BORNEO JOURNAL OF LANGUAGE AND EDUCATION
VOLUME 6 NO 2, AGUSTUS 2026
E-ISSN: 2775-4790 P-ISSN: 3032-4572
https://doi.org/10.21093/benjole.v6i2.12803

benjole

Arabic Language Education I Research Article OPEN ACCESS

Future-Proofing Arabic Studies: A Strategic Artificial Intelligence Competency Framework for Islamic Higher Education

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American Psychological Association 7th Edition Style Citation
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Article History
Received 9 March 2026
Revised 2 April 2026
Accepted 13 April 2026

Keywords
Artificial Intelligence; AI Competency; Arabic Class; Arabic Course; Competency Framework

Subjects
Arabic Language Education; Educational Technology; Artificial Intelligence

Article Structure

Abstract

The integration of Artificial Intelligence (AI) into higher education is accelerating, yet generic competency frameworks fail to address the unique needs of students in specialized fields, particularly Arabic language learners in Islamic universities. This study addresses this critical gap by proposing a tailored AI Competency Framework designed to equip these students with the skills to navigate an AI-augmented world while upholding their theological and ethical commitments. Employing a digital library research methodology, this paper conducts a systematic literature review and thematic synthesis of scholarship from AI in education and Arabic pedagogy. The resulting framework comprises five interconnected dimensions: (1) Human-Centered Thinking, which grounds technology use in spiritual and intellectual values; (2) AI Ethics, providing a moral guardrail aligned with Islamic principles; (3) AI Techniques and Applications, building practical, tool-specific skills; (4) Domain-Specific AI System Design, fostering an innovative, problem-solving mindset; and (5) AI in Basic Arabic Language Learning, which applies these competencies to core language skills. This framework offers a practical model for universities to integrate AI ethically and effectively, ensuring graduates are not only proficient in Arabic but are also prepared to be responsible stewards of technology in the service of their faith and scholarship.

A. Introduction

The pervasive influence of Artificial Intelligence (AI) has fundamentally reshaped numerous sectors, with higher education standing at the precipice of a profound transformation. As AI technologies evolve from abstract concepts into practical tools, they offer unprecedented opportunities to personalize learning, automate administrative tasks, and create more engaging educational experiences (Alam & Mohanty, 2023). Universities worldwide are grappling with the imperative to integrate AI into their curricula, not merely as a subject of study, but as a foundational competency that prepares students for a future where AI is ubiquitous (Sahrir et al., 2025). This shift demands a structured approach, moving beyond simple digital literacy to a deeper understanding of how AI systems work, their limitations, and their ethical implications.

Within the educational landscape, the domain of language acquisition has been particularly receptive to AI-driven innovations. Technologies powered by Natural Language Processing (NLP), such as intelligent tutoring systems, chatbots for conversational practice, and automated feedback tools, are revolutionizing the way students learn new languages (Alqahtani et al., 2023). These tools offer instant, personalized support, enabling learners to practice reading, writing, listening, and speaking at their own pace (Ordóñez Procel et al., 2024). For languages with complex morphological and syntactical structures, AI can deconstruct difficult grammatical concepts and provide targeted exercises, thereby accelerating the learning curve and boosting student confidence.

However, the application of AI in the context of Arabic language education presents a unique set of opportunities and challenges, particularly within the venerated halls of Islamic universities. Arabic is not merely a linguistic subject in these institutions; it is the language of the Qur'an, a conduit for sacred texts, classical scholarship, and a rich cultural heritage (Dajani, 2015). Consequently, the integration of AI must be handled with profound care (Adegbesan et al., 2024). Generic AI frameworks often fail to address the specific linguistic nuances of Modern Standard Arabic versus classical dialects, or more importantly, the ethical imperative to align technological tools with Islamic principles of etiquette (adab), morality (akhlaq), and the preservation of knowledge.

This study employs a systematic digital library review with a targeted expert validation survey. This two-phase approach was chosen to ensure the resulting AI Competency Framework is both theoretically robust and practically relevant. The initial phase involved a comprehensive literature review to construct a preliminary, evidence-based framework. The second phase utilized a survey instrument to gather feedback from experts and practitioners in the field, validating the relevance and importance of the proposed dimensions and refining them based on real-world insights. This integrative methodology ensures the final framework is not merely an academic exercise, but a practical tool grounded in both scholarly consensus and the lived experiences of educators and stakeholders in Islamic higher education.

B. Method

This study employs a digital library research methodology, underpinned by a systematic literature review, as the sole approach for developing the proposed AI Competency Framework. This method is uniquely suited for the conceptual and

theoretical synthesis required to bridge multiple, distinct disciplines (Cox, 2023). The primary objective is not to gather new empirical data, but to integrate and analyze a vast body of existing knowledge from the fields of artificial intelligence, language pedagogy, and ethics. The goal is to construct a novel, multi-dimensional framework that addresses the specific pedagogical, linguistic, and theological needs of Arabic language learners within the unique ecosystem of an Islamic university, a niche currently underserved by generic educational models.

The first phase, a digital library research methodology, was initiated by a systematic search of leading academic databases. To capture the interdisciplinary nature of the study, the search strategy employed targeted keyword clusters intersecting AI in education, Arabic and Islamic pedagogy, and practical technological applications. Inclusion criteria prioritized peer-reviewed sources from the last 15 years. A rigorous thematic synthesis analysis was then conducted on the selected literature, clustering concepts related to student values, ethics, technical skills, innovation, and language pedagogy. This process resulted in the formulation of a preliminary five-dimensional framework developed by UNESCO (Ahmad et al., 2025): (1) Human-Centered Thinking, (2) AI Ethics, (3) AI Techniques and Applications, (4) Domain-Specific AI System Design, and (5) AI in Basic Arabic Language Learning.

C. Findings and Discussion

The results of this study culminate in a comprehensive Artificial Intelligence Competency Framework tailored specifically for the unique pedagogical needs of Islamic higher education. At the core of this framework is the integration of Human-Centered Thinking in the Arabic Classroom, ensuring that technological adoption amplifies, rather than diminishes, the communicative and cultural essence of Arabic pedagogy. This foundational approach is inextricably linked to AI Ethics for the Arabic Scholar, which addresses the critical need for students to navigate digital landscapes with moral integrity and academic rigor, guided by Islamic principles. By establishing these philosophical and ethical guardrails, the framework prepares students to engage with advanced technologies responsibly, preserving the nuance and sanctity required in religious and linguistic studies.

Building upon this ethical foundation, the framework delineates the practical dimensions of linguistic and technological enhancement. It explores specific AI Techniques and Applications for Language Mastery, demonstrating how sophisticated, generative tools can personalize learning and accelerate proficiency. Crucially, the framework operationalizes these techniques right from the foundational level, embedding AI in Basic Arabic Language Skills to create a seamless technological scaffolding for learners. Ultimately, these competencies converge to empower students in Designing AI Systems for Arabic and Islamic Studies, successfully transitioning them from passive consumers of educational technology to active innovators capable of developing culturally and religiously nuanced digital solutions.

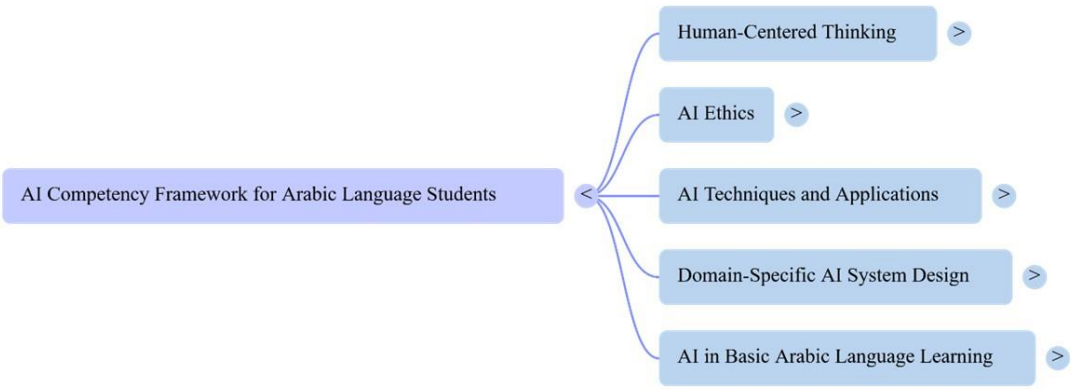

Figure 1. AI Competency Framework for Arabic Language Students

Human-Centered Thinking in the Arabic Classroom

The synthesis of literature reveals that "Human-Centered Thinking" is the foundational pillar for integrating AI into Arabic language studies at an Islamic university. This dimension insists that technology must serve the ultimate goals of a student's education: to gain a deeper, more meaningful connection with the language of the Qur'an and the Islamic intellectual tradition (Muslim, 2024). For an Arabic student, this means their primary question when encountering an AI tool shift from "How does this work?" to "How does this tool bring me closer to understanding the divine text and enriching my faith?" This perspective ensures that AI remains a wasilah (a means) to a higher end, fostering spiritual and intellectual growth rather than replacing the profound human journey of seeking knowledge (talab al-'ilm).

Furthermore, this dimension redefines the role of the human teacher (ustadh) in an AI-augmented classroom. The literature strongly suggests that an over-reliance on AI for language practice could erode the sacred student-teacher relationship (suhbah), which is central to the Islamic pedagogical tradition for transmitting not just knowledge, but also character and etiquette (adab) (Jabli, 2024). A human-centered framework, therefore, advocates for a synergistic model where AI handles repetitive tasks like vocabulary drills or providing instant feedback on tajwid (recitation) pronunciation. This frees the instructor to focus on what technology cannot: explaining the spiritual depths (lata'if) of a verse, facilitating nuanced discussions on fiqh (jurisprudence), and providing the moral and spiritual mentorship that is the hallmark of Islamic education.

This focus on human connection extends to fostering a sense of shared responsibility for the future of Arabic AI. Students, as future scholars and community leaders, must see themselves as stakeholders (Khilji, 2022). Our analysis indicates they should be empowered to advocate for AI systems that are built upon Islamic values of justice ('adl) and benefit (maslahah) (Mustapha, 2025). This could involve participating in beta testing for new Arabic NLP tools, providing feedback on cultural and theological inaccuracies, or even contributing to open-source projects that curate high-quality, tagged corpora of classical texts. In doing so, they help shape an AI ecosystem that respects and accurately represents their linguistic and religious heritage.

In conclusion, Human-Centered Thinking is the ethical and philosophical compass that guides the Arabic student's use of AI. It ensures that as they engage

with powerful new tools, they remain grounded in their identity as moral agents and custodians of a sacred tradition. By prioritizing values, criticality, and the irreplaceable human element, this dimension safeguards against the dehumanizing potential of technology and positions students to use AI as a powerful ally in their lifelong pursuit of knowledge and spiritual excellence.

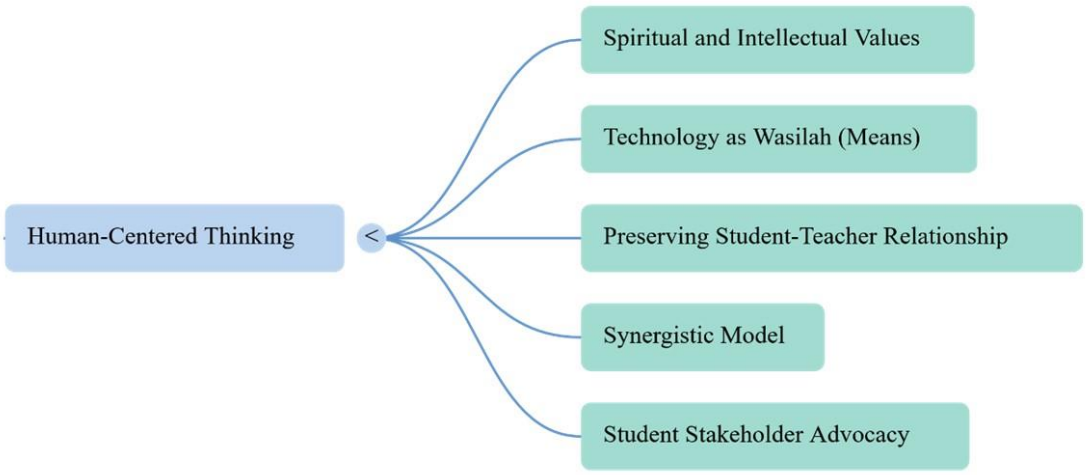

Figure 2. Human-Centered Thinking Framework

AI Ethics for the Arabic Scholar

Building upon a human-centered foundation, the literature converges on "AI Ethics" as an indispensable and practical dimension for the Arabic student. This moves beyond philosophy into the realm of applied principles, equipping students to navigate the complex moral dilemmas presented by AI in their specific field of study (Karakuş et al., 2025). For students engaging with texts that carry divine and legal weight, ethical lapses are not mere academic errors; they can have profound theological implications. This dimension provides them with the skills to identify and mitigate risks like algorithmic bias, data privacy violations, and the misrepresentation of sacred concepts, ensuring their use of AI aligns with the comprehensive ethical framework of Islam, the maqasid al-sharia.

A core theme from the review is the necessity of identifying and understanding algorithmic bias. An AI model trained primarily on Modern Standard Arabic news or social media will inevitably fail when applied to Arabic texts. The ethical scholar is therefore obligated to question, verify, and contextualize any AI-generated information (Tang et al., 2024). An ethically competent student must ask: Where is this data stored? Who has access to it? Is it being used to train other models without my consent? This concern is rooted in the Islamic principle of preserving honor and privacy. Furthermore, maintaining adab (respectful etiquette) even when interacting with an AI chatbot for language practice reinforces a habit of reverence and respect that is crucial when engaging with the language itself.

This dimension also requires students to be conversant with the evolving landscape of AI principles and regulations. While formal AI law is nascent, frameworks like the EU's Ethics Guidelines for Trustworthy AI exist (Nikolinakos, 2023). Ultimately, the AI Ethics dimension serves as the essential guardrail for all technological engagement in the Arabic classroom. It transforms students from naive users into informed and responsible digital scholars. By internalizing ethical

values, developing reflective skills, and understanding data privacy, they can confidently leverage AI's benefits while actively mitigating its risks. This ensures that their academic work remains a source of authentic knowledge and a reflection of their commitment to the ethical principles of their faith.

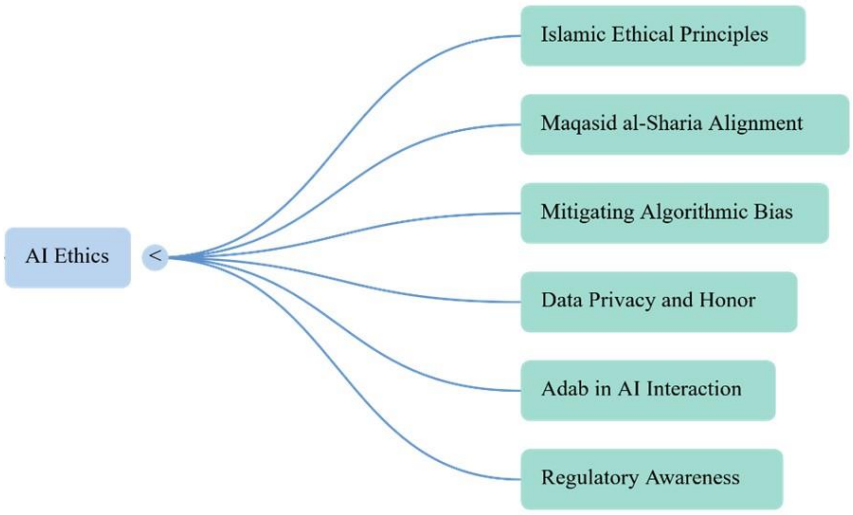

Figure 3. AI Ethics Framework

AI Techniques and Applications for Language Mastery

The literature review clearly identifies "AI Techniques and Applications" as the practical, hands-on dimension that translates theory into tangible skill for the Arabic language student. This dimension encompasses both a conceptual understanding of relevant AI and the operational ability to wield specific tools to perform authentic tasks (Chiu et al., 2024). For students at an Islamic university, this is not about becoming programmers, but about becoming AI-augmented Arabic expert. This competency enables them to use technology to accelerate their mastery of Arabic's complex grammar, expand their vocabulary exponentially, and engage with primary sources in ways that were once the exclusive domain of seasoned scholars.

A central component of this dimension is the conceptual knowledge of key AI techniques, most notably Natural Language Processing (NLP). Students should understand what NLP (Basili et al., 1996) is and how it applies to the unique challenges of Arabic, such as its non-concatenative morphology (root-and-pattern system) and rich case endings (i'rab). They should learn that an AI's ability to correctly parse a sentence depends on its training in these areas. For example, knowing that a machine translation model might struggle to differentiate the passive voice from an active verb with a similar form empowers the student to be more critical of its output and to manually verify the grammar.

Building on this conceptual base is the development of operational skills with concrete AI applications. The research points to a growing ecosystem of tools directly applicable to the Arabic curriculum (Delgoshaei et al., 2022). This includes using AI-powered root-based dictionaries for instant morphological analysis, speech recognition software that provides precise feedback on tajwid and pronunciation, and intelligent tutoring systems that generate personalized, infinite exercises on difficult grammatical concepts like the dual form or broken plurals. The application of these techniques must be linked to authentic, domain-specific tasks. Our

synthesis suggests the most effective learning occurs when AI is used to solve real problems.

In summary, the AI Techniques and Applications dimension provides the practical engine for the entire competency framework. It empowers students with the knowledge and skills to make AI an indispensable part of their learning toolkit (Martsenyuk et al., 2024). By mastering this dimension, they can overcome traditional hurdles in language acquisition, conduct more sophisticated textual analysis, and engage with the Islamic intellectual tradition in a dynamic, technology-augmented manner, all while remaining fully aware of the tools' capabilities and constraints.

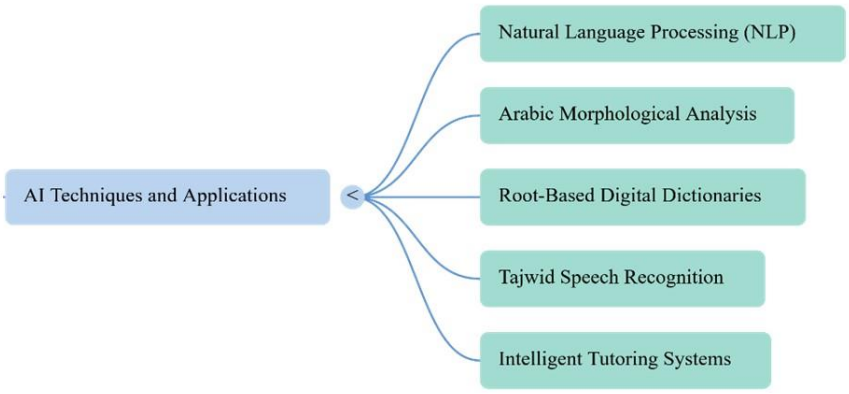

Figure 4. AI Techniques and Applications Framework

Designing AI Systems for Arabic and Islamic Studies

The most advanced dimension that emerged from our analysis is "Domain-Specific AI System Design." This competency elevates students from being users of AI to becoming informed critics and co-designers of future AI systems tailored to the unique needs of their field (Zeivots et al., 2025). While not all will become engineers, this dimension cultivates a mindset of innovation and problem-solving (Hu & Chan, 2025). It empowers them to articulate the requirements for ethical and effective AI tools, ensuring that the future of technology in Arabic and Islamic studies is shaped by subject-matter experts, not just technologists who may lack the necessary theological and linguistic depth.

A critical aspect of this dimension is the application of the design thinking process to authentic academic challenges. This process moves students from being passive consumers to active problem-solvers who can brainstorm and ideate potential AI-driven solutions, such as a visual tool that highlights and tags rhetorical devices in a given text (Ghafouri, 2025).

The skills of testing and optimization are particularly vital in this sensitive domain. Our research indicates that students must learn to evaluate an AI system's performance not just on technical accuracy, but on domain-specific criteria like theological soundness and contextual appropriateness (Aryadoust, 2023). In essence, the Domain-Specific AI System Design dimension represents the pinnacle of AI competency. It fosters a sense of ownership and agency, transforming students into stakeholders in the future of their field. By equipping them with design thinking and a conceptual understanding of the AI engineering process, this dimension ensures that the next generation of Islamic scholars will be capable of

guiding the development of AI tools that are not only technologically sophisticated but also theologically sound, culturally relevant, and ethically robust.

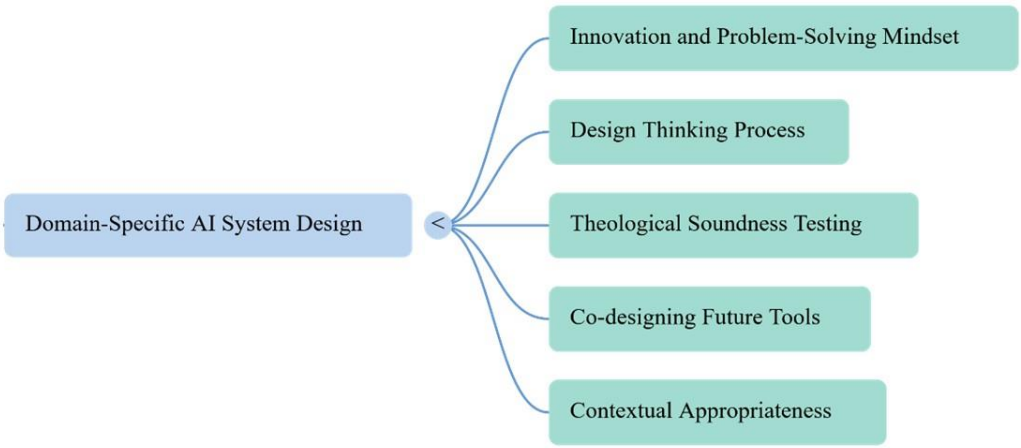

Figure 5. Domain-Specific AI System Design Framework

AI in Basic Arabic Language Skills

The final and most integrative dimension, "AI in Basic Arabic Language Learning," demonstrates the tangible application of the entire framework in the classroom. This is where theory meets practice, and the competencies are applied to the core elements of language acquisition (Glaesser, 2019). The literature overwhelmingly supports the idea that AI can be a powerful augmentative force, but its success depends on a thoughtful implementation that addresses the specific skills an Arabic student must master: listening, speaking, reading, and writing, underpinned by a solid grasp of grammar (nahw) and morphology (sarf).

A primary application of AI is in providing personalized, on-demand practice for the four core language skills. For listening, AI tools can transcribe Arabic lectures, allowing students to follow along at their own pace and check their comprehension (Abdellatif et al., 2024). For speaking, chatbots and speech recognition apps offer a private, non-judgmental space to practice pronunciation and basic conversation, providing instant feedback on phonemes that are often challenging for non-native speakers (Aljanadbah et al., 2025). In reading, AI-powered browsers and e-readers can provide instant pop-up definitions, root-word analysis, and grammatical parsing, turning any text into an interactive learning experience. For writing, emerging AI grammar checkers can help identify basic errors in sentence structure and verb conjugation (Wang & Zhong, 2022).

However, the effective integration of AI requires a blended approach that leverages the strengths of both human and artificial intelligence. The literature cautions against a purely AI-driven model (Sauer & Burggräf, 2025). The ideal scenario, synthesized from multiple sources, is one where AI handles the drill, practice, and information retrieval, while the human instructor focuses on what they do best: explaining the subtle nuances of meaning, facilitating rich discussions on context, and providing the spiritual and motivational mentorship that is central to Islamic education (Cukurova, 2025). This dimension brings the entire AI Competency Framework to life. By applying human-centered thinking, ethical considerations, and technical skills to the specific challenges of learning Arabic, students can achieve a more efficient, personalized, and profound educational

experience. AI becomes a powerful assistant in their journey, helping them build the foundational skills needed to eventually access the rich linguistic and theological treasures of Islam directly and independently. This final dimension ensures the framework is a practical, actionable guide for transforming Arabic language education for the AI era.

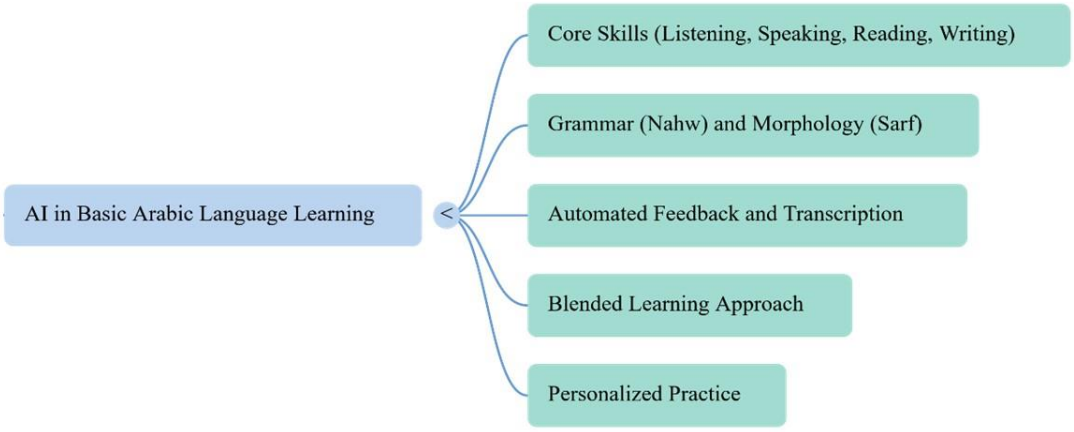

Figure 6. AI in Basic Arabic Language Learning Framework

The proposed Artificial Intelligence Competency Framework for Arabic Language Students offers a structured, multi-dimensional approach to integrating advanced technologies within Islamic higher education. By positioning Human-Centered Thinking and AI Ethics as the non-negotiable foundations, the framework ensures that technological adoption remains subservient to the spiritual and academic goals of talab al-'ilm (seeking knowledge). This ethical grounding is then operationalized through practical AI Techniques and applied directly to Basic Arabic Language Skills, transforming AI from a potential disrupter into a personalized, augmentative tool for mastering complex grammar, vocabulary, and phonetic nuances.

Furthermore, the framework moves beyond passive consumption by cultivating a forward-looking mindset through the Designing AI Systems dimension. This empowers the next generation of Arabic scholars to actively participate in the creation and refinement of NLP tools, ensuring that future technologies are culturally resonant, theologically sound, and free from algorithmic bias. Ultimately, this holistic synthesis demonstrates that when AI is implemented with intentionality and guided by Islamic pedagogical principles, it does not diminish the sacred teacher-student relationship (suhbah); rather, it elevates it, freeing human instructors to focus on the profound intellectual and spiritual mentorship that defines true Islamic scholarship.

D. Conclusion

This study has demonstrated the urgent need for a context-specific approach to AI competency in higher education, moving beyond one-size-fits-all models. For Arabic language students at Islamic universities, where language is intrinsically linked to faith and sacred texts, a generic framework is not only inadequate but potentially harmful. The proposed five-dimensional framework (Human-Centered Thinking, AI Ethics, AI Techniques and Applications, Domain-Specific AI System Design, and AI in Basic Arabic Language Learning) offers a comprehensive solution.

It uniquely integrates technical proficiency with a robust ethical and theological foundation, ensuring that AI serves as a tool for enhancing, not replacing, the profound humanistic and spiritual goals of Islamic education. The implications of this framework are significant, providing educators with a clear roadmap for integrating AI literacy and empowering students to become critical consumers and potential co-creators of AI technology. While this framework is theoretically grounded, future research should focus on its empirical implementation through case studies and the development of assessment tools. Ultimately, this research advocates for a future where technology and tradition are harmoniously integrated to produce scholars who are both technologically adept and spiritually anchored, ready to contribute meaningfully to their communities and the world.

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