



Exploring the Opportunities of Implementing Artificial Intelligence (AI) Technology for Teaching Arabic to Non-Native Speakers: A Theoretical Approach

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Abstract

Language is a tool through which humans exchange their ideas and thoughts among themselves. It helps humans express their feelings and needs. Because of the global pervasion of Islam, the Arabic language unites Arabs and non-Arab Muslims under one religion. In Islamic perception, the Arabic language holds vital importance in Muslims' lives. Thus, Muslims consider learning and teaching Arabic in their day-to-day lives. Learning Arabic presents several challenges due to its complex grammar, diverse dialects, unfamiliar script, and significant differences from many other languages in terms of structure and vocabulary. These difficulties can make learning the language a demanding task for learners. This research aims to explore the importance of learning and teaching the Arabic language in the contemporary world, examine theoretical frameworks for incorporating AI in teaching Arabic to non-native speakers, and evaluate existing AI tools for it. The methodology adopted is qualitative. Primary and secondary data were collected. This research concludes that Arabic, as a language, is deeply intertwined with Islamic religious and cultural heritage, while also serving as a vital means of global communication. Teaching Arabic to non-native speakers poses unique challenges, but the implementation of AI technology offers promising solutions. AI enables personalized learning experiences, instant feedback, and diverse learning tools, ranging from text generation to virtual reality, enhancing language acquisition. By combining AI with traditional teaching methods, educators can address these challenges and maximize learning outcomes, ultimately shaping the future of Arabic language teaching to be more accessible, effective, and engaging worldwide.

Keywords: Opportunities, Artificial Intelligence (AI), Teaching, Arabic Language, Non-native Speaker

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Introduction

In today's world, globalization emerges as the central challenge, surpassing differences of nationality, ethnicity, and language. Its universal influence spans across borders, deeply ingraining itself in societies worldwide. Globalization, characterized by interconnected economies, cultures, and technologies, shapes human interactions profoundly. Despite diverse identities, individuals are intertwined by globalization's currents, whether through trade, ideas, or migration. While it offers opportunities for collaboration, globalization also presents complex issues like economic inequality and cultural homogenization. Consequently, navigating globalization's multifaceted implications has become essential for individuals, societies, and nations in the modern world. "Globalization initially emerged as the term dedicated to the discipline of economics. But now globalization covers all aspects of human life such as language, culture, polity, media, entertainment, education or lifestyle. Globalization is the word used to describe the growing interdependence of the world's economies, cultures, and populations, brought about by cross-border trade in goods and services, technology, and flows of investment, people, and information. It has created immense opportunities for trade, research, and development. It interconnects people in all domains of contemporary life around the world." (Kumar et al., 2019).

To effectively confront the challenges of globalization, individuals need to acquire proficiency in languages beyond their native tongue. By doing so, they can enhance communication and understanding across cultural and linguistic barriers, facilitating collaboration and cooperation in a globalized world. Learning additional languages not only opens up opportunities for personal and professional growth but also promotes empathy, cultural diversity, and intercultural competence. In essence, multilingualism is a vital tool for navigating the complexities of modern society and building bridges across diverse communities.

The growing interest in learning Arabic is driven by its status as a global language with profound influences across various domains. Particularly, Muslims are motivated to learn Arabic due to its significance as the language of their religion, Islam. The foundational texts and religious sources of Islam are available in Arabic, making proficiency in the language essential for understanding and practicing their faith (Saritoprak & Abu-Raiya, 2023). Consequently, individuals, especially Muslims, recognize the importance of learning Arabic not only for religious reasons but also for its broader impact on diverse aspects of life, reflecting its status as a language of global significance.

Statement of Research Problem

Learning Arabic presents several challenges due to its complex grammar, diverse dialects, unfamiliar script, and significant differences from many other languages in terms of structure and vocabulary. These problems can make understanding the language a difficult task for learners. (Latifah et al., 2023), confirm this through their study and state that "there are three forms of challenges faced by students, namely the first is an internal language challenge, where the characteristics of the Arabic language have complex formulas in every sentence that is composed. Second, the challenge comes from individual students. And third, the challenges from the

environment around students where they learn Arabic.” (Hastang & R., 2023); (Shafie et al., 2019), This diversification varies according to the authors. However, this confirms the availability of challenges in learning Arabic.

Contemporary studies prove that AI has a potential contribution to addressing the challenges in learning a language and enhancing its experiences. (Darwin et al., 2024); (Wei, 2023); (Grassini, 2023), says that “within language learning, AI offers a wealth of tools and technologies to enrich the educational experience. Machine translation, speech technology, chatbots, virtual assistants, and AI-generated content enhance language learning through personalized, interactive, and flexible solutions. These tools empower language learners with personalized guidance, interactive engagement, progress tracking, and accessible learning experiences. However, it is crucial to address the challenges and potential drawbacks, including reduced human interaction, risks to student autonomy, contextual understanding issues, and potential impacts on the role of language teachers. Balancing AI's advantages with the irreplaceable value of human interaction is critical to optimizing language education (Yu, 2024); (Ghamrawi et al., 2023), This also may be applied to Arabic.

Research Objectives

This study is formulated with the following objectives:

1. To explore the importance of learning and teaching the Arabic language in the contemporary world.
2. To examine theoretical frameworks for incorporating AI in teaching Arabic to non-native speakers.
3. To evaluate existing AI tools for teaching Arabic to non-native speakers

Methodology

The nature of this research requires the researcher to use descriptive and analytical methods to complete this study and reach the required results. To meet the objectives of the study, primary and secondary data were used. Generally, the research is done under a qualitative approach.

Results and Discussion

1. Significance of learning and teaching the Arabic language

Language is a tool through which humans exchange their ideas and thoughts among themselves. It helps humans to express their feelings and needs. Because of the international pervasion of Islam, the Arabic language unites Arabs and non-Arab Muslims under one religion. Among the international languages, the Arabic language has many advantages. In particular, it holds the distinction of being a language for human communication and divine communication too. It has received religious pride in Islamic society to the extent that learning, teaching, and researching it, is considered a blessing from God. It is considered the religious language of Arabs and Muslims of the world.

Arabic is the most widely spoken of the Semitic languages in the world. It is spoken by 467 million people in the Arab world and neighboring regions such as Ahwaz, Turkey, Chad, Mali, Senegal, Eritrea, Ethiopia, South Sudan, and Iran. In India, more than twenty thousand people speak this language. In 1973 it was chosen as one of the official languages of the United Nations. 18th of December was declared as Arabic Language Day by the UN. In Islamic perception, the Arabic language has a vital importance in Muslims' lives. Muslims consider this language as special as their mother tongue. This is because the Holy Quran and Hadees - The words of the

Prophet (PBUH) - are in Arabic, and it is believed that the spoken language of the people in Heaven is Arabic. Since the Islamic books are in Arabic, there is a great need to translate them into other languages to understand Islam and practice it in their lives.

(Alhirtani, 2019), states in her study, that “Arabic language is an important tool in learning and teaching Islamic Legal Sciences. Its importance is that it is the language of the Holy Qur'an, which is the main source of Islamic texts and provisions. Therefore, to understand these texts, the learners must understand the Arabic language” citing the argument, that Quran sciences cannot be studied without understanding the Arabic language: “The Arabic language is part of the religion, and knowledge about it is an obligation. Understanding the Holy Book and the prophet’s Sunnah is an obligation that cannot be understood without understanding the Arabic language, and what is necessary to fulfill an obligation is an obligation. This study focuses on exploring the opportunities and challenges of implementing artificial intelligence (AI) technology for teaching Arabic to non-native speakers as a theoretical approach.

2. Teaching Arabic to non-native speakers

Teaching language is not like teaching other subjects because it depends on creating perceptions among students, but language teaching is related to theories, their elements, skills, and practices that require application and implementation. The language student must practice how he is proficient in using it in daily life, such as listening, speaking, writing, and reading, to benefit from what he has studied and not transfer information as happens in other subjects. In this way, teaching the Arabic language to non-native speakers is not an easy task that everyone can do, and it has principles and rules that must be followed and its curricula followed.

3. Opportunities of implementing AI Technology for teaching Arabic to Non-Native Speakers

AI provides personalized learning experiences suited to individual needs and learning styles, enhancing the efficiency and effectiveness of language acquisition. It offers instant feedback, enabling learners to correct mistakes promptly and continuously improve their language skills. Thus AI creates a safe environment for learners to experiment and make errors without fear of judgment, fostering a supportive learning atmosphere. Moreover, it redefines the traditional role of teachers, shifting towards facilitation and guidance rather than solely imparting knowledge. The potential of AI to revolutionize the future of education indicates its increasing prominence as technology advances. Embracing AI in language learning is not just a choice but a necessity, reflecting the evolving wide of education and the global demand for accessible and effective language learning solutions.

(Niemi, 2021), explain that “the use of AI in education today is no longer a new “know-how”. In scientific literature, we found various scenarios of its application. Summarizing the experience of educationalists, we can identify the following areas of AI in education: assessment of knowledge of students, updating students’ knowledge, assessment of teacher activities, assistance to students in the educational process from a virtual assistant, personalization, and individualization of the educational process, adaptive learning (Taylor et al., 2021); (Almelhes, 2023). Software Developers confirm that “the benefits of AI in language learning are numerous and transformative. AI offers personalized learning experiences, instant feedback, and a safe space for learners to make mistakes (Gligorea et al., 2023); (Kim et al., 2022). It redefines the role of teachers and has the potential to revolutionize the future of education. As technology continues to advance, we can expect AI to play an even more prominent role in language acquisition, making language learning more accessible and effective for learners around the world. Embracing AI in language learning is not just a choice but a necessity in the ever-evolving world of education”.

In this context, AI facilitates the teaching of Arabic script, pronunciation, grammar, vocabulary, and cultural nuances for the students (Zou et al., 2023); (Gharaibeh & Alhassan, 2023). This can be proved via the significance of AI in language learning and teaching. “in general, an intelligent tutoring system can be described in terms of three modules: the domain knowledge, the student model, and the teaching module. In this environment, students can learn at their own pace, and the student model can help us develop individualized knowledge-based instruction according to domain knowledge learning and teaching. The teaching model guides the process of learning and teaching. The student model maintains the learner history and provides the capability to update the student learner model hence allowing the system to adapt to student needs and alter the instructional process. So, the implementation of AI in teaching Arabic to non-native speakers offers opportunities like personalized learning and interactive practice but faces challenges such as data quality and cultural nuances. Despite concerns about effectiveness and ethics, leveraging theoretical frameworks and successful case studies can help maximize AI's potential while addressing these challenges, and shaping the future of Arabic teaching.

In this way, there are many tools and applications. (Al Darayseh, 2023), lists the following important AI tools that have been developed or are being developed for learning and teaching Arabic:

1. CHATGPT: It was launched by San Francisco-based OpenAI late last year and is one of the most popular AI-powered tools used for writing in many fields. It can help with your research and suggest new ideas.
2. Poe (Platform for Open Exploration): Poe is an AI chatbot application that provides access to a library of existing multi-capacity AI models focusing primarily on text, all supporting Arabic writing.
3. Bing Chat: Bing Chat from Microsoft is an AI search engine that supports searches in Arabic, making it easier for Arab students to access the information they need.
4. ResearchRabbit: It is an intelligent platform frequently used to review scientific literature relevant to your research project. It saves you time by using AI to scan databases of millions of research papers and journal articles published in different fields.
5. Kateeb: It is one of the few artificial intelligence-powered text generation platforms that help people write in Arabic. Based in Dubai, it can help you craft text supported by reliable sources, enhancing your paper's credibility and trust results in search engines.

Many innovative companies develop enhanced artificial intelligence solutions to support and improve learning for students of all ages and provide valuable and quick solutions to facilitate daily tasks, including (Ruiz-Rojas et al., 2023); (Okonkwo & Ade-Ibijola, 2021):

- a. Seneca: A UK-based homework and revision platform, this platform is so confident in its product that it guarantees its students will get the highest exam grades or their money back.
- b. Thinkster Maths: A digital mathematics learning platform that uses artificial intelligence and machine learning to visualize how a student thinks and personalize content.
- c. Knewton's Alta: This adaptive higher education course is designed to improve the students' study and learning while completing assignments.
- d. Gradoscope: A platform that grades papers and provides students with valuable feedback and insights to help instructors monitor progress and learning gaps.
- e. VirtualSpeech: Focusing on all the essential soft skills, such as presentation, meeting, and interview skills, VirtualSpeech uses virtual reality technology.
- f. InnerVoice by therapy: It is an app designed to help children with neurological problems make connections between objects and language and help them learn.

To effectively apply these tools for learning and teaching Arabic, one should know each tool's unique features and capabilities. For instance, CHATGPT developed by OpenAI, proves

invaluable for enhancing Arabic writing skills. By utilizing its ability to generate ideas and improve research papers, learners and educators alike can benefit from fresh perspectives and refined language compositions. Poe, another AI chatbot application, provides access to a library of Arabic-focused AI models, offering tailored support for writing in Arabic and facilitating language practice and teaching. Bing Chat from Microsoft serves as an essential resource for Arab students, enabling them to conduct searches in Arabic effortlessly, thereby enhancing their access to relevant information and resources for language learning and research endeavors.

Research Rabbit offers an efficient approach to gathering academic materials for Arabic language research projects. By leveraging its AI-driven platform to review scientific literature efficiently, users can save valuable time while ensuring the quality and depth of their academic work. Kateeb, an AI-powered text generation platform, specializes in assisting with Arabic writing tasks. With its ability to generate content supported by reliable Arabic sources, Kateeb enhances the believability and accuracy of Arabic language compositions. Moving beyond language-specific tools, platforms like Seneca and Thinkster Maths can be adapted for Arabic language learning. Seneca's personalized homework and revision activities can be suitable to include Arabic language exercises, providing students with interactive learning experiences aimed at achieving high exam grades. Similarly, while primarily focused on mathematics, Thinkster Maths' AI capabilities can still be harnessed to personalize Arabic language learning content, adapting to individual learning patterns and needs.

Knewton's Alta offers adaptive course materials designed to improve study habits and learning outcomes. By integrating Alta into Arabic language education, educators can provide personalized assignments and feedback, enhancing students' language proficiency effectively. Gradoscope proves valuable for grading Arabic language papers and providing insightful feedback to students, enabling instructors to monitor progress and address learning gaps efficiently. Thus, VirtualSpeech and InnerVoice by iTherapy provide to larger aspects of language learning and development. VirtualSpeech focuses on essential soft skills, such as presentation and communication, offering immersive virtual reality experiences suitable for Arabic-speaking learners. InnerVoice assists Arabic-speaking children with neurological challenges in making connections between objects and language, supporting their language acquisition and development journey. Through a comprehensive utilization of these tools, educators and learners can improve their Arabic language learning and teaching experiences, developing proficiency and growth effectively.

Conclusion

This study concludes that, as the language of the Quran and the Prophet's teachings, Arabic holds immense religious and cultural importance for Muslims worldwide. Furthermore, with its widespread use across various regions and its status as an official language of the United Nations, Arabic serves as a vital tool for communication and cultural exchange. Teaching Arabic to non-native speakers presents unique challenges, requiring adherence to specific principles and methodologies to ensure effective language acquisition. However, the integration of AI technology offers favorable opportunities to enhance the learning experience for students. AI enables personalized learning experiences, instant feedback, and adaptive instruction, thus fostering a supportive environment for language acquisition. Various AI tools and applications have been developed to facilitate the teaching and learning of Arabic, providing different aspects of language acquisition and proficiency. These tools, ranging from next-generation platforms to virtual reality experiences, offer diverse opportunities for learners and educators to engage with the language effectively. By leveraging AI technology together with traditional teaching methods, educators can address the challenges of teaching Arabic to non-native speakers while maximizing learning

outcomes. As technology continues to advance, the integration of AI into Arabic language education will undoubtedly play a vital role in shaping the future of language learning and teaching, making it more accessible, effective, and engaging for learners worldwide.

Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study in the collection, analyses, or interpretation of data in the writing of the manuscript, or in the decision to publish the results.

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