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Hamdan Bin Mohammed Smart University

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Assignment # A1

AI In Teaching Arabic Language

Boons and Difficulties

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Dr. Abdurrahman AlMekhlafi

From: Fatima Alaryani

Student ID: 200116410

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Introduction

There is no denying the fact that Artificial Intelligence (AI) in education is a cutting-edge field that combines technology and conventional teaching techniques. This is especially true for Arabic language learning. This research draws from an extensive literature analysis spanning numerous studies and articles and explores the complex ramifications of using AI to improve Arabic language training. Together, these academic publications investigate how AI might benefit teachers, help address the teacher shortage by deploying autonomous robot instructors, and provide tailored, flexible learning opportunities that potentially transform the educational system for Arabic language learners completely. Notwithstanding the difficulties in integrating AI into Arabic language training, efforts like the King Salman Global Academy for the Arabic Language are prime examples of the global dedication to using AI to improve education.

This article summarizes the fascinating possibilities and inherent difficulties of incorporating AI into Arabic language instruction. It highlights the immense potential of AI to improve learning outcomes and tackle pedagogical issues, but it also recognizes the difficulties in responsibly bringing this potential to fruition. The potential shows the future of education in a digitally connected society for the symbiosis of AI and pedagogy, which promises to transform the landscape of Arabic language instruction as technology continues to evolve and collide with educational techniques.

Literature Review

Many recent studies have focused on Artificial intelligence for teaching Arabic language. The title of one of the research studies is "**Artificial Intelligence for Arabic Lessons: Will it Help Teachers?**"(1) It explores the possibility of using artificial intelligence (AI) to support Arabic language instructors. The study uses a survey approach to determine whether AI technologies can support conventional Arabic teaching techniques, evaluating prior research on AI in education. The study concludes that, even while AI can assist with some parts of teaching, it cannot replace a teacher's sophisticated and knowledgeable role in providing face-to-face, all-encompassing language education. Artificial Intelligence is seen as an aid rather than a replacement for the pedagogical knowledge needed to teach Arabic. In contrast, the possibility of employing robots and artificial intelligence (AI) to address the worldwide teacher shortage is examined in the paper "**Why Not Robot Teachers: Artificial Intelligence for Addressing Teacher Shortage**"(2) by Bosede I. Edwards and Adrian D. Cheek. It introduces the concept

of autonomous robot teachers, highlighting the need for robots to have personalities, social skills, the ability to impart teaching, and classroom management abilities. The study describes the creation of a working prototype robot teacher and addresses the difficulties and skills needed for these robots to be used successfully in classroom environments. It contends that despite their drawbacks, robotics and artificial intelligence (AI) promise to improve educational delivery, alleviate the teacher shortage, and maybe revolutionize classrooms in the future. So, the study "**The Use of Artificial Intelligence for Arabic Learning**"(3) examines the advantages and difficulties of integrating AI technologies into Arabic language instruction. It examines the current state of AI technology in education, addresses the applicability of AI in Arabic studies at the graduate level, and offers real-world instances of AI in Arabic learning. It tackles privacy issues around the application of AI technology. It suggests building chatterbots for education and provides instructions on building and using these artificial intelligence tools in language learning settings.

In addition, the paper "**Artificial Intelligence as a Support for Arabic Language Learning in Higher Education with VOSviewer Analysis**"(4). It investigates how artificial intelligence (AI) might help with Arabic language acquisition in higher education, mainly through online robotics and applications. The study examines the usefulness and implications of AI in this setting using the VOSviewer software. The findings show that AI greatly facilitates learning and provides a cutting-edge method of teaching languages that align with technical advancements. The study uses a variety of approaches, such as data mapping and literature analysis, to show how AI can improve Arabic language learning results and play a role in educational innovation. Also, the paper "**AI-based Arabic Language and Speech Tutor**"(5) details the creation of an AI-ALST, or Artificial Intelligence-based Arabic Language and Speech Tutor, that the University of Arizona is using to teach the Moroccan Arabic dialect. MFCC feature extraction, a bidirectional LSTM attention mechanism, and a cost-based approach for class-imbalance learning are all used by the AI-ALST system. The system provides analysis, evaluation, and feedback on pronunciation problems to help students with pronunciation training. Through precision, recall, and F1-score measures, preliminary experimental evaluations show how well AI-ALST detects pronunciation errors and improves language acquisition.

Research Title	Main Focus	Methodology	Key Findings	Implications/Applications
"Artificial Intelligence for Arabic Lessons: Will it Help Teachers?"	Exploring the possibility of using AI to support Arabic language instructors.	Survey approach evaluating prior research on AI in education.	AI can assist with some aspects of teaching but cannot replace the comprehensive role of a teacher in providing face-to-face language education.	AI is viewed as an aid, not a replacement, for the pedagogical knowledge required to teach Arabic.
"Why Not Robot Teachers: Artificial Intelligence for Addressing Teacher Shortage"	Examining the use of robots and AI to address the global teacher shortage.	Description of creating a working prototype robot teacher and the skills needed for classroom use.	Despite drawbacks, robotics, and AI can potentially improve educational delivery and address teacher shortages.	Suggests a future where robots with personalities and teaching abilities could play a significant role in classrooms.
"The Use of Artificial Intelligence for Arabic Learning"	Investigating the integration of AI technologies into Arabic language instruction.	Examine current AI technology in education and its applicability in Arabic studies with real-world examples.	Highlights the benefits and challenges of using AI in Arabic learning, including privacy concerns. Suggests the development of chatterbots for education.	Proposes creating and using AI tools like chatterbots in language learning settings, focusing on practical applications and addressing privacy issues.

<p>"Artificial Intelligence as a Support for Arabic Language Learning in Higher Education with VOSviewer Analysis"</p>	<p>How AI can assist Arabic language acquisition in higher education through online robotics and applications.</p>	<p>Utilization of VOSviewer for data mapping and literature analysis on AI's usefulness and implications.</p>	<p>AI facilitates learning and provides a modern teaching method that aligns with technological advancements.</p>	<p>AI can improve Arabic language learning outcomes and contribute to educational innovation.</p>
<p>"AI-based Arabic Language and Speech Tutor"</p>	<p>Creation of an AI-ALST to teach the Moroccan Arabic dialect.</p>	<p>Utilization of MFCC feature extraction, a bidirectional LSTM attention mechanism, and a cost-based approach for class-imbalance learning.</p>	<p>The AI-ALST system effectively detects pronunciation errors and improves language acquisition.</p>	<p>Offers a practical application of AI in pronunciation training, demonstrating AI's role in enhancing language learning.</p>

The paper "**AI-Powered Arabic Language Education in the Era of Society 5.0**" (6) analyses the integration of artificial intelligence (AI) in Arabic language learning, showing its potential to create personalized, adaptable, and efficient educational experiences. It examines several AI applications, such as Intelligent Tutoring Systems, voice assistants, and educational games that can enhance Arabic language instruction by making it more interactive and suited to individual learners' requirements. The study emphasizes how artificial intelligence (AI) may revolutionize Arabic language learning in the digital age. This is consistent with the ideas of Society 5.0, which combines technology and human interaction to create cutting-edge teaching methods. The scoping review "Arabic chatbot technologies" provides an extensive analysis of empirical research on artificial intelligence in education (AIEd) released between 1993 and 2020. It examines forty chosen papers from AIEd-specific publications and the Web of Science database, concentrating on AIEd applications, technologies, and educational advantages. The assessment provides insights for educators and engineers, bridging the gap between educational applications and AI technical advancements. The importance of multidisciplinary research, privacy, and AI-related ethics issues is emphasized. Prospects for AIEd research, focusing on AI's vital role in improving educational methods and results, are also suggested.

AI-Powered Arabic Language Education

Main Theme: Integration of AI in Arabic Language Learning

Objective:

To create personalized, adaptable, and efficient educational experiences.



Context: Society 5.0

- Combines technology with human interaction.
- Aims for innovative teaching methods.



AI Applications:

- Intelligent Tutoring System: Tailored learning paths.
- Voice Assistants: Pronunciation and listening practice.
- Education Games: Interactive and engaging learning experiences.



Impact of AI on Language Learning:

- Personalization: Education tailored to individual needs.
- Interactivity: Enhanced engagement through technology.
- Efficiency: Streamlined and effective learning processes.



Research Insights:

- Focus on applications, technologies, and educational benefits of AIEd.
- Highlights the gap between AI technical advancements and educational applications.



Challenges and Future Directions:

- Multidisciplinary Research: Collaboration between educators and engineers.
- Privacy and Ethics: Concerns related to AI in education.
- Future Prospects: AI's role in improving educational methods



Implications for Stakeholders:

- For Educators: Insight into effective AI integration.
- For Engineers: Development of AI tools considering ethical and privacy concerns.



Contribution to Educational Innovation:

- Revolutionizing Arabic Language Learning: Demonstrates AI's transformative potential.
- Aligning with Society 5.0: Merging technological advancements with human-centric education approaches.



The study "**Learning Arabic Writing Skill Based on Digital Products**"(7) evaluates how digital products improve students' Arabic writing abilities. It stresses the effective use of Mendeley and Turnitin in writing and publishing Arabic journal articles, illustrating the significance of digital tools in boosting students' writing quality and participation in academic publishing processes. Also, the study indicates a notable change in the direction of digital technology integration in Arabic language instruction. The paper "**Transformation Of Arabic Learning From Classical Model To Digital Model**"(8) examines how Arabic language instruction has changed, moving from antiquated manuals to cutting-edge digital techniques. It compares digital learning practices using modern tools like Zoom and Google Classroom with the standard of traditional teaching methods in Islamic boarding schools and madrasahs. The study emphasizes the benefits and drawbacks of both approaches, highlighting how Arabic language instruction needs to adapt to modern demands and technological breakthroughs.

Moreover, The King Salman Global Academy for Arabic Language describes how artificial intelligence (AI) is being used to support and improve Arabic language learning globally in the article "**Ancient and modern: The Arabic language gets a boost from AI**"(9) (Althaqafi, 2022). Applications of AI include creating dictionaries, learning curricula, and individualized learning experiences. These programs align with Saudi Arabia's Vision 2030, which aims to establish the institution as a worldwide Arabic reference. Artificial intelligence (AI) supports language acquisition in various domains, including grammar, pronunciation, and literacy, through adaptive learning techniques and intelligent dialogue systems. The school is even more committed to raising the caliber of Arabic language instruction and content, as evidenced by its partnership with THIQA Business Services to create Arabic language applications. In addition, the article "**Unlocking the Potential of Artificial Intelligence in the Arabic Language**"(10), the possibilities and advantages of artificial intelligence (AI) are discussed in detail in this introduction, with an emphasis on applications like speech recognition, image recognition, machine translation, natural language processing, and AI-powered virtual assistants for the Arabic-speaking community. It emphasizes the changes artificial intelligence (AI) may make to industries, including business, education, and healthcare, through improved customer service, medical diagnoses, and personalized learning. The difficulties include dialect diversity, linguistic complexity, and a lack of data. Developing customized algorithms, cutting-edge research, and teamwork are required to increase AI's efficacy in Arabic. Significant advancements in healthcare, education, industry, and cross-language communication are

expected, highlighting AI's contribution to advancing Arabic-speaking regions' technological capacities.

So, the World Arabic Language Day event, which took place on December 18, 2019, at the UNESCO Headquarters in Paris, is discussed in this article, emphasizing the theme **"The Arabic Language and Artificial Intelligence"**(11) (Bailleul, 2019). It draws attention to the growing usage of Arabic online and the potential for artificial intelligence (AI) to advance and maintain Arabic through easier-to-understand communication between cultures and individuals. During the event, two roundtable conversations examining AI's new possibilities for the Arabic language, such as instantaneous translation tools and language learning facilitation, were held with linguistic specialists, scientists, and professionals. With case studies from Saudi Arabia, Egypt, and Morocco, the regional study "Building Knowledge Societies in the Arab Region: Investigating the Role of the Arabic Language as a Knowledge Gateway" was released. It gave an overview of knowledge and the Arabic language in the Arab world. The commemoration also featured the "First forum of heads of departments for teaching Arabic language to non-Arabic speakers," where academics from European universities who are not native Arabic speakers talked about the difficulties and curriculum associated with teaching the language.



[Comparative map - GitMind](#)

Reflection:

Examining the wide range of research studies and articles about Artificial Intelligence (AI) in Arabic language instruction provides an intriguing look at what could be in store for education in the future. Together, these pieces highlight how revolutionary AI can be in education, significantly when improving the Arabic language learning process for pupils. Every study or paper offers a different viewpoint on how artificial intelligence (AI) might address specific issues in Arabic language instruction, ranging from writing and speech skills to more general pedagogical approaches.

A primary subject is the contrast between AI's role in education as an additional tool and a potentially revolutionary one. This dual role is best illustrated by the study "Artificial Intelligence for Arabic Lessons: Will it Help Teachers?" which contends that although AI can improve some elements of instruction, it cannot replace the intricate and nuanced role that human teachers play in the classroom. Numerous studies support this conclusion, which says that AI should supplement conventional teaching techniques rather than replace them.

However, studies like "AI-based Arabic Language and Speech Tutor" and "Why Not Robot Teachers: Artificial Intelligence for Addressing Teacher Shortage" push the limits of AI's use in education. They present the ideas of artificial intelligence (AI) systems that can provide precise pronunciation feedback and robot tutors. These cutting-edge techniques demonstrate how AI can transform traditional teaching methods by providing scalable answers to issues like the scarcity of teachers and the demand for individualized learning experiences.

The emphasis on personalization and adaptability in AI-powered education systems reflects a broader shift towards Society 5.0's ideals, where technology and human interaction merge to create more inclusive, customized learning environments. This shift is further exemplified by integrating digital tools and AI in teaching Arabic writing skills, as discussed in the study "Learning Arabic Writing Skill Based on Digital Products." Such tools enhance educational outcomes and prepare students for participation in the digital academic sphere.

When implementing AI in education, privacy, ethics, and the need for interdisciplinary research are crucial factors. These worries highlight how crucial it is to create AI systems that are not only efficient but also inclusive, responsible, and responsible. The need for continual cooperation between educators, engineers, and researchers is highlighted by the urge to bridge the gap between educational needs and AI technological breakthroughs.

The efforts of the King Salman Global Academy and the talks held on World Arabic Language Day highlight the global viewpoint on AI in Arabic language education and demonstrate the dedication of people worldwide to promoting Arabic language education through technology. These programs demonstrate how AI can support linguistic variety and cross-cultural communication, aligning with international educational objectives and societal advances.

In summary, considering AI's potential in Arabic language instruction reveals a landscape full of both opportunities and difficulties. AI has enormous potential to improve learning outcomes, solve pedagogical issues, and support innovative educational practices. Realizing this promise necessitates considering ethical, private, and educational considerations to ensure that AI empowers rather than divides. The future of Arabic language instruction and, by extension, the more prominent educational paradigm will be significantly influenced by the cooperation of technology innovation and pedagogical skills as we proceed.

Conclusion:

In conclusion, I firmly believe the researchers illustrate that there are many advantages and difficulties to consider when integrating artificial intelligence (AI) into Arabic language instruction. Artificial intelligence (AI) assists teachers by supplementing conventional teaching techniques with new resources and technologies to improve student learning without diminishing educators' vital role. To provide individualized, engaging, and effective learning experiences, it presents autonomous robot teachers as a cutting-edge response to the global teacher shortage. It also uses voice assistants, educational games, and intelligent tutoring systems. AI further enables the integration of digital technology into Arabic language training, encouraging innovation in education and enhancing language proficiency with tools that offer precise pronunciation feedback.

However, the project has obstacles to overcome, such as Arabic dialect diversity and linguistic complexity, which necessitate using advanced algorithms for efficient instruction. Challenges with access and equity, privacy and ethics, technical constraints, the danger of becoming overly dependent on technology, and the requirement for cultural and contextual sensitivity in AI systems make the environment more challenging. These difficulties highlight the need for a well-rounded strategy that uses AI's potential while acknowledging its drawbacks and moral ramifications.

Boons	Difficulties
<p>Support for Instructors:</p> <p>AI can complement traditional teaching methods by providing additional resources and tools, enhancing the learning experience.</p>	<p>Complexity and Diversity:</p> <p>Arabic's linguistic complexity and dialect diversity pose significant challenges for AI, requiring sophisticated algorithms.</p>
<p>Teacher Shortages:</p> <p>AI, through autonomous robot teachers, offers a novel approach to mitigate the global teacher shortage.</p>	<p>Privacy and Ethics:</p> <p>Raises privacy and ethical issues that need careful consideration in the application of AI in education.</p>
<p>Learning Experiences:</p> <p>AI technologies personalize and adapt learning experiences, making them more engaging and efficient.</p>	<p>Technical Limitations:</p> <p>Technical limitations exist in creating AI tools that fully replicate human teachers' nuanced understanding and pedagogical skills.</p>
<p>Technological Integration:</p> <p>Facilitates the integration of digital technologies in Arabic language instruction, allowing for innovative teaching methods.</p>	<p>Dependency on Technology:</p> <p>Risk of becoming overly dependent on technology, potentially neglecting the importance of human interaction and traditional methods.</p>
<p>Language Skills:</p> <p>AI-based tools provide detailed feedback on pronunciation, improving language acquisition and speech skills.</p>	<p>Access and Equity:</p> <p>Ensuring equitable access to AI-powered educational tools remains challenging, especially in regions with limited infrastructure.</p>
<p>Educational Innovation:</p> <p>Leads to educational innovation, demonstrating significant improvements in learning outcomes through data mapping and analysis.</p>	<p>Cultural Sensitivity:</p> <p>AI systems must be designed with a deep understanding of Arabic's cultural and contextual nuances, requiring multidisciplinary research and collaboration.</p>

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