunities while simultaneously developing self-regulation and moral awareness.

Edy and Anwar (2025) similarly discuss the need to reorient Islamic education in the context of digital disruption by integrating digital literacy with moral values in madrasah. Their study emphasizes the importance of balancing technological mastery with character development through adjustments in educational objectives, teacher competence, methods, learning materials, and assessment. This perspective is highly relevant to the findings of the present study because it demonstrates that technology integration should occur across the educational system rather than being limited to classroom media. The madrasah needs to establish a culture in which digital competence and Islamic morality develop together.

Thus, the integration of Islamic values at MTs Al Washliyah Gedung Johor Medan represents a significant dimension of technology-supported learning. The use of digital media becomes educationally meaningful when it is accompanied by ethical guidance, teacher supervision, and the internalization of Islamic values. Technology can broaden students' intellectual horizons, while Islamic values help them determine how that knowledge should be acquired, evaluated, communicated, and applied. This integration strengthens the distinctive identity of madrasah by ensuring that digital transformation does not result in the erosion of religious values. Instead, it can contribute to the formation of students who are digitally capable while remaining morally responsible and spiritually grounded.

Teacher Competence, Student Engagement, and Challenges in Technology Integration

The third finding concerns the relationship between teacher competence, student engagement, and the practical challenges encountered in implementing technology-supported learning. The research shows that technology integration has increased students' interest, motivation, and participation. Students appear more enthusiastic when teachers employ visual

presentations, instructional videos, digital applications, and internet-based resources. They become more active in asking questions, participating in discussions, and seeking additional information. This finding indicates that technology can contribute to the development of a more student-centered learning environment in which students are not limited to receiving information but are encouraged to explore and interact with learning resources.

The increase in student engagement can be understood through the broader principles of effective instructional design. Gagné et al. (2005) emphasize that effective instruction requires systematic attention to learning conditions, instructional events, learner responses, and feedback. Technology can support these processes by providing immediate access to information, visual representations, interactive materials, and opportunities for independent exploration. However, technology alone cannot guarantee motivation. Its motivational effect depends on the teacher's ability to select appropriate media and connect them with meaningful learning activities. Therefore, the positive responses observed among students at MTs Al Washliyah Gedung Johor Medan should be interpreted as the result of an interaction between technological affordances and teacher-mediated pedagogy.

Teacher competence emerges as a central factor in this process. The research findings indicate differences in teachers' digital abilities. Some teachers are relatively comfortable using presentations, videos, applications, and online resources, whereas others require additional support and training. This difference affects the consistency and quality of technology integration. A teacher who possesses strong technological skills but lacks pedagogical planning may use digital tools merely for presentation. Conversely, a teacher with strong pedagogical knowledge but limited digital competence may have difficulty exploiting available technological resources. The TPACK perspective provides a useful framework for interpreting this condition because effective technology integration requires the intersection of technological, pedagogical, and content knowledge.

Evidence from research on teacher technology integration supports this interpretation. Cheng et al. (2021) found that teachers' competence beliefs, perceptions of technological usefulness, and pedagogical values influence their technology integration practices. Likewise, Lai et al. (2022) demonstrate that TPACK, teacher beliefs, school culture, and professional development interact in shaping teachers' adoption of technology. These findings indicate that teacher competence cannot be developed exclusively through short-term technical training. It requires sustained professional development, opportunities for experimentation, collaborative learning, reflection, and institutional support. In the context of MTs Al Washliyah Gedung Johor Medan, this means that strengthening technology integration requires systematic attention to teachers' professional learning rather than simply increasing the number of available devices.

The study also identifies several infrastructural challenges, particularly limited technological facilities and unstable internet connectivity. These constraints affect the continuity of technology-supported instruction and may limit teachers' ability to use online resources consistently. Such findings confirm that digital transformation requires more than teacher willingness. Adequate infrastructure constitutes an essential foundation for sustainable

technology integration. When internet access is unstable, teachers may be forced to return to conventional instructional methods even when digital resources have been prepared. Similarly, insufficient devices can limit opportunities for students to engage directly with technology.

Another challenge concerns the availability of training. Some teachers have not received sufficient opportunities to develop advanced digital pedagogical skills. Consequently, their use of technology tends to concentrate on relatively familiar tools such as PowerPoint, video, and internet searches. Although these forms of technology use are beneficial, further development is needed to encourage more interactive, collaborative, inquiry-based, and assessment-oriented applications. Research on TPACK-based professional development demonstrates that structured training can improve teachers' perceptions and understanding of technology integration and help them design more meaningful technology-enriched learning environments. Teacher training should therefore focus not only on how to operate applications but also on how to select, design, implement, evaluate, and adapt digital learning activities according to students' needs.

The challenges identified in this study do not eliminate the positive contribution of technology. Rather, they demonstrate that technology integration is a gradual institutional process. The madrasah has already established a foundation through teachers' use of digital media and students' increasing engagement with technology-supported learning. The next stage requires strengthening infrastructure, developing teacher competence, improving digital learning resources, and establishing clear guidelines for responsible technology use. Such measures would allow the madrasah to move from basic technology adoption toward more systematic pedagogical integration.

Importantly, the findings suggest that student engagement should be regarded as one of the central indicators of successful integration. Students' willingness to ask questions, discuss ideas, explore digital resources, and participate actively indicates that technology can help create a learning environment that is less monotonous and more responsive to contemporary learner characteristics. Nevertheless, engagement must remain connected to meaningful learning outcomes. A highly interactive digital lesson is not necessarily effective if students are merely entertained without achieving the intended competencies. Consequently, teachers need to balance attractiveness, interactivity, cognitive engagement, and value formation.

The overall findings therefore indicate that the effectiveness of technology integration at MTs Al Washliyah Gedung Johor Medan depends on four interconnected dimensions: appropriate digital learning media, teacher technological-pedagogical competence, student engagement, and institutional support. These dimensions cannot operate independently. Digital media require competent teachers; competent teachers require institutional support; technology-supported activities require active students; and student engagement needs to be directed toward meaningful academic and Islamic educational objectives. This integrated perspective is consistent with the contemporary understanding of technology integration as a complex pedagogical process rather than a simple act of introducing digital devices into classrooms.

Accordingly, the experience of MTs Al Washliyah Gedung Johor Medan demonstrates that technology can strengthen learning effectiveness when it is integrated deliberately with pedagogy and Islamic values. The positive changes in students' motivation, participation, and understanding indicate the potential of digital technology to enrich learning. At the same time, limitations in facilities, internet access, teacher competence, and professional development demonstrate that sustainable integration requires continuous institutional improvement. The most important implication is that madrasah should not pursue digitalization merely for modernization. Instead, technology should be positioned as a pedagogical instrument that supports meaningful learning while remaining guided by Islamic ethics, teacher responsibility, and the broader mission of forming knowledgeable, skilled, ethical, and spiritually grounded learners.

CONCLUSIONS

This study concludes that the integration of technology and Islamic values can significantly strengthen learning effectiveness in madrasah when implemented through appropriate pedagogical strategies and supported by competent teachers and adequate institutional resources. The findings at MTs Al Washliyah Gedung Johor Medan demonstrate that the use of PowerPoint presentations, instructional videos, digital applications, and internet-based learning resources contributes to greater student motivation, participation, interaction, and understanding of learning materials. Technology provides teachers with opportunities to create more attractive, contextual, and student-centered learning experiences while enabling students to explore information more actively and independently. However, technological integration in Islamic education cannot be separated from the fundamental mission of developing faith, morality, character, and spiritual awareness. Teachers therefore play a crucial role in guiding students to use technology responsibly, critically, ethically, and in accordance with Islamic values. The study also identifies several challenges, including limited technological facilities, unstable internet connectivity, differences in teachers' digital competencies, and insufficient professional training. These challenges indicate that sustainable digital transformation requires continuous teacher development, institutional support, adequate infrastructure, and value-based digital learning policies. Overall, technology should not be viewed merely as a modern instructional instrument but as a pedagogical resource that, when integrated with Islamic values, can strengthen meaningful learning while preserving the religious identity and educational mission of madrasah.

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