



The Integration of Technology in Arabic Language Instruction at the Madrasah Aliyah Level

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Abstract:

The integration of technology has become increasingly important in contemporary Arabic language education because it shapes how students access, process, and engage with learning materials. This study aimed to examine how technology is integrated into Arabic language instruction at the Madrasah Aliyah level, focusing on forms of implementation, pedagogical functions, and instructional challenges. The study employed a qualitative case study design involving six informants consisting of one vice principal, two Arabic language teachers, and three students. Data were collected through classroom observation, semi-structured interviews, and documentation, and analyzed using data condensation, reduction, display, and verification. The findings show three main patterns: digital administration through the PIESA application, limited classroom technology use mainly for presentation, and teachers' digital literacy challenges in pedagogical application. The novelty of this study lies in examining technology integration as an institutional and instructional process. The findings suggest the need for sustained professional development and pedagogically oriented technology support.

Keywords: *Technology Integration; Arabic Language Instruction; Madrasah Aliyah; Digital Literacy*

Abstrak:

Integrasi teknologi menjadi semakin penting dalam pendidikan bahasa Arab kontemporer karena memengaruhi cara peserta didik mengakses, memproses, dan terlibat dengan materi pembelajaran. Penelitian ini bertujuan untuk mengkaji bagaimana teknologi diintegrasikan dalam pembelajaran bahasa Arab pada tingkat Madrasah Aliyah dengan menelaah bentuk implementasi, fungsi pedagogis, dan tantangan pembelajarannya. Penelitian ini menggunakan desain studi kasus kualitatif dengan melibatkan enam informan yang terdiri atas satu wakil kepala bidang kurikulum, dua guru bahasa Arab, dan tiga siswa. Data dikumpulkan melalui observasi kelas, wawancara semi-terstruktur, dan dokumentasi, kemudian dianalisis melalui kondensasi data, reduksi data, penyajian data, dan verifikasi. Hasil penelitian menunjukkan tiga pola utama, yaitu administrasi digital melalui aplikasi PIESA, penggunaan teknologi di kelas yang masih terbatas pada presentasi, serta tantangan literasi digital guru dalam penerapan pedagogis. Kebaruan penelitian ini terletak pada analisis integrasi teknologi sebagai proses institusional dan instruksional. Temuan ini menegaskan perlunya pengembangan profesional berkelanjutan dan dukungan teknologi yang berorientasi pedagogis.

Kata Kunci: *Integrasi Teknologi; Pembelajaran Bahasa Arab; Madrasah Aliyah; Literasi Digital*

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INTRODUCTION

The integration of technology into education has become one of the defining characteristics of contemporary learning environments. In a society increasingly shaped by digital communication, information access, and global interaction, language education is expected to respond to these transformations. Arabic language instruction holds particular significance because it supports religious literacy, intercultural understanding, and access to classical as well as contemporary (Alshehri, 2024; Tukimin et al., 2020; Uribe et al., 2021). The growing presence of digital media has changed how learners process information, develop vocabulary, and engage with learning materials. Evidence from recent educational practices shows that students are more motivated when instruction incorporates interactive digital resources rather than relying solely on conventional teacher-centered delivery (Alkaabi et al., 2025; Iversen, 2024). Therefore, investigating technology integration in Arabic language instruction is important because it addresses broader educational demands for relevance, accessibility, and meaningful learning outcomes.

Despite the increasing availability of digital tools, the integration of technology in Arabic language instruction remains uneven at the Madrasah Aliyah level. In many classrooms, teaching practices continue to rely heavily on textbook-based explanation, memorization, and limited oral drills (Fajari et al., 2021; Zhang et al., 2021). Such approaches often create passive learning environments in which students experience difficulty in vocabulary acquisition, pronunciation practice, and contextual language use. Field observations in secondary religious education frequently reveal that although students are familiar with smartphones, multimedia platforms, and online communication, these resources are not systematically incorporated into classroom instruction. As a result, a gap emerges between students' digital learning habits and formal pedagogical practices. This mismatch may reduce engagement, weaken learning motivation, and limit opportunities for more interactive and meaningful Arabic language learning experiences (Omar, 2021; Tetzchner, 2022).

Previous studies have examined the role of technology in language education from different perspectives. Selim (2023) and Monhem et al. (2020) found that digital media improved vocabulary retention and increased learner participation in Arabic classrooms. Aldukhayel (2023), Hamdany et al. (2022), and Sheikh et al. (2022) reported that multimedia-based instruction enhanced students' listening comprehension and classroom engagement. Smith et al. (2021) and Hangga et al. (2024) emphasized that mobile learning created more flexible learning opportunities beyond classroom boundaries. Meanwhile, Liu et al. (2024) and Cabrera et al. (2024) argued that online platforms supported collaborative learning and learner autonomy. Although these studies demonstrate positive contributions, most of them focus on isolated media applications, short-term interventions, or general language education contexts. Limited attention has been given to how technology is pedagogically integrated into Arabic instruction at the Madrasah Aliyah level. This gap remains important because instructional integration involves more than simple technological availability.

The present study positions technology integration not merely as the use of digital devices but as a pedagogical process that connects instructional objectives, learning activities, classroom interaction, and student engagement. Its novelty lies in examining

how technology functions within the broader instructional ecology of Arabic language learning at the Madrasah Aliyah level (Guo, 2022; Mostafa, 2020). Rather than measuring only immediate achievement outcomes, this study explores the instructional logic behind technology use, including how teachers select tools, adapt materials, and facilitate participation (Hsu et al., 2021; Wang et al., 2022). This perspective offers a more comprehensive understanding of technology integration as a dynamic educational practice. Addressing this issue is important because effective integration can strengthen language exposure, create authentic learning experiences, and support more responsive pedagogical models in contemporary Arabic education.

Based on the issues above, the central problem of this study concerns the limited understanding of how technology is integrated into Arabic language instruction at the Madrasah Aliyah level. Although digital tools are increasingly available, there remains insufficient explanation regarding the forms of integration, pedagogical purposes, and instructional challenges that shape classroom implementation. Existing studies have not fully clarified how teachers translate technological opportunities into meaningful learning experiences that support language development. This study therefore addresses several guiding questions: how is technology integrated into Arabic language instruction, what pedagogical functions does it serve in classroom practice, and what challenges influence its implementation? These questions are essential for understanding the relationship between technological resources and the quality of Arabic language learning.

This study argues that effective technology integration in Arabic language instruction is not determined solely by the presence of digital tools, but by the pedagogical capacity to align technology with learning objectives, classroom interaction, and students' linguistic needs. It is assumed that when technology is meaningfully integrated, students may experience greater participation, richer exposure to language input, and more contextual learning opportunities. The original contribution of this research lies in offering an analytical account of technology integration as an instructional practice rather than as a technical intervention. By clarifying the pedagogical patterns, functions, and constraints that shape implementation, this study contributes to the development of more adaptive and contextually relevant approaches to Arabic language instruction at the secondary education level.

RESEARCH METHOD

This study employed a qualitative research design with a case study approach (Kekeya, 2023). A qualitative design was selected because the purpose of the study was to obtain an in-depth understanding of the processes, forms, and instructional dynamics involved in the integration of technology in Arabic language instruction at the Madrasah Aliyah level. Rather than measuring causal relationships or statistical effects, this study focused on exploring meanings, practices, and contextual experiences that emerge in natural classroom settings. The case study approach was considered appropriate because it allows intensive examination of a bounded educational context, including the interaction between teachers, students, learning materials, and digital media. Through this design, the study sought to generate a contextual and interpretive understanding of how technology is pedagogically integrated into Arabic language learning practices.

The study was conducted at Madrasah Aliyah YPPA Cipulus. This site was selected because it has incorporated various forms of digital media and technological resources into Arabic language instruction, making it relevant to the focus of the study. In addition,

the institution represents a meaningful setting for examining how technology integration is implemented within the context of Islamic secondary education. The informants consisted of six participants selected purposively based on their direct involvement in instructional activities. They included one vice principal for curriculum affairs, two Arabic language teachers, and three students from different grade levels. The vice principal provided information regarding institutional policy and curriculum implementation, the teachers contributed pedagogical perspectives and classroom experiences, while the students provided insights into learning participation, responses, and perceived benefits of technology-supported instruction.

Data were collected through observation, in-depth interviews, and documentation (R. Cole, 2024). First, classroom observation was conducted to obtain direct empirical understanding of how technology was used during Arabic language instruction. The observation focused on the types of digital media employed, patterns of teacher–student interaction, learning activities, and students’ responses during classroom participation. Second, semi-structured in-depth interviews were conducted with all informants to explore their experiences, perceptions, and reflections regarding the pedagogical use of technology in Arabic learning. The interview format enabled the researcher to maintain thematic consistency while allowing deeper exploration of emerging issues. Third, documentation was used to collect supporting data from lesson plans, instructional materials, digital learning media, school policy documents, and other institutional records relevant to the focus of the study.

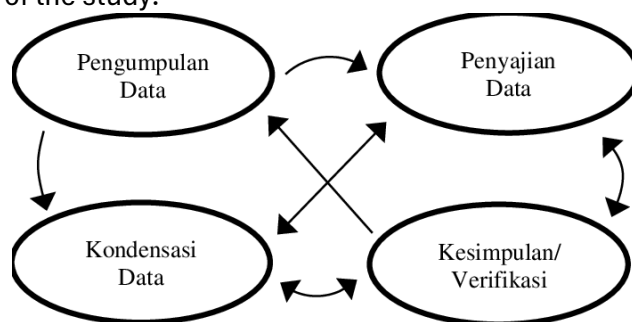


Figure 2: Miles and Huberman’s Data Analysis Model

The data were obtained from the research that had been conducted and subsequently underwent a condensation process to clarify and deepen the research findings. Data analysis in this study followed the interactive model developed by Miles and Huberman, consisting of data condensation, data reduction, data display, and data verification (Cole, 2024). Data condensation was conducted by selecting, simplifying, and focusing raw data obtained from observations, interviews, and documentation. At this stage, relevant information related to technology integration, instructional practices, and classroom interaction was identified and organized. Data reduction then involved categorizing and coding the condensed data into analytical themes. The categorized findings were subsequently presented through narrative descriptions and thematic matrices to facilitate interpretation and pattern identification. The final stage was data verification, in which conclusions were continuously examined by comparing data across sources and reviewing emerging interpretations to ensure analytical consistency and credibility.

To ensure the trustworthiness of the findings, this study employed several validity

procedures (Fadli, 2021). First, source triangulation was conducted by comparing information obtained from the vice principal, teachers, and students in order to identify consistency and variation across perspectives. Second, technique triangulation was applied by comparing data derived from observation, interviews, and documentation. Third, member checking was conducted by confirming selected interpretations and findings with several informants to ensure that the researcher's interpretation accurately reflected participants' intended meanings. In addition, prolonged engagement in the research setting enabled the researcher to gain deeper contextual understanding of instructional practices and reduce interpretive bias. These procedures strengthened the credibility, dependability, and confirmability of the research findings.

FINDINGS AND DISCUSSION

Results

The findings of this study reveal how technology is integrated into Arabic language instruction at the Madrasah Aliyah level. The results highlight three main dimensions: digital school administration, classroom instructional practices, and teachers' digital literacy challenges. Together, these findings provide an overview of current technological adaptation while illustrating how institutional innovation and pedagogical implementation interact in practice.

PIESA supports digital school administration

In the field context, digital school administration refers to the use of an integrated digital system to manage routine academic and administrative activities more efficiently, systematically, and transparently. At Madrasah Aliyah YPPA Cipulus, this operationally appears through the use of the PIESA (Presensi Online Siswa) application. Based on documentation collected during the study, PIESA functions as a school-based digital platform that supports attendance recording, leave requests, academic scheduling, grade documentation, and several other administrative services. The existence of this application indicates that technology integration at the madrasah does not only appear in classroom learning but also in institutional management practices. In this study, PIESA is interpreted as concrete evidence of the school's effort to adapt educational administration to a more organized, accessible, and digitally coordinated system.

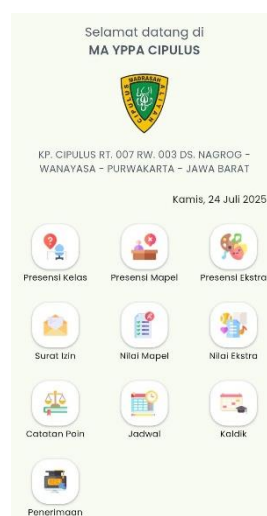
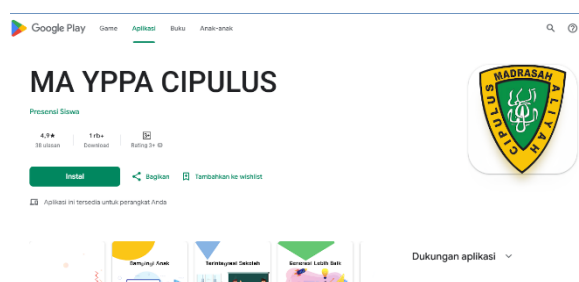


Figure 1. Figure 3: PIESA Application

Observation of school documentation shows that PIESA has become part of routine institutional practice. The application was not presented merely as a symbolic technological innovation, but as a practical administrative instrument used in everyday school activities. The collected screenshots and interface displays demonstrate that attendance, scheduling, and academic information are organized through a structured digital workflow. From the researcher's interpretation, the existence of this application reflects a movement toward greater efficiency in school management. Administrative tasks that previously required manual recording can now be documented more systematically and retrieved more quickly. The digital structure also reduces procedural fragmentation because multiple services are integrated into a single platform. This indicates that technology at the madrasah already performs an organizational function that supports continuity, accountability, and administrative coordination.

The documentation data indicate that PIESA functions as an institutional digital infrastructure rather than merely a supporting application. In practical terms, it organizes school administrative activities into a unified system that enables the management of student attendance, academic schedules, leave permissions, and academic records. Restated simply, the presence of PIESA shows that the madrasah has already taken concrete steps toward digital administration. For readers, this means that technology integration in the school is visible not only in pedagogical discourse but also in actual institutional procedures. The researcher interprets this as evidence that administrative digitalization has begun to form an important foundation for broader educational transformation within the school environment.

A clear pattern emerges from the documentation. Technology integration is first visible in administrative functions before becoming fully embedded in classroom pedagogy. The digitalization process appears structured, centralized, and operationally stable. Administrative tasks are organized around efficiency, accessibility, and continuity of data management. The available documentation also shows that technology is applied to support coordination among school actors rather than merely to modernize appearance. Overall, the pattern indicates that digital administration has become an early and tangible stage of institutional technological adaptation.

Arabic instruction uses limited technology

In this study, digital literacy challenges refer to teachers' limitations in accessing, understanding, selecting, and pedagogically applying digital technology within Arabic language instruction. At the field level, this condition does not simply indicate the inability to operate devices, but also includes difficulty in integrating digital tools into lesson planning, classroom interaction, and learning evaluation. Interview data revealed that some teachers remain more familiar with conventional instructional routines such as textbook explanation, oral questioning, and written exercises. Technology is often perceived as supplementary rather than integral to pedagogical design. Operationally, therefore, digital literacy challenges are understood as a gap between the availability of technological resources and teachers' pedagogical readiness to employ them meaningfully in classroom practice.

One Arabic teacher explained, "The Merdeka Curriculum encourages teachers to

be more creative, but in practice many of us are still learning how to connect technology with classroom instruction.” Another informant stated, “Digital tools are available, but not all teachers feel confident enough to use them regularly in Arabic lessons.” These statements indicate that the challenge is not merely technical access but pedagogical confidence. The researcher interprets these responses as showing that technology integration remains transitional. Teachers recognize the importance of digital adaptation, yet their classroom implementation is still influenced by previous instructional habits. This suggests that technological readiness is shaped not only by infrastructure but also by professional familiarity, pedagogical experience, and the gradual process of instructional adjustment.

A second teacher remarked, “I still rely more on explanation, discussion, and textbook exercises because those methods feel more manageable during teaching.” Another participant explained, “We need more practical guidance because sometimes we know the tools, but we are unsure how to use them effectively for Arabic learning objectives.” These interview results reveal that teachers’ hesitation is connected to instructional practicality. From the researcher’s interpretation, teachers tend to prioritize methods they perceive as stable, predictable, and manageable within classroom conditions. Digital technology therefore becomes selectively used rather than routinely integrated. This finding suggests that professional support should focus not only on technical introduction but also on helping teachers translate digital possibilities into usable pedagogical strategies.

Classroom observation supports the interview findings. During observed lessons, teachers occasionally used digital devices such as laptops or presentation slides, yet classroom interaction remained predominantly teacher-centered. Most instructional explanations, task directions, and vocabulary reinforcement continued to rely on oral explanation and printed learning materials. This observation indicates that digital tools were present but had not yet become central to instructional design. Restated more simply, teachers have begun to enter digital learning environments, but their pedagogical practice still remains anchored in conventional instructional patterns. The researcher interprets this as a stage of gradual adaptation rather than resistance. The observed practices suggest that teachers are navigating between established teaching routines and emerging technological expectations.

The data show a consistent pattern of partial technological adoption. Teachers generally acknowledge the relevance of digital tools and demonstrate openness toward educational innovation. However, their practical implementation remains cautious, selective, and strongly influenced by existing pedagogical habits. Digital competence appears uneven across teachers, and confidence in instructional application develops more slowly than institutional technological availability. The dominant pattern is therefore one of transitional adaptation. Technology is present within the school environment, but pedagogical integration is still developing through gradual experimentation, professional learning, and increased familiarity with digital instructional practices.

Teachers face digital literacy challenges

In this study, limited technology use in Arabic instruction refers to the partial and non-intensive incorporation of digital tools during classroom teaching and learning activities. Operationally, technology is considered limited when digital devices are used only as supporting instruments for content delivery rather than as interactive pedagogical

media that shape student participation, collaboration, and learning engagement. Classroom observation at Madrasah Aliyah YPPA Cipulus showed that Arabic language teaching had begun to involve several technological resources, including Smart TVs, laptops, projectors, and PowerPoint presentations. However, these tools were mainly used to support explanation and visual presentation. The dominant learning process continued to rely on teacher explanation, textbook-based instruction, and vocabulary exercises conducted through direct classroom interaction.

Table 1. Observation of Technology Use in Arabic Instruction

Observation	Indicator
Teacher used PowerPoint slides to present vocabulary material	Technology used primarily for content presentation
Smart TV or projector displayed lesson materials in front of class	Visual support available during instruction
Students followed teacher explanation while taking notes	Interaction remained teacher-directed
Classroom activities centered on textbook and worksheet exercises	Conventional learning materials remained dominant
“Tebak Kata” activity was used during vocabulary learning	Interactive strategy present but not digitally mediated

The observational data indicate that digital tools have entered classroom practice, yet their role remains supplementary rather than transformative. Technology was mainly used to support presentation, while the instructional structure remained teacher-centered. Students generally responded by listening, observing displayed materials, and completing written tasks. During vocabulary activities, however, student participation became more active when the teacher implemented the tebak kata method. Restated simply, Arabic instruction already uses technology, but technology has not yet become the main driver of classroom interaction. The researcher interprets this pattern as showing that instructional engagement is more strongly influenced by pedagogical design than by technological presence alone. Interactive learning occurred when classroom activities required active student participation rather than passive reception.

A clear pattern appears across classroom observations. Technology functions mainly as a visual and organizational support, while instructional control remains concentrated in teacher explanation and textbook-based activities. The classroom structure remains relatively stable, with digital media inserted into existing teaching routines rather than reshaping the learning process itself. At the same time, student engagement increases when activities become participatory, game-based, and interaction-oriented. This suggests that the current pattern of Arabic instruction combines limited technological use with selective interactive pedagogy. The learning process therefore reflects early-stage integration, where technological tools are available but pedagogical transformation remains gradual and still developing.

Discussion

The findings of this study indicate that technology integration in Arabic language instruction at the Madrasah Aliyah level operates through two interconnected domains, namely institutional administration and classroom pedagogy. The presence of the PIESA application demonstrates that digitalization has first become visible in administrative management through attendance recording, scheduling, academic documentation, and

other school services (Baum, 2021; Zhong et al., 2024). This finding corresponds with previous discussions in educational technology literature which emphasize that schools often begin digital transformation through managerial and administrative systems before instructional integration becomes fully established. In this sense, the present study confirms that technological adaptation in educational institutions tends to emerge first in organizational routines because administrative activities demand efficiency, data continuity, and coordinated access among institutional actors (Nurbayan & Sanusi, 2025).

At the pedagogical level, the study found that Arabic instruction has begun to incorporate technological tools such as Smart TVs, laptops, projectors, and PowerPoint presentations. However, classroom observation showed that these media function mainly as visual support rather than as interactive learning environments (Damayanti et al., 2024; Hasanah, 2023). This finding is broadly consistent with earlier studies reporting that technology can improve classroom engagement when integrated meaningfully into pedagogical design. Nevertheless, the present study also reveals an important difference. While previous literature frequently reports the positive impact of digital learning media on student participation and learning motivation, the current findings suggest that the mere availability of digital devices does not automatically transform instructional practice (Hussein et al., 2020; Mundzir, 2022). Technology in this case remains supplementary because teacher explanation, textbook-based instruction, and conventional classroom routines continue to dominate the learning process.

Another important finding concerns teachers' digital literacy challenges. Interview data revealed that teachers recognize the importance of digital innovation but still encounter difficulties in translating available technological resources into pedagogically meaningful classroom practice. This finding aligns with previous studies emphasizing that teacher competence constitutes one of the most decisive factors in successful technology integration (Fwu et al., 2023; Uworwabayeho et al., 2020). However, the present study extends this understanding by showing that the challenge is not limited to technical ability alone. The findings indicate that pedagogical confidence, professional familiarity, and instructional practicality strongly shape teachers' willingness to adopt digital media (Arifah et al., 2022; Riwanda et al., 2024). In other words, the gap observed in this study lies not between access and absence of technology, but between technological availability and pedagogical readiness for sustained instructional integration.

Theoretically, this study contributes to the understanding that technology integration in Arabic language education should be viewed as a gradual institutional process rather than a purely technical intervention. The findings suggest that technological adaptation develops progressively across administrative structures, pedagogical practices, and professional competencies. This perspective expands current discussions by demonstrating that educational digitalization is multidimensional and context-dependent. Practically, the findings imply that efforts to strengthen technology integration should not focus exclusively on providing digital infrastructure. Equal attention must be directed toward professional development, instructional mentoring, collaborative teacher learning, and pedagogical support that helps teachers connect digital tools with language-learning objectives, classroom interaction, and student engagement.

The present study therefore contributes an important contextual understanding of technology integration at the Madrasah Aliyah level. It shows that institutional digitalization may develop more rapidly in administrative functions than in instructional practice, while pedagogical transformation depends strongly on teacher readiness and instructional

design. The findings also suggest that interactive learning outcomes are shaped less by the presence of technology itself than by the way teachers organize participation, engagement, and meaningful classroom interaction. Consequently, the contribution of this research lies in offering a more grounded explanation of how technology is negotiated, adapted, and gradually incorporated within Arabic language education. This understanding provides an important basis for designing more realistic, context-sensitive, and sustainable models of educational innovation.

CONCLUSION

This study concludes that the integration of technology in Arabic language instruction at the Madrasah Aliyah level remains a gradual and multidimensional process. The most important finding is that technology has developed more visibly in institutional administration through the PIESA application than in classroom pedagogy, while Arabic instruction still relies largely on conventional teaching practices. The main lesson from this research is that meaningful educational digitalization depends not merely on technological availability but on pedagogical readiness, teacher confidence, and the capacity to connect digital tools with learning objectives and classroom interaction. The scholarly contribution of this study lies in providing a contextual understanding of technology integration as an institutional and pedagogical process within Arabic language education. This study is limited by its single-site case design; future research should involve broader contexts and comparative multi-site investigations.

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