Towards a Human-Centred Framework for Using Generative Artificial Intelligence in Teaching Arabic to Non-Native Speakers

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ABSTRACT:
Generative artificial intelligence (GenAI) is increasingly adopted in education and offers new opportunities for language learning. It can support personalized instruction, interactive communication, and immediate feedback. However, its effective use in language education remains challenging. This study aims to propose a human-centred framework for integrating GenAI for teaching Arabic to non-native speakers. The framework was developed through a review of literature on GenAI, human-centred Artificial Intelligence, language education, Arabic language pedagogy, linguistic justice, cultural studies, and artificial intelligence (AI) ethics. It consists of five dimensions: human agency, pedagogical alignment, linguistic justice, cultural sensitivity, and ethical governance. AI literacy is positioned as an enabling layer that supports the implementation of all dimensions. The framework integrates technological, pedagogical, linguistic, cultural, and ethical perspectives within a single model for Arabic language education. The framework may guide educators, curriculum developers, and institutions in adopting GenAI in a responsible, inclusive, and educationally meaningful way.

Keywords: generative AI; human-centred AI; Arabic language education; linguistic justice; cultural sensitivity; ethical governance.

1. Introduction

Generative artificial intelligence (GenAI) has become one of the most significant technological developments in contemporary education. The emergence of large language models such as ChatGPT has changed how educational content is created, accessed, and delivered (Lim et al., 2023). These technologies can generate human-like text, provide immediate feedback, and support personalized learning experiences (Mittal et al., 2024). Therefore, interest in the educational use of GenAI has grown among researchers, educators, and educational institutions worldwide (Giannakos et al., 2025). The increase in GenAI has created new opportunities for teaching and

learning. It enables learners to access explanations, receive individualized support, and engage in interactive learning activities beyond traditional classroom environments (Nzenwata et al., 2024). GenAI also assists teachers in preparing instructional materials, developing learning activities, and providing feedback more efficiently (Moustafa et al., 2026). These capabilities have encouraged many educators to explore the potential of Artificial Intelligence (AI) supported learning environments (Giannakos et al., 2025). Despite these benefits, the use of GenAI in education has raised several concerns. The quality and accuracy of GenAI content remain important issues because generated responses may contain misleading or incorrect information (L. Yan et al., 2024). Concerns have also been raised regarding algorithmic bias, privacy protection, academic integrity, and excessive dependence on AI systems (Vaccino-Salvadore, 2023). Furthermore, the rapid integration of AI technologies into education has generated questions about the appropriate role of teachers and learners in increasingly automated learning environments (Ryan, 2025).

Language education has appeared as one of the most active areas for the application of GenAI technologies. Recent studies have reported positive outcomes related to language practice, writing support, vocabulary development, and learner engagement (Griche and Bennis, 2026). Conversational AI systems provide learners with opportunities to practice language skills in flexible and interactive ways (Sharples, 2023). In addition, language learning involves social interaction, cultural understanding, and meaningful communication, which cannot be fully reduced to technological processes (Akinsemolu and Onyeaka, 2025). The integration of GenAI is more complex in teaching Arabic to non-native speakers. Arabic has distinctive linguistic characteristics, including diglossia, rich morphology, and the coexistence of standard Arabic with numerous regional dialects (Al-Omari, 2016). In addition, Arabic is closely connected to cultural, historical, and religious traditions, making language learning inseparable from cultural understanding (Taha-Thomure, 2008). These characteristics pose pedagogical challenges distinct from those associated with many other languages (Almelhes, 2024). Current studies have suggested that GenAI can support Arabic language learning by providing language practice opportunities, personalized feedback, and increased access to learning resources (Moustafa et al., 2026). However, concerns remain regarding the representation of Arabic language varieties, the cultural appropriateness of GenAI content, and the preservation of meaningful human involvement in the learning process (Abdelrehim et al., 2026). The growing use of GenAI therefore requires approaches that address not only technological effectiveness but also linguistic, cultural, pedagogical, and ethical considerations.

Several studies have examined GenAI in education, language learning, AI ethics, and Arabic language teaching. However, these areas are often discussed separately. Research on GenAI frequently focuses on technological capabilities and learning outcomes (Giannakos et al., 2025). Studies on AI ethics mainly address issues such as fairness, transparency, accountability, and responsible use (Yan and Liu, 2025). Meanwhile, research on Arabic language education primarily concentrates on linguistic and pedagogical challenges (Hanandeh et al., 2024). Therefore, an integrated framework that brings together human-centred AI principles, language education, Arabic language pedagogy, and ethical considerations within a conceptual framework is still lacking. This study proposes a human-centred framework for integrating GenAI for teaching Arabic to non-native speakers. The framework aims to support the responsible integration of GenAI by emphasizing human agency, pedagogical alignment, linguistic justice, cultural sensitivity, and ethical governance. It also recognizes AI literacy as an enabling layer that supports the effective and responsible use of AI by both teachers and learners. The proposed framework may provide useful guidance for educators, curriculum developers, and educational institutions seeking to integrate GenAI in ways that are educationally meaningful and socially responsible.

2. Literature review

This section reviews and organizes relevant literature into four subsections. First, it explores the growing role of GenAI in language education and highlights both its opportunities and challenges. Second, it discusses human-centred AI in education, with attention to human agency, human oversight, ethical responsibility, and AI literacy. Third, it examines the distinctive characteristics of teaching Arabic to non-native speakers, with attention to linguistic, cultural, and pedagogical considerations. Then, it identifies key gaps in the existing literature that justify the need for a human-centred framework for integrating GenAI into teaching Arabic language for non-native speakers.

2.1 Generative AI and language education

The rapid development of GenAI has attracted much attention in language education. Many researchers see GenAI as a promising tool to support language learning through personalized instruction, immediate feedback, and interactive learning experiences. According to Mittal et al. (2024), GenAI technologies can revolutionize educational practices by providing adaptive learning support tailored to individual learner needs. Also, Jauhiainen and Garagorry Guerra (2024) argued that AI-driven personalization can help to create more flexible learning environments and improve learner engagement. Giannakos et al. (2025) suggested that AI tools can support autonomous learning by providing continuous assistance outside the classroom. Despite these positive findings, the effectiveness of personalized learning remains a subject of discussion. Previous studies have shown that GenAI can personalize learning materials and feedback for individual learners, but little evidence exists on its long-term effects on learning outcomes. Ryan (2025) stated that over-reliance on automated support may reduce opportunities for critical thinking and independent learning. This means that personalization in and of itself is not sufficient evidence of educational effectiveness. Instead, the educational value of AI is a function of how these tools are embedded into larger teaching and learning processes.

Another area that has received significant attention is the use of conversational AI for language practice. Sharples (2023) described GenAI as a potential social learning partner that may enable meaningful interaction between learners and AI systems. Likewise, Griche and Bennis (2026) found that conversational AI can provide learners with opportunities to practice language skills in a low-anxiety environment, which may improve confidence and participation. Also, Akinsemolu and Onyeaka (2025) noted that AI-powered dialogue systems can improve communication skills by offering immediate responses and continuous interaction. However, not all researchers share the same level of optimism regarding conversational AI. L. Yan et al. (2024) raised concerns about the reliability of GenAI responses, noting that large language models may generate inaccurate or fabricated information. These limitations are especially problematic in language education, where learners may not always have sufficient knowledge to identify incorrect explanations or language examples. So, one should consider the potential risks of conversational AI along with its benefits.

Ethical concerns are another important theme in literature. Several studies have highlighted issues with algorithmic bias, privacy protection, transparency, and academic integrity. Vaccino-Salvadore (2023) stated that the extensive use of ChatGPT in language learning brings up important ethical issues regarding authorship, originality, and responsible use. In addition, Mohamed (2024) noted that AI systems can replicate existing social and linguistic biases found in the training data. Also, Yan and Liu (2025) emphasized that ethical governance should be considered as a basic prerequisite, rather than an optional consideration, for educational AI applications. While researchers broadly agree that GenAI has the potential to provide opportunities, there is less agreement about how far these technologies should influence educational practice. Some studies

focus on technological capability and learning efficiency (Giannakos et al., 2025; Mittal et al., 2024), while others highlight the significance of human monitoring, ethical accountability, and pedagogical aspects (Holmes and Miao, 2023; Ryan, 2025). This difference is a reflection of a larger debate about the role of AI in education. The question is no longer whether GenAI can support learning but how it should be integrated in ways that preserve meaningful human participation and educational values.

2.2 Human-centred AI in education

Human-centred artificial intelligence (HCAI) refers to an approach in which AI systems are designed and used to support human capabilities, values, and decision-making. In education, this approach means that AI should assist teachers and learners rather than replace their roles. Holmes and Miao (2023) emphasized that AI in education should protect human dignity, learner autonomy, and meaningful human participation. Similarly, Guest (2026) argued that HCAI requires educational technologies to remain aligned with human needs and social values. This perspective is important because GenAI can produce explanations, feedback, and learning materials with limited human input. Although these functions may improve efficiency, they may also reduce the active role of teachers and learners if AI is used without clear educational guidance. Therefore, HCAI does not reject technology. Instead, it asks how technology can strengthen human learning, judgment, creativity, and interaction.

Human agency is one of the main principles of HCAI in education. Teachers should remain responsible for instructional decisions, learning design, assessment, and the evaluation of GenAI content. Learners should also remain active participants who question, interpret, and evaluate AI responses rather than accepting them without reflection. Schmager et al. (2025) noted that responsible AI systems should support human oversight and accountability. This is particularly important in education because learning is not limited to receiving correct answers. It also includes critical thinking, reflection, problem-solving, and communication. AI systems may provide useful support, but they cannot fully understand learner emotions, classroom relationships, educational goals, or the social context of learning. For this reason, HCAI requires teachers to guide AI-supported activities and help learners use AI in meaningful and responsible ways.

HCAI includes ethical responsibility, fairness, transparency, and AI literacy. Educational institutions need to consider how AI systems collect data, generate content, and influence learner behaviour. Yan and Liu (2025) argued that ethical governance is necessary to ensure that AI remains accountable and aligned with educational values. AI literacy is also important because teachers and learners need to understand the strengths and limitations of AI systems. They should be able to identify inaccurate information, recognize possible bias, and use AI tools responsibly. Chiu and Rospigliosi (2026) suggested that AI literacy includes technical understanding, critical evaluation, and ethical awareness. These principles become especially important in language education, where GenAI content may influence how learners understand language, culture, identity, and communication. Therefore, a human-centred approach provides an important theoretical foundation for examining the use of GenAI in teaching Arabic to non-native speakers.

2.3 Teaching Arabic to non-native speakers

Teaching Arabic to non-native speakers is a special educational situation. Unlike widely taught languages such as English, Arabic has unique linguistic, cultural, and sociolinguistic features that pose further challenges to teachers and learners. Therefore, educational strategies that work in other languages may not be directly applicable to the Arabic language (Taha-Thomure, 2008). One of the most widely recognized challenges in Arabic is diglossia. Arabic speakers commonly use Standard Arabic in formal contexts while depending on regional dialects for daily communication. This linguistic situation is problematic for non-native learners, who need to switch between different forms of

the language during the learning process (Al-Omari, 2016). While Modern Standard Arabic is often the dominant language of instruction, learners are often exposed to dialectal differences outside the classroom, leading to a gap between formal learning and authentic language use (Hamid, 2025). Another difficulty is the structural complexity. Arabic morphology is characterized by a root-and-pattern system that differs significantly from other languages. Learning a language involves learning complex rules of grammar, word formation, and extensive vocabulary networks. These linguistic features tend to raise the cognitive load on learners, especially in the initial stages of language acquisition (Almelhes, 2024). Also, these features indicate that teaching the Arabic language should use teaching methods that take into account the proficiency level of learners, their learning goals, and the different varieties of Arabic used in real communication.

Studies pointed out that learning Arabic is not just a matter of acquiring linguistic knowledge. Arabic is closely tied to cultural traditions, historical heritage, and social values. Taha-Thomure (2008) argued that proficiency in the Arabic language is tied to an understanding of the cultural contexts in which the language is used. Similarly, Al-Omari (2016) reported the inseparability of the relationship between language and culture in Arabic language education. This means that effective instruction should not only address grammar and vocabulary but also develop the learners' intercultural understanding and cultural awareness. The importance of cultural understanding is even more apparent in modern educational settings. According to Hamid (2025), Arabic learning often occurs outside formal education, through social interactions, digital communication, and exposure to cultural content. As such, the learning of language is often linked to the formation of identity and interculturality. This is a departure from traditional approaches, which see language acquisition mainly as a linguistic process.

Several studies explored the contribution of emerging technologies in Arabic language education. Ahmed (2010) suggested that educational technologies can improve learner engagement and provide additional learning opportunities. Moustafa et al. (2026) argued that GenAI technologies may support Arabic language learning through personalized feedback, interactive language practice, and increased access to educational resources. However, the integration of GenAI into Arabic language education also introduces new concerns. Abdelrehim et al. (2026) warned that GenAI content may not always reflect the linguistic and cultural diversity of Arabic-speaking communities. The dominance of certain language varieties within training datasets may contribute to unequal representation of dialects and cultural perspectives. Similar concerns have been raised regarding the cultural appropriateness and contextual accuracy of GenAI educational content (Moustafa et al., 2026). These issues suggest that technological effectiveness alone cannot guarantee meaningful learning outcomes in Arabic language education. Therefore, such considerations become particularly important when examining the suitability of existing GenAI frameworks for teaching Arabic to non-native speakers.

The reviewed literature showed that GenAI can facilitate language learning with personalized feedback, writing support, conversational practice, and access to learning resources. Research on HCAI has also focused on human agency, ethical responsibility, fairness, transparency, and AI literacy. In addition, studies on teaching Arabic to Non-Native Speakers have focused on linguistic diversity, diglossia, cultural awareness, and pedagogical issues. But these areas tend to be discussed separately. GenAI studies typically focus on general learning benefits and technical capabilities, whereas human-centred AI studies offer general principles that are not necessarily tailored to language education. On the other hand, research on Arabic language education emphasizes linguistic and cultural issues and does not address the increasing role of GenAI. Thus, there is still a

lack of an integrated framework that links GenAI, HCAI, and the specific needs of teaching Arabic to non-native speakers.

3. Human-centred framework for integrating generative AI in teaching Arabic to non-native speakers

The proposed framework is based on the idea that AI should support teachers and learners rather than replace their roles. Human-centred AI emphasizes the importance of human agency, human oversight, and meaningful human participation in AI-supported environments (Guest, 2026; Holmes and Miao, 2023). The framework combines insights from GenAI in education, HCAI, Arabic language pedagogy, linguistic justice, cultural studies, and AI ethics. It does not treat AI as an independent solution for educational problems. Instead, it views AI as a tool that is used based on learner needs, teaching objectives, linguistic contexts, and ethical principles (Schmager et al., 2025; Yan and Liu, 2025). This approach is important because the value of GenAI depends not only on what technology can produce, but also on how teachers and learners use, evaluate, and control its outputs. The framework consists of five dimensions: human agency, pedagogical alignment, linguistic justice, cultural sensitivity, and ethical governance, as illustrated in Figure 1. These dimensions were selected because they address the main requirements identified in the reviewed literature. Human agency and pedagogical alignment reflect the human and educational foundations of AI integration (Holmes and Miao, 2023; Su and Yang, 2023). Linguistic justice and cultural sensitivity respond to the specific linguistic and cultural characteristics of Arabic language education, including language varieties, social meaning, and cultural representation (Al-Omari, 2016; Fernandes and McIntyre, 2025; Taha-Thomure, 2008). Ethical governance addresses concerns related to fairness, privacy, transparency, accountability, and responsible use (Vaccino-Salvadore, 2023; Yan and Liu, 2025). Together, these dimensions provide a balanced perspective that connects technological opportunities with educational, linguistic, cultural, and ethical responsibilities.

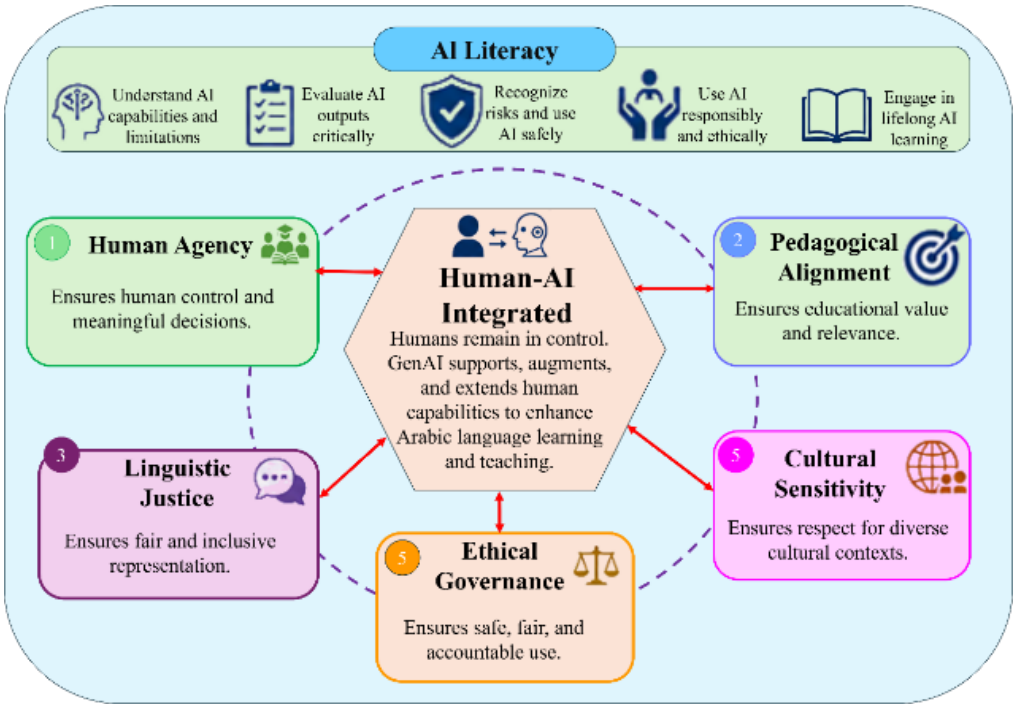

Figure 1. Proposed human-centered framework for integrating GenAI in teaching Arabic to non-native speakers

The framework dimensions work together to support the human-centred integration of GenAI into teaching Arabic to non-native speakers. The framework does not suggest that these dimensions should be applied separately. They are closely connected. For example, pedagogical alignment requires teachers to maintain agency when selecting AI-supported activities and evaluating GenAI outputs (Schmager et al., 2025; Su and Yang, 2023). Linguistic justice and cultural sensitivity are also linked because language varieties often reflect cultural identity, social context, and communication practices (Fernandes & McIntyre, 2025; Hamid, 2025). Ethical governance supports all dimensions by ensuring that AI use remains transparent, fair, and accountable (Holmes and Miao, 2023; Yan and Liu, 2025). In addition, AI literacy is the enabling layer around the framework. It supports the implementation of all five dimensions. Teachers and learners need sufficient AI literacy to understand the capabilities and limitations of AI systems. Also, they need to evaluate GenAI content, detect misinformation, discern possible bias, and use AI tools responsibly (Chiu and Rospigliosi, 2026; Holmes and Miao, 2023). Without AI literacy, it will be difficult for teachers to create relevant AI-supported activities, and learners may depend on AI responses without critical evaluation. AI literacy enables the transfer of the framework from the conceptual model to practical use in education.

The framework leads to responsible, inclusive, and effective Arabic language learning. It is intended to support learning environments where GenAI augments educational practice without compromising the role of teachers, learners, language diversity, or cultural understanding. Also, it can help educators, curriculum developers, and educational institutions to select, design, or evaluate AI-supported learning activities. The following sections discuss each dimension of the framework and its relevance to teaching Arabic to non-native speakers.

3.1 Human agency

Human agency refers to teachers' and learners' active roles in making decisions in the use of GenAI. It is not enough for AI tools to provide explanations, provide feedback, or provide learning materials. Teachers and learners need to decide when these tools are appropriate, how the output should be used, and whether the output supports the intended learning outcomes. This is especially important in language learning, where learning consists of interpretation, communication, reflection, and active participation (Ryan, 2025; Schmager et al., 2025). For teachers, human agency involves maintaining control over instructional design and classroom practice. Teachers should select AI-supported activities based on the needs of learners, their proficiency levels, and the objectives of the course. They should also evaluate GenAI explanations, examples, and feedback before using them in teaching. This role is even more critical in Arabic language education, as the GenAI content may not always reflect the appropriate language varieties, authentic expressions, and cultural meanings. Teachers may have to clarify the difference between Standard Arabic and the regional dialects, clarify the social meaning of expressions, and correct inaccurate or inappropriate AI outputs (Al-Omari, 2016; Taha-Thomure, 2008). For learners, human agency means using GenAI as a tool to support learning, not as a source of pre-packaged answers. Learners should interrogate AI responses, validate against alternative sources, and use knowledge in authentic language tasks. They should also know that the AI's feedback might be incomplete or wrong. This is important as over-reliance on AI could diminish learner effort, critical thinking, and autonomous problem-solving (Ryan, 2025). In Arabic learning, learners should be encouraged to use AI for practice and exploration, but they should still develop their own ability to communicate, interpret meaning, and make language choices.

3.2 Pedagogical alignment

Pedagogical alignment refers to the degree to which GenAI is employed in ways that align with stated learning objectives, appropriate teaching strategies, and the needs of learners. The use of AI should not be justified solely by its availability

and technical capabilities. Instead, teachers should first determine what learners need to achieve and then decide if AI can help meet that objective. Su and Yang (2023) argue that the choice of AI-supported activities should be based on the purposes of education. Similarly, Noroozi et al. (2024) suggested that the value of AI in education should be evaluated based on its contribution to learning rather than its technical sophistication. In language education, pedagogical alignment is important because learners need to develop more than grammatical knowledge. They need to enhance their vocabulary, reading, writing, listening, speaking, and communication skills. GenAI can help in these areas by generating practice tasks, explaining grammar rules, giving feedback on writing, and creating conversation activities. However, these activities are useful only when they are connected to a clear learning purpose. For example, a GenAI writing task should match the learner's proficiency level and the intended writing skill. A conversational activity should fulfill a particular communication purpose, not merely provide an opportunity for learners to talk to an AI system. Learners may use AI frequently but make little progress without this alignment.

Pedagogic alignment is especially important in teaching Arabic to non-native speakers. Learners of Arabic may have different aims. Others may need Arabic for travel, work, religious purposes, day-to-day communication, academic study, or other reasons. They may also require different degrees of exposure to Modern Standard Arabic and regional dialects. Thus, the AI-supported activities must be designed based on the learner profile, the course outcomes, and the linguistic variety being taught. Teachers should consider whether an activity is designed to use formal Arabic, a particular dialect, vocabulary learning, grammar practice, or cultural communication. This makes sure that AI does not produce irrelevant, too difficult, or inappropriate content for the learning context (Al-Omari, 2016; Almelhes, 2024). Also, Teachers must evaluate the quality of GenAI materials for pedagogical alignment. AI can generate exercises, explanations, and examples quickly, but those materials aren't always accurate or appropriate for a given lesson. Teachers should read through and modify as appropriate. They should also consider whether the use of AI supports active learning, reflection, and communication. GenAI shouldn't just be a way for learners to get answers, but also to practice and use Arabic. AI activities, when aligned to explicit educational goals, can enhance learning without diminishing the role of teachers or the importance of structured instruction.

Pedagogical alignment ensures that GenAI is applied for educational purposes, not technological novelty. It links AI usage with learner needs, course goals, and suitable pedagogical methods. This dimension makes sure that the integration of GenAI in Arabic language education is purposeful, relevant, and conducive to meaningful learning.

3.3 Linguistic justice

Linguistic justice refers to the fair representation of languages and language varieties in educational and technological systems. In the context of GenAI, this issue is important because large language models are trained on data that may not represent all languages equally. Some languages have large amounts of digital data, while others have limited resources. Even within the same language, standard forms may receive more attention than regional varieties. Fernandes and McIntyre (2025) argued that unequal language representation in AI systems may affect the quality, accuracy, and usefulness of generated content. Therefore, AI systems should not be treated as neutral tools. Their output may reflect the language priorities and limitations of the data used to train them. Linguistic justice is particularly relevant to Arabic because Arabic includes Standard Arabic and many regional dialects. Standard Arabic is widely used in formal writing, education, and official communication. However, dialects are used in daily conversations, media, online communication, and local social settings. AI systems may produce content that focuses mainly on Standard Arabic or may generate dialectal forms that are inaccurate, mixed, or unsuitable for the intended context. This can create difficulties for learners who need

to understand how Arabic is used in real communication. Studies on Arabic language technologies have noted that the performance of AI systems can vary across Arabic varieties because of differences in available data and language representation (Abdelrehim et al., 2026; Moustafa et al., 2026).

In Arabic language education, linguistic justice does not mean that every dialect should be taught in the same way or at the same level. Instead, it means that learners should receive a balanced and realistic understanding of the Arabic language diversity. Teachers may choose Standard Arabic as the focus of a course, especially in academic or formal learning contexts. However, learners should also be aware that Arabic is used differently across regions and social situations. AI-supported materials should make this distinction clear. For example, an AI tool should not present a dialectal expression as if it were universally used across all Arabic-speaking countries. It should also avoid treating one language variety as more correct or valuable than others without explanation. Also, linguistic justice requires teachers to evaluate GenAI language content carefully. They should check whether vocabulary, grammar explanations, examples, and dialogues reflect the language variety being taught. They should also help learners understand the difference between formal Arabic and regional language use. This is important because learners may rely on GenAI content without knowing whether it represents Modern Standard Arabic, a dialect, or an inaccurate mixture of both. Teachers can use AI as a tool for comparing language varieties, discussing differences, and developing learners' awareness of Arabic diversity. However, such use requires clear pedagogical guidance and careful review of AI outputs. Linguistic justice supports inclusive and context-sensitive AI integration in Arabic language education. It encourages educators and institutions to consider whose language is represented, which varieties are included, and how GenAI content may influence learners' understanding of Arabic. By addressing these issues, the framework helps ensure that GenAI supports linguistic diversity rather than reproducing existing inequalities or oversimplified views of the Arabic language.

3.4 Cultural sensitivity

Cultural sensitivity refers to the ability to recognize, respect, and respond appropriately to the cultural values, social practices, and communication norms of different communities. In language education, culture is closely connected to language use. Learners do not only learn grammar and vocabulary. They learn how meaning changes according to social relationships, context, politeness, identity, and cultural expectations. Durocher (2007) explained that cultural sensitivity supports effective communication because it helps learners understand perspectives that may differ from their own. Therefore, AI-supported language learning should consider cultural context, not only linguistic accuracy. This issue is particularly important in Arabic language education. Arabic is used across many countries and communities, each with its own cultural traditions, social norms, and communication practices. A phrase, gesture, topic, or form of address may be appropriate in one context but unsuitable in another. Learners may also encounter cultural references related to family, hospitality, religion, literature, history, and everyday social interaction. These references can influence how language is understood and used. Taha-Thomure (2008) emphasized that Arabic language learning should include cultural understanding because linguistic knowledge alone is not enough for meaningful communication. Similarly, Al-Omari (2016) noted that learners need cultural awareness to use Arabic appropriately in different social situations.

GenAI can provide learners with examples, dialogues, stories, and explanations related to Arabic culture. It can also support intercultural learning by helping learners compare communication styles and cultural practices. However, GenAI content may simplify cultural contexts or present them as fixed and uniform. It may also reproduce stereotypes or provide examples that are inaccurate, outdated, or culturally inappropriate. Abdelrehim et al. (2026) warned that GenAI Arabic content may not

always reflect the diversity of Arabic-speaking communities. For this reason, teachers should review GenAI materials before using them in class. Also, they should encourage learners to question cultural examples and compare them with reliable sources, authentic texts, and real communication experiences. Cultural sensitivity requires more than avoiding offensive content. It involves presenting Arabic-speaking communities as diverse, dynamic, and socially complex. Teachers can use GenAI to introduce cultural topics, but they should provide explanations and context. For example, a GenAI dialogue about greetings, family relations, or religious occasions should be discussed in relation to the country, social setting, and language variety involved. This helps learners understand that cultural practices may differ across Arabic-speaking communities. It also prevents learners from developing simplified or stereotypical views of Arabic culture.

Cultural sensitivity supports the responsible use of GenAI by ensuring that content is culturally appropriate, respectful, and contextually meaningful. It helps educators evaluate whether AI tools support intercultural understanding or create misunderstandings. By including this dimension, the framework recognizes that effective Arabic language learning requires attention to both language and culture.

3.5 Ethical governance

Ethical governance refers to the principles, policies, and practices that guide the responsible use of generative AI in educational settings. It is concerned with how AI tools are selected, used, monitored, and evaluated. In language education, ethical governance is important because GenAI can influence learning materials, feedback, assessment, and learner behaviour. Holmes and Miao (2023) emphasized that educational AI should be guided by transparency, accountability, fairness, privacy protection, and respect for human rights. Similarly, Yan and Liu (2025) argued that ethical governance is necessary to ensure that AI systems remain aligned with educational values and social responsibility.

Transparency is one important part of ethical governance. Teachers and learners should know when content, feedback, or learning activities are generated by AI. They should also understand that AI outputs may contain errors, bias, or incomplete information. This is especially important when learners use AI for writing, translation, grammar explanations, or language practice. If learners assume that GenAI responses are always correct, they may develop inaccurate language knowledge or depend on AI without critical evaluation. Therefore, educational institutions should provide clear guidance on the appropriate use of AI tools and encourage teachers and learners to evaluate GenAI content carefully (Vaccino-Salvadore, 2023; Yan and Liu, 2025).

Privacy and data protection are also important concerns. Many AI tools collect user information, prompts, written texts, and interaction data. In language education, this may include learner writing, personal experiences, or classroom discussions. Educational institutions should consider what data are collected, where they are stored, and how they may be used. Learners should be informed about possible privacy risks before using AI tools. Teachers should also avoid sharing sensitive learner information through public AI platforms. These practices help protect learner rights and support responsible AI use (Holmes and Miao, 2023; Yan et al., 2024).

Ethical governance also includes fairness and academic integrity. AI systems may reproduce linguistic, cultural, or social biases that appear in their training data. In Arabic language education, biased content may affect how learners understand Arabic-speaking communities, language varieties, or cultural practices. Teachers should therefore review GenAI content and correct inaccurate or unfair representations. Academic integrity is another concern because GenAI can generate essays, translations, and written assignments. Educational institutions need clear policies that explain acceptable and unacceptable uses of AI. These policies should support learning rather than only focus on punishment. They should help learners

understand authorship, responsible assistance, and the importance of completing their own work (Mohamed, 2024; Vaccino-Salvadore, 2023).

Ethical governance provides the conditions that support responsible and trustworthy AI integration. It connects the other dimensions by ensuring that AI use remains transparent, fair, safe, and accountable. It also helps teachers and institutions develop clear procedures for selecting AI tools, protecting learner data, reviewing GenAI content, and addressing academic integrity. Through ethical governance, GenAI can be used as a supportive educational tool while reducing risks that may harm learners, teachers, or Arabic language education.

4. Contributions and implications of the framework

The proposed framework brings together GenAI, HCAI, and Arabic language education in one context-specific model. It shows that GenAI integration should not focus only on technical benefits, such as feedback and personalization. Also, it should consider human agency, educational goals, linguistic diversity, cultural context, and ethical responsibility. The main contribution of the framework is the inclusion of Linguistic Justice and Cultural Sensitivity. These dimensions are important because Arabic includes Standard Arabic and many regional dialects. In addition, Arabic learning is closely connected to diverse cultural and social contexts. Therefore, GenAI content should be linguistically inclusive and culturally appropriate. The framework may guide teachers, curriculum developers, and educational institutions when selecting AI tools, designing learning activities, and developing responsible AI policies. It may also support future research that examines and validates the five dimensions in real Arabic language learning settings.

5. Limitations and future research

This study proposes a conceptual framework and does not test it in real Arabic language classrooms. Therefore, the framework should be considered a starting point rather than a final model. Its five dimensions need to be examined through empirical studies involving teachers, learners, and educational institutions. The framework was developed for teaching Arabic to non-native speakers. Some of its principles may be useful in other language-learning contexts. Future studies may examine how teachers and learners use GenAI in Arabic language learning. They may also develop tools to measure human agency, pedagogical alignment, linguistic justice, cultural sensitivity, and ethical governance. Such studies can help validate and improve the framework.

6. Conclusion

GenAI offers important opportunities for Arabic language education, including personalized support, language practice, and immediate feedback. However, its use should not be based only on technical capability or efficiency. Teaching Arabic to non-native speakers involves linguistic diversity, cultural understanding, pedagogical needs, and ethical responsibility. This study proposed a human-centred framework for integrating GenAI in teaching Arabic to non-native speakers. The framework includes five dimensions: human agency, pedagogical alignment, linguistic justice, cultural sensitivity, and ethical governance. AI literacy is included as an enabling layer that supports the responsible use of AI by teachers and learners. The framework highlights that effective GenAI integration should preserve the role of teachers and learners, respect Arabic language varieties, and support culturally appropriate learning. It may guide educators, curriculum developers, and institutions in using GenAI in a responsible, inclusive, and educationally meaningful way. Future research should test and refine the framework in real Arabic language learning contexts.

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Conflict of interests

The authors declare no conflict of interest.

Author Contributions

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