



RESEARCH ARTICLE

Madrasa and digital learning transformation: Integrating technological pedagogical and content knowledge and *makarim sharia* into fostering madrasa teachers' teaching skills

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Abstract: The rapid expansion of digital learning has compelled madrasas to rethink teaching practices while preserving their Islamic educational identity. This study explores how madrasa teachers experience and interpret digital learning transformation, enact TPACK, integrate *makarim al-shariah* values into pedagogical and technological practices, and develop teaching skills in digitally transformed learning environments. Using a qualitative phenomenological design, data were collected through in-depth semi-structured interviews with 18 madrasa teachers, and the data were analysed using thematic phenomenological analysis. The findings reveal that madrasa teachers enact TPACK as an integrated and context-sensitive form of professional knowledge, emphasizing alignment between technology, pedagogy, and Islamic content rather than technological use alone. *Makarim al-shariah* values—such as *amanah* (responsibility), *adab* (ethical conduct), and *mizan* (balance)—serve as an ethical foundation guiding digital pedagogical decisions and shaping students' digital character. The integration of TPACK and *makarim al-shariah* fosters holistic teaching skills, including effective instructional design, ethical classroom management, professional adaptability, and moral leadership. This study lies in extending the TPACK framework into faith-based education by integrating *makarim al-shariah* as an ethical–pedagogical dimension of digital teaching competence. By foregrounding teachers lived experiences, the study enriches international discourse on digital transformation in Islamic education and offers practical insights for value-oriented madrasa teacher development programs. This study contributes to international scholarship by extending the TPACK framework into faith-based education and enriching the discourse on digital transformation in Islamic education.

Keywords: Madrasa teachers, digital learning transformation, technological pedagogical and content knowledge, *makarim al-shariah*; teaching skills, Islamic education.

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1. Introduction

Madrasas have historically played a vital role in preserving Islamic knowledge, nurturing moral values, and shaping the intellectual and spiritual development of Muslim communities. In recent years, however, these institutions have faced increasing pressure to adapt to rapid digital transformation and changing educational expectations (Tambak & Sukenti, 2024; Zul et al., 2026). The integration of digital learning into madrasa education is no longer optional but has become a strategic necessity to ensure educational quality, relevance, and sustainability in the twenty-first century (Mukul, & Büyüközkan, 2023; Yue, & Chenglong, 2025). This transformation places madrasa teachers at the center of change, requiring them to develop advanced teaching skills that combine pedagogical expertise, technological competence, and deep understanding of Islamic content and values.

Digital learning transformation in education has been widely discussed in international literature, particularly through the framework of Technological Pedagogical and Content Knowledge (TPACK). TPACK emphasizes that effective teaching in digital environments emerges from the dynamic integration of technology, pedagogy, and subject matter knowledge rather than from these domains in isolation. Empirical studies over the past five years demonstrate that teachers' TPACK significantly influences instructional quality, student engagement, and learning outcomes in technology-enhanced environments (Chai et al., 2020; Scherer et al., 2021; Koh et al., 2022). For madrasa teachers, TPACK must be contextualized within Islamic education, where religious content and ethical dimensions are integral to the teaching–learning process.

At the same time, the discourse on values-based and faith-oriented education has highlighted the importance of integrating moral and ethical foundations into digital pedagogy. In Islamic education, *makarim al-shariah*—which emphasizes noble character, ethical conduct, and social responsibility—represents a core philosophical foundation for teaching and learning. Recent studies indicate that aligning digital learning with ethical and value-based frameworks strengthens teachers' professional identity and supports holistic student development (Abdullah et al., 2025; Sahin & Yilmaz, 2023; Tambak et al., 2022; Yasin et al., 2025). However, most technology integration models remain value-neutral and insufficiently address the moral and spiritual dimensions that are central to madrasa education.

Current state-of-the-art research shows three dominant trends. First, extensive studies focus on TPACK as a predictor of teachers' digital teaching skills and instructional effectiveness (Valtonen et al., 2021; Koh et al., 2022). Second, digital transformation literature increasingly emphasizes the need for context-sensitive and culturally responsive pedagogy, particularly in non-Western and faith-based educational settings (Saada & Magadlah, 2021). Third, recent work in Islamic education highlights the compatibility of Islamic values with modern educational innovations, including digital learning and sustainability-oriented pedagogy (Huda et al., 2020; Abdullah et al., 2025; Firdaus et al., 2025). Despite these advances, these strands of research largely remain disconnected. Recent international scholarship over the past five years demonstrates a growing interest in digital learning transformation and teacher competence development, particularly through TPACK framework. TPACK has been widely recognized as a robust theoretical model for explaining how teachers integrate technology meaningfully into their instructional practices. Empirical studies consistently report that teachers with strong TPACK are more capable of designing interactive, student-centered, and technology-enhanced learning environments (Chai et al., 2020; Valtonen et al., 2021; Koh et al., 2022). These findings position TPACK as a critical foundation for improving teaching skills in digitally transformed educational contexts.

Parallel to the development of TPACK research, recent studies have increasingly emphasized digital learning transformation as a systemic change rather than a mere adoption of digital tools. Digital transformation in education involves shifts in pedagogical approaches, teacher roles, institutional culture, and learning design (Scherer et al., 2021; Zawacki-Richter et al., 2020). Research published in *Computers & Education* and *Educational Technology Research and Development* highlights that teachers are central actors in this transformation, as their beliefs, competencies, and professional identities significantly influence the success of digital learning implementation. However, much of this literature remains focused on general or secular education systems. Another prominent trend in recent research concerns the growing recognition of values-based and culturally responsive pedagogy in technology-enhanced learning. Scholars argue that digital pedagogy cannot

be value-neutral and must be aligned with learners' cultural, ethical, and spiritual contexts (Saada & Magadlah, 2021; Sahin & Yilmaz, 2023). Studies in religious and faith-based education contexts indicate that integrating moral and ethical values into digital learning strengthens teachers' sense of purpose and enhances holistic student development. Nevertheless, these studies often address values at a conceptual level, without integrating them into established instructional frameworks such as TPACK.

Within Islamic education scholarship, recent research has increasingly explored the compatibility between Islamic values and contemporary educational innovations. Studies suggest that Islamic principles such as moral excellence, responsibility, and social justice are inherently aligned with modern educational goals, including digital literacy and sustainability (Huda et al., 2020; Abdullah et al., 2025). In particular, *makarim al-shariah* has been highlighted as a foundational concept for character education and ethical teaching in Islamic institutions. However, empirical investigations that connect *makarim al-shariah* directly with teachers' digital teaching skills and pedagogical knowledge remain limited (Tambak et al., 2025; Rasyidi et al., 2025). Furthermore, the existing state-of-the-art literature reveals a methodological imbalance. Quantitative studies dominate TPACK and digital learning research, focusing primarily on measurement models, predictive relationships, and large-scale surveys (Valtonen et al., 2021; Koh et al., 2022). In contrast, qualitative and context-sensitive explorations—especially in madrasa settings—are relatively scarce. As a result, the lived experiences of madrasa teachers navigating digital transformation while maintaining Islamic values are underrepresented in international academic discourse.

Taken together, the current state of the art indicates four key tendencies: (1) the centrality of TPACK in fostering teachers' digital teaching skills; (2) the shift from tool-based digital adoption toward holistic digital transformation; (3) the growing emphasis on value-based and culturally responsive digital pedagogy; and (4) the emerging but still fragmented discourse on Islamic values in modern education. Despite these advances, there remains a significant gap in integrative studies that connect TPACK, *makarim al-shariah*, and digital learning transformation within madrasa education. Addressing this gap is essential to developing a contextually grounded and ethically informed model of digital pedagogy for madrasa teachers.

A critical research gap therefore emerges at the intersection of digital learning transformation, TPACK, and Islamic value integration in madrasa contexts. Existing studies tend to examine TPACK without embedding Islamic ethical principles, or they explore *makarim al-shariah* conceptually without linking it to concrete pedagogical and technological practices (Tambak et al., 2025; Rasyidi et al., 2025). Moreover, empirical research that specifically investigates how the integration of TPACK and *makarim al-shariah* contributes to the development of madrasa teachers' teaching skills is still limited in internationally indexed literature. This gap suggests a need for a more holistic and contextually grounded framework that reflects both technological demands and the moral mission of madrasa education. Despite the rapid growth of research on digital learning transformation and teacher competence development, several critical gaps remain evident in the current literature. First, although the Technological Pedagogical and Content Knowledge (TPACK) framework has been extensively validated as a predictor of effective digital teaching, most studies conceptualize TPACK in value-neutral or secular contexts, with limited attention to faith-based educational institutions such as madrasas. Consequently, the moral, spiritual, and ethical dimensions that are central to Islamic education are often overlooked in existing TPACK-based models (Zul et al., 2026).

Second, while recent scholarship in Islamic education highlights the relevance of Islamic values—particularly *makarim al-shariah*—for character formation and ethical learning, these studies largely remain conceptual and are rarely connected to concrete pedagogical or technological practices. Empirical investigations that explicitly examine how *makarim al-shariah* can be integrated into digital pedagogy and teachers' professional knowledge are still scarce (Tambak et al., 2025; Rasyidi et al., 2025). Third, digital learning transformation research increasingly emphasizes systemic and cultural change; however, madrasa contexts remain underrepresented in international discourse. Existing studies tend to focus on general schooling or higher education, resulting in a limited understanding of how madrasa teachers experience and enact digital transformation while maintaining Islamic educational values (Zhang et al., 2022; Trust et al., 2023; Tambak et al., 2025). Finally, the majority of TPACK-related studies employ quantitative designs, leaving a lack of in-depth, context-sensitive insights into teachers' lived experiences, professional meaning-making, and instructional practices in digitally transforming madrasas. These gaps indicate the need for an integrative and contextually

grounded approach that connects digital learning transformation, TPACK, and *makarim al-shariah* to foster madrasa teachers' teaching skills in a holistic and ethically informed manner (Mukul, & Büyüközkan, 2023; Yue, & Chenglong, 2025; Tambak et al., 2025).

Responding to this gap, the present study proposes an integrative perspective on madrasa digital learning transformation by combining the TPACK framework with *makarim al-shariah* as a foundational value system. This integration represents a novel approach to fostering madrasa teachers' teaching skills, positioning teachers not merely as users of digital tools but as ethical educators who consciously align technology, pedagogy, and Islamic content (Zul et al., 2026). By embedding *makarim al-shariah* within TPACK, this study offers a value-oriented model of digital pedagogy that is particularly relevant for madrasas navigating contemporary educational challenges (Mukul, & Büyüközkan, 2023; Yue, & Chenglong, 2025).

Accordingly, the focus of this research is to explore; How do madrasa teachers experience and interpret digital learning transformation in their teaching practices?; How do madrasa teachers understand and enact Technological Pedagogical and Content Knowledge (TPACK) in the context of digital learning?; In what ways are *makarim al-shariah* values integrated into madrasa teachers' pedagogical and technological practices?; How does the integration of TPACK and *makarim al-shariah* contribute to the development of madrasa teachers' teaching skills in digitally transformed learning environments? The study seeks to contribute to international scholarship by extending TPACK into faith-based education, enriching the discourse on digital transformation in Islamic education, and providing practical insights for teacher development programs in madrasas. Ultimately, this research aims to support the sustainable advancement of madrasa education through a balanced synthesis of technology, pedagogy, content knowledge, and Islamic ethical values.

2. Literature review

2.1. Digital learning transformation in madrasa education

Digital learning transformation refers to a systemic and cultural shift in educational practices through the meaningful integration of digital technologies into teaching, learning, and institutional processes. Recent literature emphasizes that digital transformation goes beyond the mere use of digital tools and involves changes in pedagogical models, teacher roles, learning design, and educational values (Zawacki-Richter et al., 2020; Trust et al., 2023). In the context of madrasa education, digital learning transformation must be understood within the framework of Islamic pedagogy, where education encompasses *ta'lim* (knowledge transmission), *tarbiyah* (holistic development), and *ta'dib* (moral cultivation). Scholars argue that madrasas face unique challenges in digital transformation due to their strong attachment to tradition, text-based learning, and moral authority of teachers (Saada & Magadlah, 2021). However, recent studies also highlight that digital learning offers new opportunities for madrasas to enhance accessibility, student engagement, and relevance in contemporary society while maintaining Islamic identity (Abdullah et al., 2025; Huda et al., 2021).

From an evaluative perspective, digital learning transformation in madrasas can be categorized into several dimensions, including pedagogical transformation, technological adaptation, and cultural-ethical alignment. Pedagogically, digital transformation encourages a shift from teacher-centered instruction toward more interactive, collaborative, and reflective learning approaches. Technologically, it involves the use of learning management systems, digital content platforms, and online communication tools to support instruction. Ethically, madrasa digital transformation requires careful alignment with Islamic values to prevent moral disengagement and misuse of technology (Sahin & Yilmaz, 2023). Empirical studies show that successful digital transformation in faith-based education depends on teachers' readiness, institutional support, and value-based guidance (Howard et al., 2022). In madrasas, digital learning is most effective when it strengthens, rather than replaces, traditional Islamic pedagogical practices, demonstrating the need for context-sensitive and ethically grounded transformation models.

2.2. Technological Pedagogical and Content Knowledge (TPACK)

Technological Pedagogical and Content Knowledge (TPACK) is a theoretical framework that explains how teachers integrate technology effectively into teaching by synthesizing three core domains: content knowledge, pedagogical knowledge, and technological knowledge. Originally developed to address challenges of technology integration in education, TPACK emphasizes that effective digital teaching emerges from the interaction of these domains rather than from technological skills alone (Chai et al., 2020; Koh et al., 2022). In Islamic and madrasa education, TPACK must be understood as a value-sensitive construct, because content knowledge is inseparable from religious meaning, ethical purpose, and spiritual orientation. Islamic subject matter such as Qur'an, Hadith, and Fiqh carries normative and moral dimensions that require careful pedagogical and technological mediation. Recent research suggests that teachers in faith-based contexts enact TPACK differently from those in secular settings, prioritizing meaning, reflection, and moral guidance over technological novelty (Scherer et al., 2021).

Evaluatively, TPACK can be categorized into seven interrelated knowledge components, including technological knowledge, pedagogical knowledge, content knowledge, and their intersections. Studies show that teachers develop TPACK through professional experience, reflective practice, and collaborative learning rather than formal training alone (Valtonen et al., 2021; Kafyulilo & Fisser, 2021). In madrasa settings, the enactment of TPACK is shaped by contextual constraints, curriculum traditions, and Islamic values. For example, teachers selectively adopt digital tools that support explanation, memorization, and discussion while avoiding technologies perceived as distracting or ethically problematic. Empirical evidence indicates that teachers with strong TPACK are more capable of designing meaningful digital lessons, managing online classrooms, and supporting student engagement (Howard et al., 2022). However, scholars increasingly argue that TPACK must be expanded to incorporate ethical and cultural dimensions, particularly in religious education contexts, highlighting the need for integrative models that go beyond technical competence.

2.3. *Makarim al-shariah* in Islamic pedagogy

Makarim al-shariah refers to the noble moral objectives of Islamic law that emphasize ethical excellence, responsibility, justice, balance, and social harmony. In Islamic education, *makarim al-shariah* functions as a foundational principle guiding teaching, learning, and character formation. Education is not solely concerned with cognitive development but aims to cultivate morally responsible individuals who embody Islamic values in personal and social life. Recent scholarship highlights that *makarim al-shariah* provides a comprehensive ethical framework that aligns with contemporary educational goals such as character education, citizenship, and responsible technology use (Abdullah et al., 2025; Huda et al., 2021). In the digital era, the relevance of *makarim al-shariah* has become increasingly significant as educators face ethical challenges related to digital behavior, information integrity, and student character development.

From an evaluative standpoint, *makarim al-shariah* can be operationalized in education through several pedagogical aspects, including ethical modeling by teachers, value-based classroom management, and integration of moral reasoning into subject content. In digital learning contexts, this includes guiding students' online behavior, promoting respectful communication, and addressing issues such as plagiarism and digital responsibility (Sahin & Yilmaz, 2023). Studies in Islamic and faith-based education demonstrate that when values are explicitly integrated into teaching practices, students exhibit higher moral awareness and self-regulation (Zedan & Bitar, 2024). In madrasas, *makarim al-shariah* also functions as a criterion for selecting and evaluating digital technologies, ensuring that innovation remains aligned with Islamic educational objectives. This evaluative role positions *makarim al-shariah* not only as a moral ideal but as a practical pedagogical framework for navigating digital transformation.

2.4. Madrasa teachers' teaching skills

Madrasa teachers' teaching skills refer to a set of integrated pedagogical, professional, ethical, and contextual competencies that enable teachers to design, implement, and evaluate learning processes effectively within Islamic educational environments. Unlike general teaching skills, madrasa teachers' competencies are inherently value-laden, as teaching is not only an instructional activity but also a moral and spiritual responsibility rooted in Islamic educational philosophy. Teaching in madrasas encompasses *ta'lim* (transmission of knowledge), *tarbiyah* (holistic development of learners), and *ta'dib* (cultivation of moral and ethical character), positioning teachers as educators of both intellect and character (Abdullah et al., 2025; Huda et al., 2021). Recent international scholarship emphasizes that teaching skills in faith-based education must be understood as holistic and contextualized, integrating pedagogical effectiveness with ethical guidance and cultural relevance (Saada & Magadlah, 2021; Zedan & Bitar, 2024). In madrasa contexts, teaching skills include the ability to facilitate meaningful learning, manage classrooms ethically, integrate Islamic values into subject matter, and adapt instructional strategies to contemporary challenges such as digital learning. Thus, madrasa teachers' teaching skills are not merely technical competencies but expressions of professional identity and moral agency within Islamic education.

From an analytical perspective, madrasa teachers' teaching skills can be categorized into several interrelated dimensions. First, pedagogical skills include lesson planning, instructional delivery, classroom management, assessment, and the use of learner-centered strategies. Studies show that effective teachers in religious education contexts employ dialogical, reflective, and inquiry-based approaches that encourage student engagement and understanding (Howard et al., 2022; Darling-Hammond et al., 2022). In madrasas, pedagogical skills must support both cognitive learning and moral reflection. Second, technological-pedagogical skills have become increasingly central due to digital learning transformation. Recent research highlights that teachers' ability to integrate technology meaningfully—often conceptualized through frameworks such as TPACK—significantly influences teaching quality and student engagement (Chai et al., 2020; Koh et al., 2022). For madrasa teachers, technological skills are evaluated not only in terms of effectiveness but also ethical suitability, ensuring that digital tools support Islamic learning objectives rather than undermine them.

Third, ethical and value-based skills, grounded in *makarim al-shariah*, distinguish madrasa teachers from teachers in secular contexts. These skills include modeling Islamic conduct (*adab*), guiding students' moral behavior, promoting responsibility (*amanah*), and maintaining balance (*mizan*) in instructional practices. Recent studies argue that ethical competence is a core component of teacher professionalism in digitally transformed environments, particularly in faith-based education (Sahin & Yilmaz, 2023; Waghid & Davids, 2021). In madrasas, ethical teaching skills are inseparable from pedagogical effectiveness. Finally, adaptive and reflective skills enable madrasa teachers to respond to changing educational contexts while preserving Islamic identity. Teachers must continuously reflect on their practices, adapt to new technologies, and align innovation with religious values. Research on teacher professionalism underscores that reflective practice and continuous professional development are essential for sustaining teaching quality in times of educational change (OECD, 2021; Trust et al., 2023). In this sense, madrasa teachers' teaching skills represent a dynamic synthesis of pedagogy, technology, ethics, and reflection.

3. Method

3.1. Research Design

This study employs a qualitative phenomenological research design to explore madrasa teachers' lived experiences of digital learning transformation through the integration of Technological Pedagogical and Content Knowledge (TPACK) and *makarim al-shariah* values. Phenomenology is particularly appropriate because it seeks to understand how individuals interpret, internalize, and give meaning to their professional experiences within specific sociocultural and value-laden contexts (Creswell & Poth, 2021; Neubauer et al., 2019). Recent methodological scholarship emphasizes that phenomenological research is well suited to studies of teacher professionalism, digital transformation, and values-based education, as these phenomena involve subjective

meaning-making, identity construction, and ethical reflection rather than observable behaviors alone (Moustakas, 2020; van Manen, 2023). In the context of madrasa education, teaching skills are not merely technical competencies but are deeply embedded in Islamic epistemology, moral responsibility, and professional commitment. Therefore, a phenomenological approach enables an in-depth understanding of how madrasa teachers experience and negotiate the intersection of digital pedagogy, Islamic values, and professional practice.

3.2. Research Informants

The informants of this study consisted of 18 madrasa teachers who were purposively selected based on their relevance to the research objectives. Purposeful sampling was employed to ensure that all informants possessed rich and meaningful experiences related to digital learning implementation, pedagogical practice, and the integration of Islamic values in madrasa education. This sampling strategy is strongly recommended in phenomenological research, as the primary aim is to gain deep insight into participants' lived experiences rather than statistical generalization (Creswell & Poth, 2021; van Manen, 2023). All informants were actively teaching in madrasas and had direct experience with digital learning practices, including online, blended, or technology-enhanced classroom instruction. They also demonstrated an understanding of Islamic educational values, particularly *makarim al-shariah*, as reflected in their teaching philosophy and professional conduct. Prior research emphasizes that participants in phenomenological studies should have firsthand experience with the phenomenon being investigated to enable rich and authentic data generation (Neubauer et al., 2019; Braun & Clarke, 2021).

To capture diverse perspectives, the informants varied in terms of teaching experience, subject specialization, and professional background. The inclusion criteria for informants were as follows: (1) being a full-time madrasa teacher; (2) having a minimum of three years of teaching experience; (3) having experience in using digital tools or platforms for teaching and learning; and (4) demonstrating commitment to Islamic educational values in instructional practice. These criteria align with recent qualitative studies on teacher digital competence and values-based education, which stress the importance of selecting participants who are professionally engaged with digital transformation and reflective practice (Scherer et al., 2022; Howard et al., 2022). Of the 18 informants, teaching experience ranged from 3 to over 20 years, allowing the study to capture both early-career and senior teachers' perspectives on digital learning transformation. The informants taught a range of subjects, including Islamic studies (Qur'an, Hadith, Fiqh, and Akhlaq) as well as general subjects within the madrasa curriculum. Such variation enhances the depth and credibility of qualitative findings by enabling cross-case thematic comparison (Creswell & Poth, 2021).

Data collection continued until thematic saturation was achieved, indicated by the repetition of themes and the absence of new significant insights. The inclusion of 18 informants is consistent with recommended sample sizes for phenomenological research in education, where saturation typically occurs between 10 and 25 participants depending on the depth of inquiry (Guest et al., 2020; Braun & Clarke, 2021). Therefore, the number of informants was deemed sufficient to capture the essence of madrasa teachers' experiences in integrating digital learning, TPACK, and *makarim al-shariah* values.

3.3. Data collection

Data were collected through in-depth semi-structured interviews, which are widely regarded as the primary data collection method in phenomenological inquiry (Creswell & Poth, 2021; van Manen, 2023). Purposeful sampling was used to select madrasa teachers who had actively engaged in digital learning implementation and possessed sufficient professional experience to reflect on pedagogical change. The interview protocol was designed to elicit rich descriptions of participants' lived experiences, focusing on four key domains; Experiences of digital learning transformation in madrasas; Teachers' understanding and enactment of TPACK in instructional practices; The role of *makarim al-shariah* in shaping pedagogical decisions and teacher identity; Perceived changes in teaching skills resulting from the integration of technology and Islamic values. Such open-ended and reflective questioning is consistent with recent qualitative research on teacher digital

competence and values-based pedagogy, which highlights the importance of capturing teachers' voices and professional narratives (Scherer et al., 2021; Saada & Magadlah, 2021; Braun & Clarke, 2021).

Interviews were conducted individually to ensure depth, confidentiality, and a safe space for reflective dialogue. Depending on participants' availability and contextual conditions, interviews were carried out either face-to-face or via online communication platforms. Each interview lasted approximately 45–75 minutes, a duration considered sufficient for eliciting detailed experiential narratives without causing participant fatigue (Guest et al., 2020). With informed consent, all interviews were audio-recorded to ensure data accuracy and completeness. In addition to audio recordings, field notes were taken during and after each interview to document contextual information, non-verbal cues, and preliminary analytical insights. Recent methodological studies highlight the importance of field notes in phenomenological research as complementary data that enhance contextual understanding and analytic depth (Braun & Clarke, 2021; van Manen, 2023).

Data collection followed the principle of thematic saturation, whereby interviews continued until no new significant themes or meanings emerged from the data. Contemporary qualitative research suggests that saturation in phenomenological studies is typically achieved within 10–25 participants, depending on the depth and homogeneity of the sample (Guest et al., 2020). In this study, saturation was reached after interviewing 18 madrasa teachers, indicating that the collected data were sufficient to capture the essence of the phenomenon under investigation. Throughout the data collection process, ethical considerations were strictly observed. Participants were fully informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any stage. Confidentiality and anonymity were ensured through the use of pseudonyms and secure data storage. These procedures align with current ethical standards for qualitative educational research and contribute to the trustworthiness of the study (Creswell & Poth, 2021).

3.4. Data analysis: Thematic phenomenological analysis

Data analysis followed a thematic phenomenological analysis, combining phenomenological reduction with inductive thematic coding. This approach aligns with contemporary qualitative research practices in education and digital pedagogy (Braun & Clarke, 2021; van Manen, 2023). The analysis began with data familiarization, in which the researchers repeatedly read the interview transcripts to gain an overall understanding of participants' experiences. This phase enabled immersion in the data and supported the identification of meaningful patterns related to digital learning practices, Technological Pedagogical and Content Knowledge (TPACK), and the integration of *makarim al-shariah* values. Such immersion is considered essential in phenomenological research to ensure that analysis remains grounded in participants' authentic voices (Creswell & Poth, 2021). Next, initial coding was conducted inductively by identifying significant statements and meaning units that reflected participants' perceptions, actions, and reflections. Codes were not predetermined but emerged directly from the data, allowing unexpected insights and context-specific meanings to surface. Recent qualitative studies emphasize that inductive coding is particularly appropriate for phenomenological inquiry, as it prioritizes participants' lived meanings rather than theoretical imposition (Braun & Clarke, 2021).

In the third stage, related codes were clustered into themes representing shared patterns of meaning across participants. These themes captured key aspects of madrasa teachers' experiences, such as navigating digital transformation, enacting TPACK in instructional practice, and embedding *makarim al-shariah* values in digital pedagogy. The analysis moved iteratively between individual transcripts and cross-case comparisons to ensure thematic coherence and depth. This iterative process aligns with contemporary recommendations for high-quality thematic analysis in educational research (Nowell et al., 2017; Braun & Clarke, 2021). The final stage involved phenomenological synthesis, in which the themes were integrated to articulate the essence of the phenomenon—namely, how madrasa teachers experience and interpret the integration of digital learning, pedagogical knowledge, and Islamic ethical values in fostering their teaching skills. Reflexivity was maintained throughout the analytical process by documenting analytic decisions and reflecting on the researchers' positionality, thereby minimizing interpretive bias and enhancing analytical transparency (van Manen, 2023).

To enhance the rigor and trustworthiness of the analysis, several strategies were employed, including peer debriefing, member checking, and the use of rich, thick descriptions supported by direct quotations from participants. These strategies are strongly recommended in recent Scopus- and WoS-indexed qualitative methodology literature to ensure credibility, dependability, and confirmability of findings (Creswell & Poth, 2021; Braun & Clarke, 2021).

4. Result

4.1. Digital learning transformation as a shift in teaching identity and practice

Madrassa teachers experienced digital learning transformation not merely as a technical change but as a profound shift in their professional identity, teaching roles, and pedagogical orientation. Participants described moving from teacher-centered instruction toward more interactive, student-centered, and flexible teaching practices. Several teachers initially perceived digital learning as challenging and disruptive, particularly due to limited infrastructure and unfamiliarity with digital tools. However, over time, many participants reinterpreted digital transformation as an opportunity for pedagogical growth and innovation.

“At first, I felt that digital learning was forcing me out of my comfort zone. But gradually, I realized that it changed the way I teach and interact with students. I am no longer just a transmitter of knowledge.” (T3).

“At the beginning, I felt overwhelmed. Teaching digitally was very different from traditional face-to-face teaching in the madrasa.” (T2).

Digital platforms enabled teachers to diversify instructional strategies, extend learning beyond classroom boundaries, and engage students more actively. Teachers emphasized that digital learning required them to become facilitators, designers of learning experiences, and reflective practitioners.

“Digital learning transformed my role. I now prepare materials differently and think more about how students learn, not just what I teach.” (T11).

Over time, however, teachers reported a gradual transformation in mindset. Digital learning came to be understood as an opportunity to expand pedagogical possibilities, enhance student engagement, and respond to contemporary learners' needs.

“Digital learning changed the way I see teaching. I am no longer only delivering lessons, but designing learning experiences.” (T8).

Teachers also noted that digital platforms altered the dynamics of authority and interaction. Students became more active, expressive, and independent, while teachers adopted the role of facilitators and guides.

“Students ask more questions and explore materials on their own. My role has shifted to guiding and mentoring them.” (T15).

This theme indicates that digital learning transformation in madrasas is experienced as a process of pedagogical and identity reconstruction, requiring teachers to renegotiate their professional roles within Islamic educational traditions. This theme highlights that digital transformation in madrasas is experienced as a pedagogical and identity-based transition, rather than a purely technological adoption.

4.2. Understanding and enacting TPACK as integrated and contextual professional knowledge

Participants demonstrated a progressively sophisticated understanding of Technological Pedagogical and Content Knowledge (TPACK) as an integrated form of professional knowledge grounded in practice. Teachers emphasized that technology alone does not improve learning; instead, its effectiveness depends on how well it is aligned with pedagogy and subject content.

“Using technology without considering teaching methods and lesson content is meaningless.” (T6)

Teachers described developing TPACK primarily through experiential learning, experimentation, peer collaboration, and reflective practice rather than through formal training alone. Many participants reported

learning by trial and error, adapting digital tools to suit both Islamic subject matter and students' learning characteristics.

"I learned how to combine technology, pedagogy, and content by practicing and reflecting on what worked and what didn't." (T12).

In Islamic subjects such as Qur'an, Hadith, and Fiqh, teachers carefully selected digital tools that supported explanation, visualization, repetition, and discussion, while avoiding tools perceived as distracting or incompatible with learning objectives.

"I choose digital tools that help students understand the lesson deeply, not just tools that look attractive." (T1).

This theme reveals that madrasa teachers enact TPACK as a situated, reflective, and value-sensitive competence, continuously shaped by classroom realities and Islamic educational aims.

4.3. Integrating *makarim al-shariah* as an ethical foundation of digital pedagogy

A central and distinctive finding of this study is the pervasive role of *makarim al-shariah* values in guiding teachers' digital pedagogical and technological practices. Teachers consistently emphasized that digital learning must remain ethically grounded and aligned with Islamic moral principles. Participants described *makarim al-shariah* as shaping their decisions regarding technology selection, classroom management, communication style, and assessment practices.

"Technology is neutral, but how we use it must follow Islamic ethics." (T4).

Teachers actively integrated values such as responsibility (*amanah*), moderation (*mizan*), respect (*adab*), and moral discipline into digital learning activities. This included setting clear rules for online behavior, encouraging respectful communication, and addressing issues of digital misuse.

"I always remind students that online behavior reflects their character as Muslims." (T10).

Some teachers explicitly linked Islamic teachings to digital literacy topics, helping students understand ethical dimensions of information sharing, plagiarism, and online interaction.

"Using digital media responsibly is part of practicing Islamic morals in modern life." (T17).

This theme demonstrates that *makarim al-shariah* functions as an **ethical compass**, ensuring that digital transformation in madrasas remains aligned with Islamic educational philosophy.

4.4. Integrating TPACK and *makarim al-shariah* to foster holistic teaching skills

The final theme illustrates how the integration of TPACK and *makarim al-shariah* contributes to the development of madrasa teachers' teaching skills in digitally transformed learning environments. Teachers described their teaching skills as becoming more holistic, adaptive, and reflective, encompassing both technical proficiency and moral responsibility. Participants reported improvements in lesson planning, instructional clarity, classroom management, assessment strategies, and student engagement when digital competence was balanced with Islamic values.

"My teaching skills improved when I combined digital tools with Islamic values. Students became more active but also more disciplined." (T9).

"My lesson planning became more structured and meaningful." (T2)

"Digital tools improved student participation when guided by values." (T8)

Teachers emphasized that this integration helped them navigate tensions between innovation and tradition, modern technology and Islamic ethics.

"TPACK helps me teach effectively, while *makarim al-shariah* reminds me why and how I should teach." (T18).

"Islamic values help me control distractions in digital learning." (T4)

"TPACK helps me teach effectively, values help me teach responsibly." (T18)

Several participants highlighted that this integrative approach strengthened their professional confidence and sense of purpose as madrasa teachers in the digital era.

"I feel more confident as a teacher now because I know how to use technology without losing Islamic values." (T13).

"I am more confident using technology because I know its ethical limits." (T10)

"I feel balanced between innovation and tradition." (T15).

Several informants described this integration as shaping a new model of madrasa teacher professionalism.

"I see myself as a digital teacher with Islamic responsibility." (T7)

"This integration defines my identity as a madrasa educator." (T12)

This theme underscores that madrasa teachers' teaching skills are not merely technical outcomes of digital training but are constructed through the synergy of pedagogical knowledge, technological competence, and ethical commitment. Thus, teaching skills emerged as holistic competencies, combining pedagogical effectiveness, technological fluency, and moral integrity.

5. Discussion

The findings of this study demonstrate that madrasa teachers experience digital learning transformation as a deep pedagogical and identity-oriented change rather than a technical shift. This supports international evidence that digital transformation reshapes teachers' professional identities, beliefs, and instructional cultures (Zawacki-Richter et al., 2020; Zhang et al., 2022; Trust et al., 2023; Tambak et al., 2025). In Islamic education, this transformation is particularly consequential because teaching is understood as an integrated process of *ta'lim* (knowledge transmission), *tarbiyah* (personal development), and *ta'dib* (moral cultivation) (Zul et al., 2026; Mahfud, & Zahriyah, 2025). The findings indicate that digital learning compels madrasa teachers to reinterpret these classical functions within contemporary technological environments.

From an Islamic pedagogical standpoint, the shift toward more facilitative, dialogical, and student-centered practices resonates strongly with classical Islamic learning traditions that emphasize reflection (*tafakkur*), inquiry (*tadabbur*), and active engagement with knowledge (Falaqi et al., 2025). Recent studies in faith-based and religious education confirm that digital environments can support such pedagogical principles when culturally and ethically grounded (Saada & Magadlah, 2021; Zedan & Bitar, 2024; Tambak & Sukenti, 2025). Thus, digital learning transformation in madrasas should not be framed as a departure from Islamic pedagogy but as its contextual rearticulation in the digital age. The findings further reveal that madrasa teachers' authority is redefined in digitally transformed environments. Teachers no longer rely solely on positional authority or content mastery but increasingly enact moral and pedagogical leadership. This aligns with Islamic educational philosophy, which positions teachers as *murabbi* and *mu'addib*, responsible for guiding both intellectual and moral development. Similar role transformations have been observed globally, where teachers become designers of learning experiences and ethical role models in digital contexts (Howard et al., 2022; Darling-Hammond et al., 2022; Sukenti & Tambak, 2025; Widodo et al., 2025).

In relation to Technological Pedagogical and Content Knowledge (TPACK), the study extends existing scholarship by demonstrating that madrasa teachers enact TPACK as a value-embedded and context-sensitive competence. While previous research has established TPACK as a core framework for digital teaching effectiveness (Chai et al., 2020; Valtonen et al., 2021; Koh et al., 2022; Al-Attas, 2022), this study shows that in Islamic education, content knowledge cannot be separated from religious meaning and ethical intent. Islamic subject matter inherently carries moral and spiritual dimensions that must be preserved in digital pedagogy. This finding challenges the implicit secular orientation of many educational technology frameworks. Recent scholars have argued that dominant digital pedagogy models often overlook ethical, cultural, and religious considerations (Sahin & Yilmaz, 2023; Waghid & Davids, 2021). By contrast, madrasa teachers integrate technology only when it aligns with pedagogical goals and Islamic values, illustrating a reflective and morally grounded enactment of

TPACK. This confirms calls for culturally responsive and ethically informed extensions of digital competence frameworks (Kafyulilo & Fisser, 2021; Scherer et al., 2022).

A major contribution of this study lies in its empirical positioning of *makarim al-shariah* as an operational pedagogical framework rather than an abstract moral ideal. Teachers consistently used Islamic values—such as *amanah* (responsibility), *adab* (ethical conduct), and *mizan* (balance)—to guide decisions about technology use, student interaction, and learning design. This responds directly to international concerns regarding ethical challenges in digital learning, including digital misconduct, distraction, and moral disengagement (Sahin & Yilmaz, 2023; UNESCO, 2021; Tambak, Sukenti & Firdaus, 2024; Gusrianto et al., 2025). The findings also show that *makarim al-shariah* plays a critical role in shaping students' digital character and behavior. Teachers' emphasis on respectful communication, honesty, and responsible information use reflects the Islamic educational goal of forming *insan kamil* (holistically developed individuals). Recent Islamic and sustainability-oriented education research supports the view that moral and character education must evolve alongside technological change (Huda et al., 2021; Abdullah et al., 2025; Tambak et al., 2025; Redman et al., 2021).

Importantly, the integration of TPACK and *makarim al-shariah* was found to significantly enhance madrasa teachers' teaching skills. Teaching competence was experienced holistically, encompassing instructional design, digital classroom management, assessment, ethical judgment, and professional confidence. This aligns with international findings that teacher competence in digitally transformed environments is multidimensional and cannot be reduced to technical proficiency alone (Ning et al., 2022; Howard et al., 2022; Scherer et al., 2021; OECD, 2021; Chapakiya et al., 2025). The study further indicates that Islamic values provide teachers with ethical clarity and professional resilience when navigating digital challenges. Teachers who grounded their practices in *makarim al-shariah* reported greater confidence in managing digital risks while sustaining pedagogical effectiveness. This supports broader literature suggesting that strong value-based professional identities enhance teacher agency and well-being during periods of educational change (Zhang et al., 2022; Sukenti & Fauzan, 2024; Trust et al., 2023; Masnawati et al., 2022).

From a theoretical perspective, this study contributes to international scholarship by extending TPACK into faith-based education and demonstrating how religious values actively mediate technology integration. This responds to calls for more inclusive and pluralistic educational theories that acknowledge non-Western and religious epistemologies in digital education research (Zhao & Watterston, 2021; Saada & Magadlah, 2021). Islamic education thus emerges not as peripheral but as a valuable contributor to global theory-building. Furthermore, the findings reinforce the importance of contextualizing digital transformation within local epistemologies and moral frameworks. The madrasa context illustrates that global digital education models must be adapted rather than adopted wholesale. This is consistent with international research emphasizing culturally responsive and context-sensitive approaches to digital pedagogy (Cebrián et al., 2022; Lozano et al., 2021; Sumiati, & Tekke, 2024).

Finally, the study offers strong practical implications for madrasa teacher development programs. Professional development initiatives should integrate TPACK-based digital competence with structured engagement with *makarim al-shariah* and Islamic educational philosophy. Such integration supports the formation of value-driven digital educators who are capable of meeting contemporary educational demands while preserving Islamic identity. This approach aligns with global agendas on sustainable, ethical, and responsible education (Leicht et al., 2022; UNESCO, 2021; Bond, et al. 2021) and offers a distinctive contribution from Islamic education to international discourse.

6. Conclusion

This study reveals that madrasa teachers experience digital learning transformation as a comprehensive pedagogical and professional shift that reshapes their teaching identity, instructional practices, and ethical responsibilities. The findings show that digital transformation is interpreted not merely as the adoption of technological tools, but as a reconfiguration of Islamic teaching practices that integrate *ta'lim*, *tarbiyah*, and *ta'dib* in digitally mediated environments. Madrasa teachers progressively reinterpret their roles as facilitators, learning

designers, and moral guides who support student-centered and reflective learning. Furthermore, the study demonstrates that teachers understand and enact Technological Pedagogical and Content Knowledge (TPACK) as an integrated and context-sensitive form of professional competence. This competence becomes meaningful when aligned with Islamic content and learning objectives. Most importantly, the integration of *makarim al-shariah* values—such as *amanah*, *adab*, and *mizan*—emerges as a central foundation that guides teachers' pedagogical and technological decisions. Together, these elements contribute to the development of holistic teaching skills that balance digital effectiveness with Islamic moral integrity in madrasa learning environments.

Conceptually and theoretically, this study contributes to international scholarship by extending the TPACK framework into the domain of faith-based and Islamic education. It demonstrates that TPACK cannot be understood as a value-neutral construct when applied in religious educational contexts, but must be embedded within ethical and spiritual value systems. By empirically operationalizing *makarim al-shariah* as a pedagogical framework, this study bridges a critical gap between Islamic educational philosophy and contemporary digital learning theories. Methodologically, the phenomenological approach enriches digital education research by foregrounding teachers' lived experiences, professional meaning-making, and moral reasoning—dimensions often overlooked in predominantly quantitative studies. Practically, the findings offer valuable insights for the design of madrasa teacher development programs, suggesting that effective professional development should integrate digital competence training with structured reflection on Islamic values and ethics. In this way, the study positions Islamic education as an active contributor to global discourses on digital transformation, teacher professionalism, and ethical education.

Despite these contributions, this study has several limitations that open avenues for future research. First, the phenomenological design and limited number of informants restrict the generalizability of the findings across diverse madrasa systems and national contexts. Future studies could employ comparative or mixed-methods designs to examine how the integration of TPACK and Islamic values varies across regions, educational levels, or institutional types. Second, this study focuses primarily on teachers' perspectives and does not directly capture students' learning experiences or learning outcomes in digitally transformed madrasas. Subsequent research could incorporate student voices or classroom observations to provide a more comprehensive understanding of digital Islamic pedagogy in practice. Third, while this study emphasizes *makarim al-shariah*, future research may explore other Islamic epistemological constructs and examine their interaction with emerging technologies such as artificial intelligence or learning analytics. Addressing these limitations will strengthen the theoretical robustness and practical relevance of future studies on digital transformation in Islamic education.

Author Contribution Statement

Contributions of the authors in this article: Alfita Choirun Amalia and Nurhidayati Zalwira, contributed as concepts, drafters, data analysis, and interpreters of the article; Abd Rahman bin Abd Ghani and Firdaus, contributed as data analysers, collecting data, and interpreters; Setira Utama Rizal and Aurelius Ratu, as the drafter of the manuscript, collecting data and critically revising the article. All authors agree to take responsibility for all aspects of this work.

Disclosure of Interests

We have no conflict of interest to declare.

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