



## Transforming Arabic Language Learning in the Era of Industry 5.0: Integrating Digital Technology and Humanistic Approaches

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### ABSTRACT

**Purpose** – This study aims to formulate adaptive and innovative Arabic language learning strategies in the Industrial Revolution 5.0 era by synergizing advanced digital technology with humanistic values. It specifically explores the utilization of various digital platforms and identifies the pedagogical challenges faced by educators in bridging the gap between technological potential and field reality.

**Design/methods/approach** – The research employs a descriptive qualitative method. Data were collected through in-depth interviews, classroom observations, and documentation involving seven Arabic language teachers from State Islamic Senior High Schools (MAN) across Serang City, selected via simple random sampling. The data were analyzed using the Miles and Huberman interactive model, including data reduction, display, and conclusion drawing.

**Findings** – The results indicate that the integration of digital ecosystems—such as AI-based platforms, chatbots, and interactive web tools—has successfully created a flexible and dynamic learning environment for Generation Z. However, implementation is significantly hindered by disparities in teachers' digital literacy, administrative burdens, and structural infrastructure limitations. The study finds that while technology enhances engagement, the teacher's role remains irreplaceable as a humanistic facilitator who provides cultural context and motivation.

**Research implications** – The success of Arabic learning in this era depends on a "High Tech and High Touch" synergy. This study contributes a theoretical framework for inclusive digital curricula and provides a practical reference for policymakers to design technical-oriented teacher training. Limitations include the small sample size and localized geographic scope, which may affect generalizability. Future research is recommended to quantitatively evaluate the experimental impact of specific AI platforms on students' speaking skills (*maharah al-kalam*) on a larger scale.

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## Introduction

In the era of Industrial Revolution 5.0, the global educational landscape has undergone a paradigm shift from mere digitalization (4.0) toward a synergy between advanced technologies—such as Artificial Intelligence (AI), the Internet of Things (IoT), and Big Data—and human-centered values. In this context, the Arabic language occupies a strategic position, not merely as a medium for religious rituals, but as a crucial international language within the realms of diplomacy, global economy, academia, and cross-cultural exchange (Ferantika et al., 2025). Consequently, mastering Arabic in a technologically adaptive manner has become a national and international urgency to produce a generation competitive in the global labor market. A transformation in instructional design is imperative to ensure that Arabic remains relevant to the



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characteristics of Generations Z and Alpha, who demand visual, interactive, and collaborative learning experiences.

Previous research has confirmed that the integration of digital technology enhances the accessibility and flexibility of Arabic language learning. The use of digital platforms and mobile applications has proven effective in improving vocabulary acquisition and reading skills (Khotijah & Indriana, 2024). Furthermore, the utilization of AI and chatbots has begun to demonstrate a significant role in simulating independent conversation for learners (Moenir et al., 2024). Blended learning models have also been identified as efficient strategies for overcoming spatial and temporal constraints, provided they are supported by adequate instructional design and proficient teaching competencies (Afriantoni et al., 2025). Collectively, existing literature indicates that technology serves as a powerful catalyst for differentiated instruction and lifelong learning.

Despite the vast opportunities offered by technology, a significant gap remains between digital potential and pedagogical reality in the field. First, classic issues in Arabic, such as diglossia (the distance between standard language and local dialects), phonetic complexity, and grammar, remain obstacles that have not been fully resolved by digitalization alone (Nurfasilah et al., 2024). Second, controversies persist regarding content quality; many currently available digital learning media are of low quality and are not grounded in sound language acquisition principles. Third, disparities in technological access and a lack of teacher readiness in operating Industry 5.0 devices create inequalities in learning outcomes. There remains a paucity of research specifically formulating integration models capable of balancing sophisticated AI technology with the humanistic approach required to address the emotional and cultural aspects of learning Arabic.

This study aims to formulate a comprehensive Arabic language learning strategy for the Industrial Revolution 5.0 era by integrating AI-based interactive technology and humanistic pedagogical principles. The primary focus of this research is to explore how adaptive learning models can accommodate the characteristics of Generation Z while addressing the challenges of diglossia and limited access. The contribution of this study is expected to provide a theoretical framework for curriculum developers and educational practitioners to design learning media that are not only technically proficient but also culturally contextual and sustainable. Thus, this research represents a crucial step in ensuring that the Arabic language remains extant and appealing amidst the dynamics of digital civilization.

## Methods

This study employs a qualitative research design with a descriptive-analytical approach to explore in-depth the transformation of Arabic language learning amidst the dynamics of the Industrial Revolution 5.0, which integrates technological sophistication with humanistic values. The research subjects are Arabic language teachers at State Islamic Senior High Schools (MAN) throughout Serang City, where informants were selected using a simple random sampling technique, resulting in 7 teachers as representatives of practitioners in the field.

Primary data were gathered through in-depth interviews using semi-structured guidelines to delve into teachers' perspectives regarding the use of AI, IoT, and digital platforms. Additionally, direct observations were conducted to examine instructional practices in both physical classrooms and virtual learning environments. Furthermore, the researcher performed documentation and literature studies to align field findings with educational policies and previous research. The researcher serves as the primary

instrument (*human instrument*), holding full responsibility for planning, collecting, and objectively interpreting the data.

The data analysis process was carried out in a circular manner, referring to the interactive model by Miles, Huberman, and Saldana. This process commenced with data reduction to simplify complex information, followed by data display in the form of chronological narratives and matrix tables, and concluded with the stage of drawing conclusions and verifying findings. Triangulation techniques were applied to ensure the credibility and validity of the research results concerning adaptive and innovative Arabic teaching strategies.

## Results

### 3.1. Transformasi Digital dan Ekosistem Platform Pembelajaran Bahasa Arab 5.0

The research findings indicate that Arabic language learning in the Industrial Revolution 5.0 era has undergone a fundamental shift, where digital technology has become an essential and inseparable instrument of instructional practice. Based on interviews with teachers at MAN throughout Serang City, the integration of digital platforms, interactive applications, and Artificial Intelligence (AI) media has proven capable of creating a learning atmosphere that is more dynamic, flexible, and relevant to the cognitive styles of Generation Z, who tend to be visual and collaborative. The use of these digital tools serves not only as a medium for material delivery but also as a bridge to overcome spatial and temporal constraints that have traditionally hindered conventional methods (Ubaidillah, 2020). Teachers have begun utilizing specific sites such as *Alefbata* and *Duolingo* to strengthen student learning autonomy. The presence of various platforms with diverse service specifications—as shown in the table below—confirms that Arabic learning resources are now available across a broad spectrum, ranging from WhatsApp community-based classes to structured online courses.

**Table 1.** Analysis of Digital-Based Arabic Learning Platforms in the Industrial Revolution 5.0 Era

No	Platform/Site Name	Core Services	Key Features/Advantages	Cost Range/Notes
1	BASIS	WhatsApp Group + Video & PDF	Systematic zero-to-hero material, interactive, online exams.	Free (basis.web.id)
2	Arabi Indonesia	Courses & Quranic Study (Private/Group)	Flexible, personal method, offline/home visit options.	Variable (Arabi Indonesia)
3	AlifBee	Web/Mobile App (Read, Write, Speak)	Placement test, bite-sized lessons, interactive features.	Free & Premium (alifbee.com)
4	KursusArab / Alexandria	Regular & Private Online Classes	Professional tutors, engaging I'rab and Takallam materials.	Paid (kursusarab.my.id)
5	Maha Arabic Center	Basic to Advanced Courses	Structured curriculum, Takallam method, overseas alumni tutors.	Paid/Monthly (beljarbahasaarab.id)
6	IZICOURSE	Arabic & Quranic Study	Flexible time/location, experienced teachers, certificates.	Affordable (izicourse.my.id)
7	Naatiq International	Arabic Language & Literature	Middle Eastern alumni tutors, innovative materials, limited quota.	Paid (Naatiq)
8	KBAO	WhatsApp-based Programs	Daily interaction, Jurumiyah memorization, certificates.	Free & Donation-based

9	Pondok Sanad	Online Mentoring	Engaging complete platform.	mentoring, integrated	Paid (pondoksanad.com)
10	Mustaqilli	Child & Adult Courses	Interesting Language multi-city presence.	methods, Camp options,	Paid (mustaqilli.com)

### 3.2. Structural Challenges and Educator Resource Readiness

Despite the vast digital opportunities, the study reveals a significant gap in human resource readiness. It was found that not all educators possess an equal level of digital literacy; most teachers are still constrained by a lack of technical training and complex workloads that hinder the adaptation process to modern media. These obstacles are often not caused by personal resistance to progress but are structural and systemic, such as age factors, limited institutional facilities, and a lack of self-confidence in operating exponentially evolving applications. Many teachers still feel comfortable with conventional methods perceived as more stable, while simultaneously being required to keep pace with the digital-native learning speed of their students. This condition emphasizes that the transformation of teachers into adaptive educators requires collective support in the form of continuous mentoring and the provision of user-friendly infrastructure so that technology becomes a solution for learning effectiveness rather than a burden.

### 3.3. Solution Strategies: Toward an Inclusive and Humanistic Learning Ecosystem

To mitigate these weaknesses, this study formulates solution strategies focusing on strengthening learning communities and inclusive access.

First, intensive training programs must be directed toward pedagogical creativity rather than mere operational technicalities. Second, the formation of teacher learning communities is crucial as a space for sharing best practices to increase collective confidence. Third, to address internet access disparities in remote areas, teachers are advised to implement hybrid strategies by providing offline teaching materials, such as PDF modules, lightweight voice notes via WhatsApp, or community learning access centers like village internet corners. Through this approach, geographical barriers can be minimized, ensuring no student is marginalized in this transformation process. The essence of this strategy is to realize the spirit of humanism in the 5.0 era, where technology serves to strengthen human interaction, ensure equitable access, and position the teacher as an inspiring facilitator rather than a mere device operator (Bella et al., 2025).

Comprehensive technology integration in Arabic learning offers advantages in expanding resource accessibility and increasing active student engagement through interactive simulations and AI-based chatbots (Ma'wa et al., 2024). This flexibility enables personalized learning that supports the principles of flexible and personal lifelong learning (Syafanah et al., 2025).

However, potential social injustices due to the digital divide and the low quality of content on some platforms that do not meet language acquisition standards must be monitored. Therefore, the success of Arabic learning in the Industrial Revolution 5.0 era depends heavily on the synergy between advanced tools and human wisdom in selecting and utilizing them. Technology must be positioned as a functional support that maintains a humanistic touch, ensuring the educational process remains meaningful, character-driven, and capable of addressing global challenges sustainably.

## Discussion

This research stems from the fundamental question of how Arabic learning strategies can adapt effectively in the Industrial Revolution 5.0 era without losing their humanistic essence. As emphasized in the literature, the 5.0 era demands the integration of smart technology not as a replacement for the human role but as a partner to enhance the intellectual and emotional capacity of learners. The main focus of this study is to explore the synergy between interactive digital platforms and the readiness of educators at MAN throughout Serang City in facing the characteristics of Generation Z students. This is relevant to global demands that position Arabic as a strategic communication instrument in various sectors, making methodological transformation an academic necessity to maintain the language's existence in the digital space.

The main findings indicate a positive dependency forming between learning effectiveness and the diversity of the digital ecosystem, such as the use of AI chatbots and specific platforms (AlifBee, BASIS, etc.). An interesting finding is that although technology is abundantly available, its effectiveness is strictly determined by the digital literacy profiles of teachers, which still experience sharp disparities. Another important phenomenon is the shift in the teacher's role from a sole information source to a digital content curator. The researcher found that teachers at MAN Serang City creatively began combining formal materials with community-based services like WhatsApp groups, showing that access flexibility is a top priority in maintaining student interest outside formal school hours.

These results reinforce the findings of Khotijah & Indriana (2024), stating that technology integration significantly increases media variety and supports independent learning. In line with Moenir et al. (2024), the use of digital platforms is proven to improve students' vocabulary mastery faster than conventional rote methods. However, this study also provides a new perspective that deepens the findings of Nurfasilah et al. (2024); while previous research emphasized linguistic barriers like diglossia, this finding reveals that structural hurdles—such as administrative burdens and lack of local infrastructure—are more dominant inhibitors. This indicates a partial contradiction where application sophistication is often hampered by the reality of institutional facility readiness.

The high variety of learning platforms used signifies that the Arabic education market is digitally ready, yet classroom implementation requires strong human moderation. The significance lies in the balance between "High Tech" and "High Touch." These findings must be interpreted cautiously; although technology offers instant solutions, without content curation based on proper language acquisition principles, learning risks becoming mere digital entertainment without theoretical depth. Teacher weakness in technology is not merely a personal issue but a sign of the need for teacher training system reform that is more technical-practical than theoretical.

The implications for future Arabic education policy are broad. First, educational institutions must invest in sustainable rather than incidental teacher digital literacy training. Second, curriculum developers need to integrate existing digital platforms into formal structures to avoid material overlap. Third, the social implication emphasizes the need for digital inclusion strategies for students in limited internet areas to prevent quality discrimination. Overall, the future of Arabic learning in the 5.0 era depends on our ability to humanize technology, ensuring that every digital innovation strengthens the interaction between teacher and student as the core of a meaningful educational process.

## Conclusion

This study aimed to formulate adaptive and innovative Arabic learning strategies in the Industrial Revolution 5.0 era by integrating digital technology and humanistic values. The focus was on exploring digital platform utilization, identifying educator hurdles, and finding practical solutions for the gap between technological potential and madrasah pedagogical reality. Findings show that Arabic learning in the 5.0 era has transformed through a diverse digital ecosystem, significantly increasing flexibility and engagement. However, success is hindered by teacher digital literacy disparities, heavy administrative workloads, and infrastructure constraints. Despite technological efficiency in grammar and vocabulary, the teacher's role remains irreplaceable as a humanistic facilitator providing motivation and cultural context. The implications suggest that the future of Arabic education depends on the synergy of "High Tech" and "High Touch." Theoretically, this contributes to inclusive Arabic learning models. Practically, it serves as a reference for policymakers to design creative technology-oriented teacher competency programs. The researcher acknowledges limitations, particularly the small sample of seven teachers in MAN Serang City, which may limit generalizability. Furthermore, the focus on teacher perception means student psychological perspectives on long-term AI use are not fully represented. Based on these findings, it is recommended that future researchers conduct experimental studies on the quantitative effectiveness of specific AI platforms on speaking skills (*maharah al-kalam*). Educational institutions should strengthen teacher learning communities (MGMP) for sustainable technological mentoring. Finally, developing local wisdom-based Arabic teaching materials in digital 5.0 formats presents a promising R&D opportunity.

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