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Artificial Intelligence in Arabic Language Teaching: Engagement, Motivation and Learners' Responses

Heriansah[1]*, Hamdal[2] , Langgeng Sutopo[3], Sabanul Yamin[4],
Dewi Novita Sari[5], Farial Hanum[6]
[1,2,3,4,5,6]Institut Agama Islam Darul Fattah Lampung, Indonesia

Email Address
heriansahspdi20@guru.smp.belajar.id
***Corresponding author**

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Abstract
The integration of Artificial Intelligence (AI) in Arabic language education is becoming increasingly vital as it enhances learning experiences and outcomes. However, there exists a significant gap in understanding the specific impacts and challenges associated with AI applications in this context. Previous studies have indicated the potential of AI technologies to support language acquisition, yet challenges related to dialect variations and pronunciation accuracy persist. This study employed a mixed-methods approach, incorporating qualitative interviews and observational research to gather insights from language educators and learners regarding their experiences with AI tools in Arabic language instruction. The findings reveal that AI not only improves language proficiency among students but also fosters greater engagement and motivation in the learning process. Nevertheless, technical challenges, particularly concerning dialectal differences, remain critical areas needing further improvement. Overall, the research underscores the significant benefits of AI in Arabic language learning while highlighting the necessity for ongoing development to address existing challenges, ultimately paving the way for more effective educational practices.

Introduction

The development of Artificial Intelligence (AI) has had a significant impacts on various aspects of life, including in the field of education. AI offers new approaches that enable the improvement of learning quality through adaptive and interactive technologies (Fuad, A., & Al-Yahya, M. 2022). In the context of language education, AI plays a crucial role by providing personalized learning support that enables students to learn at their own pace and according to their individual learning style (Pardamean, B., 2022). It provides instant feedback and helps identify students' individual needs, making learning more effective and targeted (Ducasse, A., 2023). With these capabilities, AI not only makes learning easier for students, but also helps educators design more responsive learning strategies (Liu, Y., 2022; Lin, Y., 2021).

In the field of Arabic language education, the application of AI is of particular relevance given the complexity of this language which requires special attention, especially in phonetic and grammatical aspects (Solyman, A., 2020; Ji, H., 2022). Arabic has distinct structures and rules compared to other languages, thus requiring learning methods that are tailored to these unique needs. AI technology allows students to practice pronunciation by

using voice recognition devices that provide immediate correction of pronunciation errors (Alsharhan, E., 2020; Nazir, F., 2021; Çalik, S., 2023;). In addition, AI's ability to process natural language also provides an opportunity for students to understand Arabic sentence structure and vocabulary more deeply and contextually (Darwish, K., 2020; El-Alami, F., 2021).

Furthermore, AI is able to overcome some of the major obstacles in learning Arabic, such as difficulties in understanding complex grammar and the need for independent practice (Song, C., 2023). In this regard, AI provides various adaptive learning features, such as stylistic analysis and conversation simulation, which help students to understand the context of Arabic usage more thoroughly. It also provides flexibility for students who are not in a native-speaking environment, allowing them to access materials and exercises at any time as needed. Thus, the use of AI helps bridge the learning gap between students in different backgrounds and learning environments (Ifenthaler, D., 2023; Essa, S., 2023; Adiguzel, T., 2023).

However, the application of AI in Arabic language education also raises certain challenges that need to be considered. One of these challenges is the need for a deep understanding of the diverse learning needs of students so that AI technology can t function as expected (Ahmad, S., 2021; Adiguzel, T., 2023; Muñoz-Basols, J., 2023). In addition, the use of AI also requires adjustments in curriculum design so that the learning materials and methods used remain relevant and in line with the objectives of Arabic language education (Chen, L.,2020; Chiu, T. 2021; Tapalova, O.,2022). Therefore, further research is needed to understand the impact and effectiveness of using AI in the Arabic language learning process as a whole.

Based on this description, this study aims to explore the effect of using AI in Arabic language learning through a qualitative approach. This research is expected to provide an in-depth understanding of the role and contribution of AI in improving learning motivation, interaction, and effectiveness of Arabic language learning. Thus, the results of this study are expected to make a significant contribution to the development of Arabic language learning methods that are more adaptive and in accordance with the latest technological developments, while encouraging the integration of AI in broader language education. This research is guided by the following research questions:

1. How does AI affect students' learning motivation in Arabic language learning?
2. How do students and lecturers respond to the use of AI in Arabic language classes?

Literarture Review

The Use of AI in Language Learning

The use of Artificial Intelligence (AI) in language learning has become a significant focus of research, given its ability to facilitate a more interactive and personalized learning experience. One of the most influential AI technologies in this context is Natural Language Processing (NLP), which enables computers to understand, analyze and generate natural language. Research indicated that NLP can assist students in identifying language patterns and sentence structures, which are crucial for comprehending a new language (Zhai, 2020). With this ability, students can more quickly and efficiently master language skills.

Additionally, speech recognition is another aspect of AI technology that has been proven to enhance students' speaking skills. Through this technology, students can practice pronunciation independently and receive immediate feedback on their pronunciation errors. Kim and Chung (2019) found that using speech recognition-based tools in language learning can increase students' confidence in speaking and reduce anxiety when communicating in a new language. This shows the potential of AI in supporting crucial speaking skills in language learning.

Furthermore, AI can also increase students' motivation to learn by providing content tailored to individual needs and preferences. Liu et al. (2021) stated that AI-based applications can create adaptive learning plans, allowing students to learn at their own pace and according to their learning style. This provides an opportunity for students to focus on areas they find difficult, such as grammar or vocabulary, making learning more effective. This personalized approach is particularly important in an educational context, where each student has different backgrounds and needs.

In the context of language learning, AI can also create a more interactive learning environment. With chatbots and AI-based applications, students can practice speaking with simulated conversations that resemble real interactions. Research by Gao et al. (2022) showed that students who interacted with a chatbot experienced improved speaking and listening comprehension. This type of interaction not only enhances linguistic skills but also helps students feel more engaged in the learning process.

Finally, it is essential to akcnowledge that while AI technology presents numerous benefits, its implementation also poses significant challenges that need to be addressed. Some research suggests that students may face difficulties in using AI-based tools if there is not adequate support from educators (Chai & Bui, 2023). Therefore, it is important for educators to understand how to effectively utilize these technologies in their teaching. Overall, AI shows great potential in language learning, making a positive contribution in the development of students' linguistic skills.

Arabic Language Learning and its Challenges

Learning Arabic present unique challenges that distinguish it from other languages. Arabic not only has a distinct phoneme system but also employs a complex writing, which can be challenging for non-Arabic speakers to comprehend. Research by Ahmad and Ali (2022) indicates that the primary challenge in mastering Arabic stems for the pronunciation of certain sounds that are not found in other languages, such as the *qaf* and *ghain* sounds. Students often challenges in pronouncing these sounds correctly, which can impact their understanding of word meanings.

Furthermore, grammatical structures in Arabic are also very complex, with various word forms and rules that vary depending on the context. Nasr (2021) explains that students need to understand the morphological and syntactic systems of Arabic to be able to communicate effectively. This present a significant challenge for many students new to learning Arabic, as they must learn how to form correct sentences and comprehend the meanings concealed within various sentence structures.

AI has the potential to address these challenges, especially through the use of speech recognition technology and NLP. These technologies can help students improve their pronunciation by providing immediate feedback. Research by El-Sayed and Hafez (2020) demonstrates that the application of AI-based technology in Arabic language learning can assist students in identifying pronunciation errors and offers suggestions for improvement. With this feedback, students can learn from their mistakes and develop better speaking skills.

Apart from pronunciation, reading and writing skills are also significant challenges in learning the Arabic language. Arabic has a different writing system from Latin, which takes time and practice to master. The use of AI in text analysis can help students understand how to read and write correctly. With technology that processes text automatically, students can practice writing and receive constructive feedback (Alghamdi & Edis, 2021). This approach not only enhances literacy skills but also provides students with the opportunity to practice in a more realistic context.

Finally, the application of AI in Arabic language learning has the potential to increase student confidence and reduce anxiety that often arises in the learning process. By

providing a supportive and adaptive environment, AI enables students to learn in a more enjoyable and interactive way. Research indicates that students who learn with AI technology tend to feel more motivated and engaged in their learning (Hassan et al., 2022). This shows that the integration of AI technology in Arabic language learning not only overcomes technical challenges but also enhances the overall learning experience.

Using AI in Arabic Language Learning

The use of artificial intelligence (AI) in education has significantly impacted various aspects of learning, including Arabic language education. In this digital era, the integration of AI-based technologies is expected to enhance the effectiveness of teaching and learning processes, opening new opportunities for students to access more interactive and personalized learning. For instance, AI enables the creation of adaptive learning models that allow students to learn according to their own pace and style, tailored to their specific needs (Alharbi & Kamsin, 2021). By leveraging AI technology, Arabic language learning can be personalized, providing students with a more relevant and in-depth learning experience.

One of the most widely applied AI technologies in language learning is Natural Language Processing (NLP), which analyzes and understands human language in both text and speech form. NLP has been extensively applied in Arabic language learning to process various linguistic elements, including morphology, syntax, and semantics. With NLP techniques, educators can provide structured and relevant material that simplifies students' understanding of the complex structure of the Arabic language (Baniata et al., 2021). The application of NLP in Arabic language learning has proven effective in enhancing students' comprehension of grammatical aspects, which are often challenging.

Preprocessing techniques, such as stemming and lemmatization, also make significant contributions to AI applications in Arabic. These techniques clean textual data before processing, improving the accuracy of AI models in understanding the meaning of words within the sentence context (Chrifi, 2023). Research has shown that stemming techniques effectively reduce redundancies in text, which are common in Arabic. This process facilitates text analysis within a cleaner linguistic context, resulting in a better understanding of sentence structure and meaning.

Beyond text comprehension, AI has been applied in sentiment analysis to gauge students' emotional reactions to Arabic language learning materials. AI-based sentiment analysis provides insight into students' responses, identifying whether they feel enthusiastic, bored, or challenged by the material presented (Alasmari et al., 2023). This data enables instructors to adjust teaching methods and select materials that align with students' needs and preferences. Sentiment analysis also serves as a useful periodic evaluation to measure the effectiveness of the applied teaching methods.

In terms of Arabic language instruction and translation, AI models based on transformer neural networks excel at comprehending Arabic structures, especially complex dialects. For example, models like BERT and other transformers have been successfully used to translate various Arabic dialects, a major challenge in language learning (Baniata et al., 2018; Harrat et al., 2019). AI's application in dialect translation helps students learn different Arabic language variations, providing a broader understanding of Arabic language usage across various contexts.

Within higher education, AI has enriched online learning resources, particularly through Learning Management Systems (LMS). AI-enabled LMS platforms, such as Padlet, have proven effective in facilitating student interaction and collaboration, as well as providing flexible access to learning materials (Budiarti et al., 2022). AI-based LMS implementation enables integrated learning content, group discussions, and more efficient assessments, supporting a dynamic and collaborative Arabic learning environment.

AI also enhances specific aspects of teaching, such as contextual teaching methods. Research by Mazlan et al. (2021) found that AI-based Arabic teaching strategies enhanced students' understanding by taking into account the cultural and social context inherent in the Arabic language. This contextual approach is essential in language learning, as Arabic has unique characteristics closely related to the culture and traditions of its speakers. Therefore, AI models adapted to contextual approaches can deliver more optimal learning outcomes.

A notable challenge in AI applications for Arabic language learning is the significant dialectal variation across Arab countries. AI faces difficulty in interpreting these dialects due to different linguistic structures and varied word usage (Anwar, 2023). Addressing this issue requires the development of models that can recognize and accommodate Arabic dialectal variations. Further studies and development of more complex and adaptive AI models are necessary to bridge these dialectal differences, particularly in language learning for non-native speakers.

Moreover, the introduction of AI in Arabic language learning holds potential for increasing student motivation. Interactive, technology-based learning methods tend to engage students' interest by providing a more innovative and enjoyable learning experience (Marpuah, 2019). For instance, AI-supported chatbots or virtual assistants allow students to practice Arabic conversation, thereby enhancing their speaking skills. This direct interaction provides students with opportunities to develop language skills in a safe, pressure-free environment.

Overall, the implementation of AI Arabic language learning paves the way for more effective, adaptive, and interactive learning methods. While challenges remain, such as dialect translation accuracy and limitations in understanding cultural context, ongoing technological advancements will continue to support progress in this area. Consequently, AI not only offers innovative solutions to challenges in Arabic language learning but also has the potential to improve the quality and accessibility of Arabic education globally.

Theoretical Framework

This study employs a theoretical framework that combines constructivist learning theory and *Computer-Assisted Language Learning* (CALL) theory. Constructivist theory, developed by Vygotsky, emphasizes the importance of social interaction in the learning process. This concept is relevant in the context of using AI, where technology can create an interactive and collaborative learning environment. In language learning, AI allows students to interact with materials and each other in ways that support deeper understanding (Vygotsky, 1978).

CALL theory, on the other hand, focuses on utilizing technology to support the language learning process. Research by Chapelle (2001) demonstrates that technology, including AI, can enhance the effectiveness of language learning through structured practice and immediate feedback. In this context, AI technologies such as speech recognition and NLP play an important role in providing learning experiences that are adaptive and responsive to students' needs.

These two theories complement each other, providing a strong foundation for understanding how AI can be applied in Arabic language learning. By combining elements from constructivist theory and CALL, this research explores how AI not only facilitates language learning, but also creates an environment that supports social interaction and collaboration between students. This is essential for effective and thorough linguistic skill development.

Furthermore, it is essential to note that this theoretical framework also acknowledge the dynamic role of educators in integrating technology into learning. Research by Wang et al. (2022) suggests that the role of educators as facilitators is crucial in ensuring that

technology is used in a manner that supports meaningful learning. As such, educators need to be trained to understand how to effectively utilize AI in their teaching.

Finally, this research aims to provide new insights into the role of AI in Arabic language learning, as well as the challenges and opportunities that arise from the use of this technology. With a strong theoretical foundation, it is hoped that the results of this study can contribute significantly to the development of more effective and relevant Arabic language teaching methodologies.

Method

Research Approach and Design

This research employes a qualitative approach to investigate the impact of utilizing AI in Arabic language learning. The research design employes is a case study complemented by in-depth interviews. By using case studies, the researcher can explore the specific context in which AI technology is applied, as well as explore the experiences and perceptions of students and lecturers towards the use of this technology. In-depth interviews were designed to gather richer and more detailed information about participants' interactions with AI in Arabic language learning. This approach allows the researcher to understand the phenomenon more holistically and contextually.

Research Subjects

The research subjects consisted of Arabic language students and lecturers at selected schools and universities. Participant selection criteria included: 1) students who are currently undergoing AI-assisted Arabic learning, 2) lecturers who teach Arabic and have implemented AI technology in their learning process, and 3) at least one year of experience in teaching or learning Arabic using AI-based tools. With these criteria, the research is expected to cover diverse perspectives from different levels of education.

Research Instruments

The instruments used in this study include interview guides and classroom observations. The interview guide contains open-ended questions designed to explore participants' experiences, challenges and benefits related to the use of AI in Arabic language learning. In addition, classroom observations were conducted to observe how AI is applied in learning practices and the interaction between students and the technology. Related documents, such as lesson plans and teaching materials used, will also be analyzed to provide a more comprehensive picture.

Data Collection Procedure

Data collection procedures will be carried out systematically with the following steps: First, the researcher will contact the university, in this case IAI Darul Fattah Lampung, to obtain a research permit. After that, the researcher will schedule interviews with selected students and lecturers. The interviews will be conducted face-to-face or through an online platform, with the interviews recorded for further analysis. In addition, classroom observations will be conducted during learning sessions involving the use of AI, with detailed notes on the interactions taking place. All qualitative data collected will be properly stored and managed to ensure the integrity and confidentiality of the information.

Data Analysis Technique

The collected data will be analyzed using a qualitative analysis approach according to Miles and Huberman. This method involves several systematic steps, namely: data collection, data reduction, data presentation, and conclusion drawing.

1. Data Collection: At the initial stage, the researcher will conduct data collection through interviews and observations that have been described previously. All information collected will be stored in an organized format to facilitate analysis.

2. Data Reduction: In this step, researchers will sort and filter relevant information from interviews and observation notes. Irrelevant or repetitive data will be deleted, while significant data will be organized into categories that are easier to analyze. This also includes coding the data to identify initial emerging themes.
3. Data Presentation: After the data has been reduced, the researcher will present the data in the form of structured narratives, tables, or diagrams to illustrate the patterns found. This presentation aims to provide a clear and comprehensive picture of the participants' experiences and their interactions with AI technology in Arabic language learning.
4. Inference Drawing: The final step is to draw conclusions from the data that has been analyzed. The researcher will interpret the findings based on the themes that have been identified and relate them to the research questions. This also involves critical reflection on the findings to understand the impact and implications of using AI in the context of Arabic language learning.

With this approach, the research is expected to generate in-depth and accurate insights into the impact of AI use in Arabic language learning as well as the challenges and opportunities faced by students and lecturers.

Results and Discussion

To facilitate the discussion, the findings of this study are categorized into two main groups: the results of interviews and the results of observations. These categories allow for a more structured analysis and a clearer presentation of the data. The details are as follows:

Interview Results

This interview was conducted on October 10 and 11, 2024 with 3 Arabic lecturers who use AI in teaching and 3 lecturers who do not use AI in teaching.

Table 1.
Interview Results

Categories	Use AI	No Use AI	Students
Experience Using AI	Lecturers who use AI find it makes teaching easier, especially in grammar and pronunciation. AI also helps make learning more interactive.	Lecturers who do not use AI feel that conventional methods do not support personalized learning and it is difficult to practice pronunciation effectively.	Some students who had used the AI claimed that it helped them improve their pronunciation and understand grammar. Others found the AI interesting but still of limited use.
Challenges of Using AI	Key challenges include limited access to technology, especially for university students. In addition, most AI applications do not yet comprehensively support Arabic.	Non-AI-using lecturers felt the biggest challenge was the method's limitations in providing timely and accurate feedback on pronunciation as well as the limitations of evaluation tools.	Students feel the main challenge is the lack of guidance in utilizing AI technology and some find AI difficult to use as not all platforms have support for Arabic.
Benefits of Using AI	AI is thought to help improve time efficiency and enable real-time assessment of pronunciation. In addition, AI helps in providing more engaging materials.	Lecturers argue that AI has the potential to help overcome limitations in providing individualized feedback and accelerate the	Students who used the AI felt the main benefits were improved pronunciation and vocabulary comprehension. Students wished the AI

		language acquisition process.	could provide more interactive materials.
Opinion about Not Using AI	The AI-using lecturers felt that the approach without AI was less effective, especially in practicing speaking and listening skills.	Some non-user lecturers feel the need to learn AI technology in order to optimize teaching, but others feel AI is too technical to be applied to language learning.	Students who have not used AI find learning boring and wish AI could be integrated to improve their listening and speaking skills.

Based on the results of the interviews above, the following findings can be summarized:

1. **Experience**
   Lecturers who use AI find it helpful in optimizing Arabic learning, especially in pronunciation and grammar. Students also welcome the use of AI because it can improve their understanding.
2. **Challenges**
   The main challenge faced is the limited access and support for Arabic in the AI platform. Both lecturers and students recognize the importance of training to maximize the use of technology.
3. **Benefits**
   The main perceived benefits are time efficiency, AI's ability to provide pronunciation feedback, and increased student interest in learning.
4. **Expectations**
   There is hope from all parties that AI can be further integrated in Arabic language learning with the support of technology and better training.

Interview Result Discussion

1. User Experience in Applying AI to Arabic Language Learning

Lecturers who have incorporated AI into their Arabic teaching generally report that this technology is hihgly benefical in facilitating the teaching process and enhancing learning effectiveness, particularly in terms of student self-learning. Some lecturers mentioned the use of NLP applications and speech recognition tools as a means to provide students automatic feedback, especially on aspects of pronunciation and language structure. In line with the findings of Solyman et al. (2020), the use of synthetic data and neural machine translation has facilitated the automatic correction of grammar, which is particularly important in Arabic due to its grammatical complexity. The lecturers stated that students who frequently use these technologies show significant improvement in understanding language structures and accuracy in pronunciation.

2.Challenges in Using AI in Arabic Language Learning

However, lecturers who utilize AI also recognize some challenges in applying this technology. One of the main challenges is the variation in Arabic dialects which often lead to speech recognition systems not being entirely accurate. The study by Alsharhan and Ramsay (2020) underlines how dialect variations can affect the performance of speech recognition technology. In addition, the limitation of training data covering a wide range of dialects and intonations in Arabic remains a barrier that is often encountered in a classroom environment. Lecturers also noted that some students found it difficult to adapt to the new technology, which affected their overall learning experience.

3. Perceived Benefits of Using AI in Arabic Language Learning

From a benefits perspective, lecturers who use AI in Arabic language learning report that this technology provides opportunities for more personalized learning. For example, NLP-based systems such as the improved AraBERT (El-Alami et al., 2021) can be used to

perform more accurate text classification, which helps students to understand the context and meaning of words more deeply. Fuad and Al-Yahya (2022) also emphasized that the development of AI in conversational Arabic has paved the way for more interactive and adaptive conversation-based learning, enabling students to understand the context and meaning of words more deeply.

4. Response to the Use of AI: Lecturers Who Do Not Use AI in Teaching

Lecturers who have not used AI in Arabic language learning mostly expressed doubts regarding the effectiveness of this technology in dealing with the complexity of the Arabic language, especially on aspects of grammar and different dialects. Some lecturers expressed concern that the use of AI might not suit the learning needs of students due to the rich and varied nature of the Arabic language. Darwish et al. (2020) highlighted that natural language processing in Arabic faces major obstacles due to differences in dialects and writing forms, thus causing some lecturers to question the readiness of AI technology in meeting such needs.

5. Students' Response to the Use of AI in Arabic Language Learning

Students generally felt the positive impact of using AI, especially on the aspects of pronunciation and enunciation. An ensemble-based framework for pronunciation error detection proposed by Çalik et al. (2023) shows great potential in helping students improve the pronunciation of difficult Arabic phonemes. From the interview results, students who use AI technology in their learning process feel more confident in communicating because they get immediate feedback. However, some students who are less familiar with this technology find it difficult, especially in the early stages of adaptation. They stated that the AI often failed to understand slightly different pronunciations, especially for words with similar pronunciation but different meanings.

Previous research supports that AI in Arabic language learning provides significant benefits, especially through immediate feedback that helps improve students' language skills. Fuad and Al-Yahya (2022) and Çalik et al. (2023) showed that the application of AI can strengthen student engagement, while El-Alami et al. (2021) highlighted the benefits of natural language processing in optimizing the learning experience. However, research by Darwish et al. (2020) and Alsharhan & Ramsay (2020) underline technical challenges, particularly related to dialectal variations and Arabic pronunciation, that need to be improved for AI to be more effective and adaptive to complex Arabic language learning contexts.

Observation Results

This observation was conducted on Mei 13, 2025, at 13.00-14.30 WIB in class 3ACMC / Room A 203 with 22 students.

Table 2.
Observation Results

Observed Aspects	Observation Results
1. Preparation for AI Use	The lecturer had already set up the AI devices before the class started, ensuring the voice recognition and grammar applications were active on the computers/laptops. All devices functioned properly without any initial technical issues.
2. Instruction Delivery	The lecturer gave clear instructions on how to use the AI and demonstrated the initial steps, including how to use the speech recognition feature to train pronunciation. Students seemed to understand the instructions well.
3. Student Interaction with AI	Most students were able to interact with the AI smoothly, but some students experienced technical difficulties such as voice recognition errors due to different accents. The

	lecturer helped them by correcting the position of the microphone and providing further directions.
4. Student Involvement	Students seemed enthusiastic in trying out the AI features, especially in improving pronunciation. They seemed actively involved and enthusiastic when getting feedback from the AI on grammar and pronunciation.
5. The Role of AI in Teaching	AI assists lecturers by assessing students' pronunciation and enunciation of words. Students who initially make mistakes in pronunciation get immediate feedback from AI, allowing lecturers to focus more on providing individualized guidance to students who need it.
6. Effectiveness of AI in Learning	The use of AI was effective in helping students improve their pronunciation and understanding of grammatical structures. It also provides interactive exercises that help students feel more confident. Direct feedback from the AI is considered to motivate students to study harder.
7. Technical Challenges	There were some technical issues, such as errors in recognizing pronunciation due to accent differences and distracting background noises. Lecturers needed to provide additional instructions to overcome these issues, and some students still seemed to have difficulty following the AI commands.
8. Evaluation and Closing	The lecturer closed the class with a brief discussion about students' experiences using the AI. Some students gave positive feedback on how the AI helped them understand pronunciation and grammar, but some wished that the AI could have the ability to recognize accents better.

From the observation results, the following points can be concluded:

1. Enthusiasm and Engagement
   Most students feel enthusiastic and engaged in learning when using AI, especially in practicing Arabic pronunciation.
2. Support in Learning Process
   AI is considered effective in providing quick and interactive feedback, allowing students to correct mistakes immediately.
3. Technical Challenges
   The main difficulties are technical issues related to speech recognition. Accents and background noises often cause detection errors by the AI.
4. Student Feedback
   Students appreciated the use of AI and found it helpful, but some suggested that the AI technology used should have better tolerance for accents.

Observation Results Discussion

1. Observation of Student Interaction with AI Technology

Observations showed that in classes using AI technology, the interaction between students and technology was intensive. Students actively use speech recognition software to practice their pronunciation. For example, a Natural Language Processing (NLP)-based application allows students to listen to the pronunciation of a word or phrase in Arabic and then imitate it to get instant feedback. Fuad and Al-Yahya (2022) explained that AI technology in the context of conversational Arabic can provide a more realistic learning experience. This observation shows that the feedback provided by the technology helps students improve their pronunciation, and supports them in developing their speaking skills.

2. Student Participation and Engagement Level in Learning

In classes with the use of AI, the level of student participation and engagement is seen to increase compared to classes that do not use this technology. AI-based technology encourages students to participate more because they can interact with the application individually and according to their needs. A study by Liu et al. (2022) revealed that AI can enhance the learning process by providing a more personalized experience for students, which in turn can increase student engagement. This observation supports this finding, where students seem more enthusiastic in participating in AI-facilitated exercises compared to conventional exercises.

3. Effectiveness of AI in Teaching Language Structure and Grammar

Observations also show that AI technology provides additional support in teaching complex language structures and grammar. Students can access software that provides immediate explanation or correction of grammatical errors. Solyman et al. (2020) showed that AI with neural translation can be used for automatic grammar correction in Arabic. This observation shows that students tend to understand language structures more easily through automatic feedback, which supports their understanding of complex grammar rules in Arabic.

4. Technical Constraints in Implementing AI Technology

Technical constraints were one of the important aspects observed in the classrooms using AI. Observations revealed that some AI software sometimes had difficulty in understanding students' pronunciation and intonation variations, especially on words with similar pronunciation but different meanings. Alsharhan and Ramsay (2020) highlighted how dialect variations can affect speech recognition accuracy, and this was also evident in the observations, where students speaking certain dialects had difficulties when using speech recognition applications. This shows that AI technology still needs to be further developed to be more adaptive to dialect variations in Arabic.

5. The Impact of AI Use on Student Learning Motivation

Observations show that the use of AI has a positive impact on students' learning motivation. Students appear more motivated as the technology provides immediate feedback and a more interactive learning experience. Students' learning motivation was seen to increase especially when they managed to improve their pronunciation or understand the language structure through the AI application. According to research by Çalik et al. (2023), technology-based feedback on pronunciation can assist students in correcting mistakes independently, which in turn increases their confidence. This observation shows that students' confidence grows along with the continuous improvement they experience, which can be an additional motivation in the Arabic language learning process.

The results show that the use of AI in Arabic language learning improves students' language skills, engagement and motivation, but still faces technical challenges related to dialectal and pronunciation variations. These findings are consistent with previous studies, such as those by Fuad and Al-Yahya (2022) and Çalik et al. (2023), who stated that AI has great potential in supporting language learning and increasing motivation through immediate feedback. On the other hand, research by Alsharhan and Ramsay (2020) and Darwish et al. (2020)has highlighted that the accuracy of AI often degrades when dealing with different dialects, which calls for adapting the technology to be more responsive to the complexity of the Arabic language.

Conclusion

This research shows that the use of AI in Arabic language learning has a significant impact on improving students' language skills, facilitating more dynamic interaction in the

classroom, as well as providing faster and more accurate feedback. AI, through technologies such as natural language processing and speech recognition, is proven to help students overcome the challenges of pronunciation, complex grammar and reading skills that differ from other languages. These findings highlight the significsnt potential of AI in enhanching the effectiveness of Arabic language learning, as well as increasing student motivation and engagement.

However, this study also has some limitations. Firstly, the limited number of participants, both lecturers and students, may not fully reflect the wider experience in the context of Arabic language education. In addition, this analysis focuses on one educational institution, so the results may not be generalizable to other different contexts. These limitations suggest the need for further research with a broader scope and more variety in terms of participants and educational settings to gain a more comprehensive understanding of the influence of AI in Arabic language learning.

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