TEACHING QUR'ANIC RECITATION WITH ARTIFICIAL INTELLIGENCE (AI): ISSUES AND CHALLENGES

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ABSTRACT

Integrating artificial intelligence (AI) into Qur'anic recitation education presents exciting opportunities as well as significant challenges. This study explores these obstacles and suggests practical solutions to enhance the role of AI in learning the Qur'an. This study addresses the difficulties in capturing the spiritual essence of Qur'anic recitation through AI, ensuring AI's accurate adherence to Tajwid rules, and overcoming accessibility barriers, especially in areas underserved by technology. Using a qualitative and quantitative approach, this study will collect views from educators, technologists, and Tajwid experts through surveys, and Tajwid literature sources. This methodology aims to gain an understanding of the current landscape and identify effective strategies to mitigate the challenges. The study's findings underscore AI's potential in offering personalized learning and real-time feedback while also highlighting its limitations in conveying the emotional depth of Qur'anic verses. Ensuring the accuracy of AI in Tajwid requires collaboration with experts, and addressing accessibility concerns requires bridging the digital divide for equitable educational access. In conclusion, this study emphasizes the promise of AI in improving Qur'anic recitation education, in addition to the need to effectively address challenges. By focusing on spirituality, technical accuracy, and accessibility, educators and technologists can fully utilize AI to improve the Qur'anic learning experience for everyone.

Keyword: *Qur'an, Tajweed, Artificial Intelligent (AI), Teaching, Conformity.*

1. Introduction

In today's fast-paced world, integrating technology into our daily routines is very important, especially when it enhances our spiritual and personal growth. Integrating artificial intelligence (AI) into Qur'anic recitation education offers exciting possibilities and notable challenges. AI can provide personalized learning experiences and real-time feedback, but ensuring it adheres to the detailed rules of Tajwid (the art of Qur'anic pronunciation and recitation) and captures the spiritual essence of the recitation is complex.

Among the various applications available, Tarteel AI stands out as an innovative artificial intelligence tool for those who want to improve their recitation of the Qur'an and deepen their relationship with the Qur'an. This innovative application uses artificial intelligence to provide immediate feedback, making it a valuable resource for Muslims around the world. Tarteel AI has been built to support people as they read and memorize the Qur'an. (Nour El Khazindar, 2020).

Let's explore why Tarteel AI is the recommended application for anyone who is serious about improving their recitation of the Qur'an and improving their recitation of the Qur'an.

In this article, the main elements are:

1. Providing Context: Emphasize the role of technology in our daily lives and its importance in personal and spiritual growth.

2. Highlighting Unique Features of the Application: Mentioning that Tarteel AI uses artificial intelligence to help with recitation of the Qur'an.

3. Engaging the Audience: Suggests that Tarteel AI is very useful for Muslims who are committed to improving their reading.

4. Benefit: Show that the application provides real-time feedback and support, preparing for a more in-depth discussion of its features and advantages in the next section.

This structure provides the background for a deeper exploration of Tarteel AI's functionality and why it is a highly recommended application for Qur'an recitation. Additionally, accessibility barriers in areas with limited technology pose further obstacles. This essay examines these challenges and proposes practical solutions to enhance AI's role in learning the Qur'an. (Alkhawaldeh, R. S., 2022).

The words of Allah S.W.T:

$$﴿٤﴾ وَرَتِّلِ الْقُرْآنَ تَرْتِيلًا$$

In Islam, reading the Qur'an with a beautiful voice is highly encouraged. Prophet Muhammad (PBUH) said, "And embellish the Qur'an with your voice" (Surah al-Muzammil, 73:4). This means that Muslims are encouraged to improve the recitation of the Qur'an with melodious and clear pronunciation, making the reading experience more touching and profound. A beautifully recited Al-Qur'an not only honors the sacred text but also deepens devotion and contemplation for both reciter and listener. (Muhd Farhan,2020).

2.   Literature Review

2.1 Traditional Teachings of the Qur'an: An Overview
Qur'an, the holy book of Islam, holds an important place in the lives of Muslims around the world. His teachings, revered as the literal word of God revealed to the Prophet Muhammad, are the foundation of Islamic education. Traditionally, the teaching of the Qur'an has been a rich, multifaceted practice, combining oral and textual methods. This article explores the traditional method of teaching the Qur'an, highlighting the historical and cultural context that has shaped it.

2.1.1 Historical Context
The Qur'an was revealed over a period of 23 years in 7th century Arabia, and its preservation began orally, a method that suited the predominantly oral culture of the time. Early Muslims memorized the Qur'an, a practice known as hifz, which remains the foundation of Qur'anic education. Prophet

Muhammad himself emphasized the importance of learning and teaching the Qur'an, stating, "The best of you are those who study the Qur'an and teach it" (Sahih al-Bukhari, Hadith 5027).

2.1.2 Madrasa system

One of the most important traditional methods of teaching the Qur'an developed in the madrasah system. Madrasahs, or Islamic schools, emerged as centers of religious and secular learning around the 10th century. They provide structured education in recitation of the Qur'an, tafsir (explanation the words of Allah), fiqh, and other Islamic sciences.

Madrasas play an important role in standardizing Qur'anic education. Students learn to read the Qur'an with correct pronunciation and intonation, a practice known as tajwid. Advanced students engage in interpretation to understand the deeper meaning of the Qur'anic text. This comprehensive approach ensures that the Qur'an is not only memorized but also understood and applied. (Boyle, 2006)

2.1.3 Halaqa and Private Tutors

Outside of formal institutions, the teaching of the Qur'an has also thrived in informal settings. Halaqas, or study groups, are gatherings where individuals gather to read and discuss the Qur'an. This method fosters a communal learning environment, emphasizing collective engagement with scripture.

Private tutoring is another traditional method, where students receive personal instruction from a knowledgeable teacher, often at home or in a mosque. This method allows for a customized learning experience, adjusting the pace and individual learning style. (Muhammad Qasim, 2007).

2.1.4 Influence of Cultural Context

The traditional method of teaching the Qur'an has been adapted to the diverse cultural contexts throughout the Islamic world. In Southeast Asia, for example, pesantren in Indonesia and lodges in Malaysia play the same role as madrasas, combining Qur'anic education with local customs and traditions. In West Africa, Qur'anic schools known as majalis emphasize memorization and recitation, reflecting the region's oral tradition. However, the essence of traditional Qur'anic teaching memorization, recitation, and interpretation continues to be preserved and respected. These methods ensure that the Qur'an remains a living, dynamic text, embedded in the hearts and minds of Muslims.

The teachings of the traditional Qur'an are proof of the Muslims' eternal respect for their holy book. Through various methods whether in a structured madrasah environment, a communal halaqa atmosphere, or a personalized private tutoring approach the Qur'an is taught, learned and appreciated. This rich tradition not only preserves the text but also fosters a deep personal relationship with the divine word of the Qur'an. (Seyyed Hossein, 1981).

2.2 Teachings of the Prophetic Qur'an: A Model of Islamic Education

Prophet Muhammad as the last messenger in Islam held an important role in the spread and interpretation of the Qur'an. His approach in teaching the Qur'an offers a deep insight into Islamic education. Through his method, the Prophet not only delivered the text of the Qur'an but also

exemplified its principles in daily life. This article explores the prophetic model of Qur'anic teaching, emphasizing its historical context, and enduring influence.

2.2.1 Historical Context

Prophet Muhammad received the revelation of the Qur'an for 23 years. The revelations were delivered to him by the Archangel Gabriel, often in response to a particular event or question. The Prophet's mission is to convey this revelation to people, explain its meaning, and implement their teachings.

2.2.2 Oral Tradition

In the early days of Islam, the oral transmission of the Qur'an was the most important. The companions of the Prophet known as Companions play an important role in memorizing and preserving the revelation. The Prophet encouraged this practice, emphasizing the importance of reading and understanding accurately. He stated, "The best of you are those who study the Qur'an and teach it" (Sahih al-Bukhari, Hadith 5027).

The reading of the Prophet himself became an example for his people. He carefully obeyed the laws of tajwid (the art of reciting the Qur'an) and taught these rules to his companions. The Prophet's manner of recitation, characterized by clarity, melody, and contemplation, set the standard for all subsequent generations. (Curzon Press, 1999).

2.2.3 Interactive Teaching Methods

The Prophet used various interactive methods to teach the Qur'an. He often engages in dialogue, asking questions to provoke thought and reflection. This Socratic method encourages his followers to reflect deeply and live the teachings. (Seyyed Hossein, 1981).

2.2.4 Encourage Memorization and Reflection

Memorizing the Qur'an, or hifz, was highly encouraged by the Prophet. He outlined the spiritual and intellectual benefits of memorizing the Qur'an, promising great rewards for those who undertake this endeavor. However, he also emphasized the importance of understanding and reflecting on the verses. The Qur'an itself invites the reader to reflect on its meaning: "Have they not paid attention to the Qur'an? If the Qur'an had not been from God, they would have found many contradictions in it" (Qur'an 4:82).

2.3 Technology -Assisted Qur'anic Learning

The integration of technology offers new avenues for learning, making Qur'anic education more accessible and flexible.

2.3.1 Online Platforms and Applications

One of the most significant developments in technology-assisted Qur'an learning is the proliferation of online platforms and mobile applications. This tool provides a variety of resources, including: (Gade, 2010).

2.3.2 Qur'an Text and Translation:

Many websites and apps offer the complete text of the Qur'an along with translations in various languages. This allows students to access and understand the verses of the Qur'an more easily. (Seyyed Hossein, 2015).

2.3.3 Tajwid and Tilawah Guide:

Interactive guides and tutorials help users learn tajwid rules and improve their reading skills. Some apps feature audio recordings by famous reciters (memorizers), allowing students to follow along and practice.

2.3.4 Memorization Tools:

Applications designed for hifz offer tools to help memorization. These include repetition features, progress tracking and mnemonic aids that help users retain and remember sentences.

2.3.5 Audio and Video Sources:

Recitation and Tafsir Videos: High-quality recordings of Qur'anic recitations by famous reciters and Qur'anic tafsir (tafsir) lectures are available on platforms such as YouTube and dedicated Islamic websites. These resources provide students with various perspectives and deepen their understanding. (Eisenlohr, 2009).

2.3.6 Digital Libraries and Research Tools:

Academic and scholarly research on the Qur'an has been greatly enhanced by digital libraries and research tools. The platform provides access to many manuscripts, reviews and scholarly articles, facilitating students and researchers to conduct in-depth studies. A searchable database and advanced indexing help users quickly find specific topics and sentences.

3.   Methodology

To understand the issues and challenges associated with using AI for Qur'anic recitation, this study uses a qualitative and quantitative approach. Data are collected through literature as well as surveys, and analysis of Tajwid literature, involving educators, technologists, and Tajwid experts. This approach aims to gather diverse perspectives and insights to identify effective strategies for overcoming challenges.

4.   Discussion (Findings and Analysis)

4.1 History of Tarteel AI

Tarteel AI is an innovative application designed to assist users in improving their reading and memorizing Qur'an skills using artificial intelligence. Launched in 2018 by a group of Muslim technologists and Qur'an enthusiasts, Tarteel AI has grown rapidly to become a valuable tool for millions of Muslims around the world. Tarteel AI's main function is to provide real-time feedback on reciting the Qur'an. It listens to the user's reading, detects errors such as mispronunciations or omitted words, and offers correction suggestions. This is achieved through advanced speech

recognition technology tailored specifically for Arabic and Qur'anic pronunciation. The application also includes a voice search feature, allowing users to search and read specific verses from the Qur'an.

In addition to real-time feedback, Tarteel AI supports users in tracking their progress, setting personalized goals, and accessing over 112 different translations of the Qur'an. The application is widely used in over 150 countries, supporting a large and diverse user base. Tarteel AI's commitment to improving the study of the Qur'an has also led it to provide sponsorships for Muslim students pursuing Qur'anic education. The development and expansion of Tarteel AI highlights its importance as a modern tool for learning the Qur'an, combining traditional practices with advanced technology to enhance its user experience. (Tarteel AI,2023)

4.2 Ensuring Technical Accuracy: Challenges and Solutions
4.2.1 Complexity of Tajwid Rules
Tajwid, the art of Qur'anic recitation, surround a wide array of rules have control of pronunciation, articulation, and phonetics (makhraj). These rules are highly context-dependent, varying based on the position of letters and words within a verse. Programming an AI to understand and apply these rules with the same proficiency as a human expert is a significant technical challenge.

4.2.2 Collaboration with Tajwid Experts
Developing AI systems that accurately follow Tajwid rules necessitates close collaboration with Tajwid experts. These experts can provide insights into the nuances of recitation that are often missed by purely technical approaches. Regular workshops and collaborative sessions can ensure that the AI's performance is continually assessed and refined based on expert feedback.

4.2.3 Continuous Refinement and Validation
AI systems need continuous refinement to adapt to the complexities of Tajwid. This includes regular updates to the algorithms based on new insights and feedback. Validation against expert recitations is crucial to ensure that the AI maintains high standards of accuracy. Implementing a feedback loop where users can report inaccuracies or suggest improvements can further enhance the system's reliability.

4.3 Tarteel AI Review: An Application in Practice
The Tarteel AI application offers a practical example of how AI can assist in Qur'anic recitation while also highlighting some of the challenges in ensuring technical accuracy. According to a review from the YouTube channel Arabic 101, Tarteel AI provides three main modes: Listening Mode, Recitation Mode, and Reading Mode.

Researchers discuss software in their research articles from various perspectives. Some focus on implementing methods like repetition, as seen in Tarteel.ai, which uses both repetition and acoustic signal methods. Among these, particular attention is given to the effectiveness of Tarteel.ai in aiding memorization. Additionally, there is a focus on innovative features in the memorization process, such as the use of voice recognition and gamification, also found in Tarteel. Furthermore, system developers highlight the features of widely downloaded software that have been shown to enhance convenience and effectiveness in memorizing activities. (Haryono et al, 2022).

4.3.1 Listening Mode

In Listening Mode, users can choose a reciter, adjust the speed, and enable verse repetition, which is particularly helpful for memorization. These features are common in other apps, but Tarteel AI's unique value lies in its Recitation Mode.

4.3.2 Recitation Mode

In Recitation Mode, Tarteel AI listens to the user's recitation and follows along, providing immediate feedback. If a word is mispronounced, the app does not highlight the word and won't proceed until the user corrects their pronunciation. While this feature is useful, it currently does not account for all Tajwid rules. The app primarily focuses on pronunciation accuracy, and users must manually correct errors that involve Tajwid.

The reviewer from Arabic 101 points out that the app is quite effective in ensuring the user pronounces words correctly. However, it lacks the capability to enforce Tajwid rules strictly. This highlights a significant area for improvement in AI-assisted Qur'anic education: incorporating comprehensive Tajwid rule validation.

4.3.3 Reading Mode

Furthermore, Tarteel AI allows users to switch to Reading Mode, where they can read an Ayah with its translation and even access Tafsir (interpretations). This integration of various learning tools can enhance the user's understanding and recitation skills, yet the primary challenge remains ensuring that all aspects of Tajwid are adhered to accurately by the AI.

4.4 Tarteel AI Features
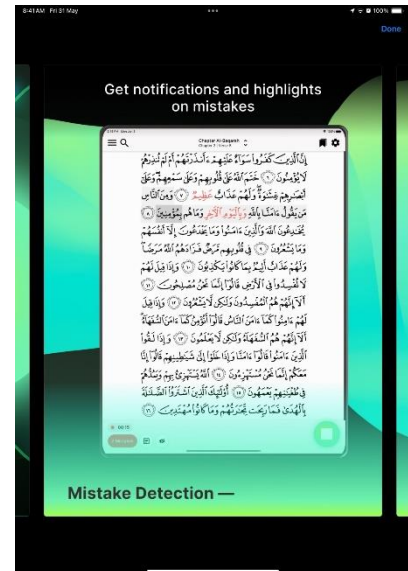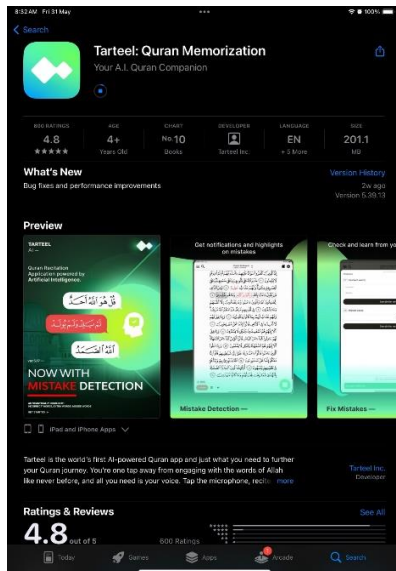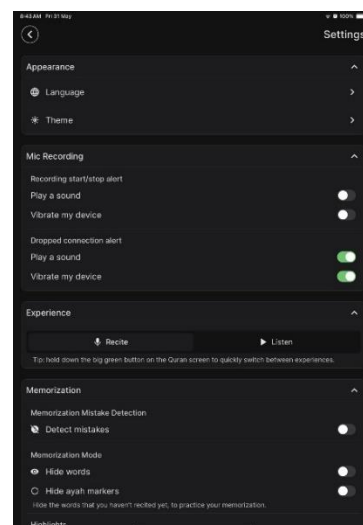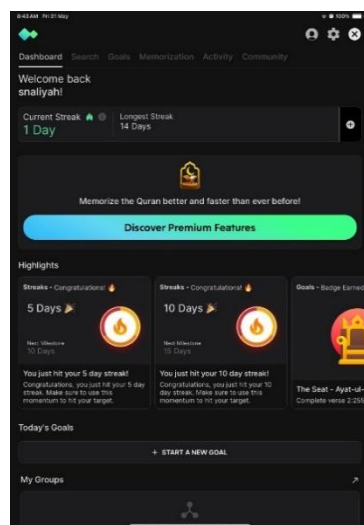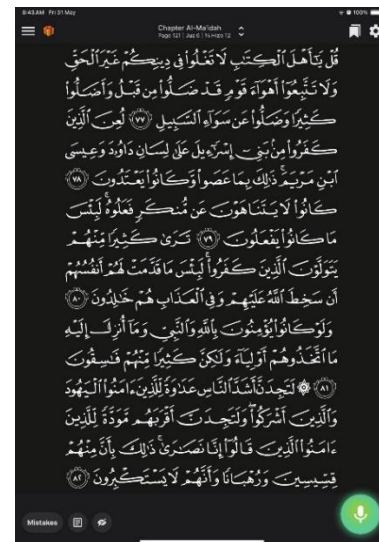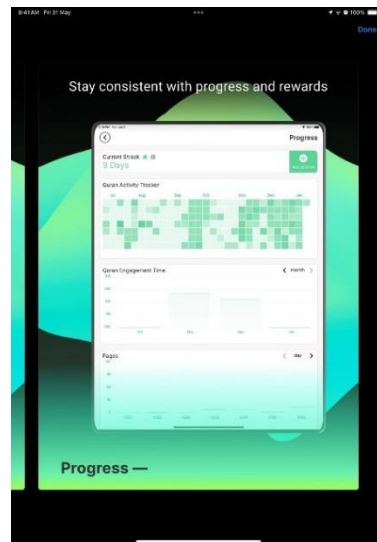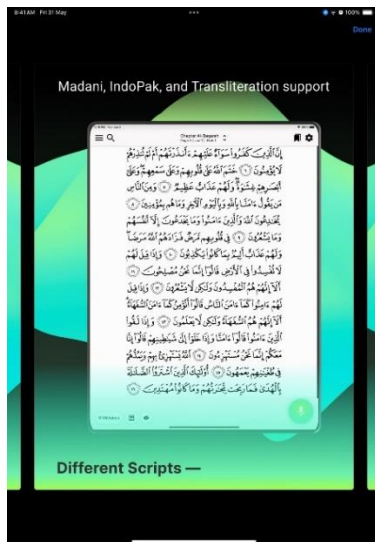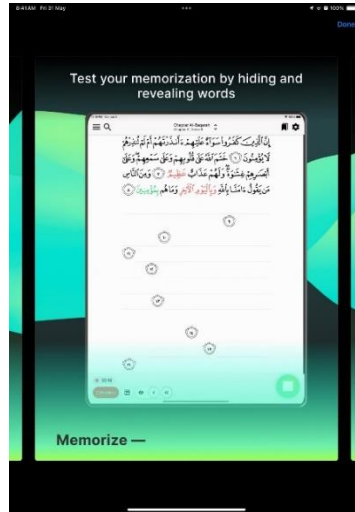
4.5 Recording and Feedback Features

The app also records users' recitations, which can be accessed with a premium account. This feature is beneficial for self-assessment and for seeking feedback from human experts. Recording recitations and providing feedback on mistakes can help users improve their accuracy over time.

4.5.1 User Feedback Integration
Integrating user feedback into the AI system is crucial for continuous improvement. The ability to identify and correct errors based on real-time user input can significantly enhance the AI's performance. Tarteel AI's model of recording recitations and providing premium users access to these recordings for further review is a step towards this continuous improvement loop.

4.5.2 Potential Solutions
Advanced Machine Learning Techniques: Using sophisticated machine learning techniques, such as deep learning, can help in better understanding and applying Tajwid rules. These techniques can analyze vast amounts of data from expert recitations to learn the intricate patterns and variations in Tajwid.

Hybrid Systems: Combining rule-based and machine learning approaches can enhance the accuracy of AI systems. While machine learning can handle the complexities and variations, rule-based systems can ensure adherence to fundamental principles of Tajwid.

User Feedback Integration: Creating a platform for users to provide feedback on AI-generated recitations can help in identifying areas of improvement. This feedback can be used to fine-tune the algorithms, ensuring they remain accurate and reliable.

In summary, while AI applications like Tarteel AI demonstrate significant potential in enhancing Qur'anic recitation education, they also underscore the challenges in achieving technical accuracy. Continuous collaboration with Tajwid experts, refining AI algorithms, and integrating user feedback are essential steps to overcome these challenges and ensure that AI systems can reliably support and enhance Qur'anic learning.

4.6   Overcoming Accessibility Barriers: Strategies and Solutions

4.6.1 Digital Divide
One of the significant barriers to using AI for Qur'anic education is the digital divide. Many regions, particularly in developing countries, lack the necessary technological infrastructure to support AI-powered tools. Internet access, compatible devices, and digital literacy are preconditions that are not universally available.

4.6.2 Offline Solutions
Developing offline versions of AI tools can significantly enhance accessibility. These versions can be pre-loaded with necessary data and functionalities, allowing users to benefit from AI-assisted learning without needing continuous internet access. Additionally, providing these tools on low-cost devices can help in reaching a broader audience.

4.6.3 Training and Support

Digital literacy is another critical aspect. Providing training and support to educators and learners on how to use AI tools effectively can bridge the gap. Workshops, online tutorials, and user-friendly interfaces can make these tools more accessible and easier to use.

4.7 Advantages and Disadvantages of Tarteel AI

4.7.1 Advantages

1. Immediate Feedback: Tarteel AI provides real-time feedback on Qur'anic recitation, allowing users to correct mistakes instantly.
2. Personalized Learning: The application offers personalized learning experiences tailored to individual users' needs and learning pace.
3. Accessibility: Tarteel AI enhances accessibility to Qur'anic education by providing a convenient platform for users to practice recitation anytime and anywhere.
4. Progress Tracking: Users can track their progress over time, setting goals and monitoring their improvement in Qur'anic recitation skills. (Theresa Naiforthat,2023)

4.7.2 Disadvantages

1. Limited Tajwid Adherence: While Tarteel AI offers feedback on pronunciation, it may not strictly adhere to all Tajwid rules, potentially leading to inaccuracies in recitation.
2. Dependency on Technology: Users may become overly reliant on the application, potentially diminishing their ability to recite the Qur'an independently without technological assistance.
3. Digital Divide: Accessibility to Tarteel AI may be limited in areas with poor internet connectivity or lack of access to compatible devices, widening the digital divide in Qur'anic education.

4.8 End-Users Feedback of Tarteel AI

4.8.1 Accuracy of Tarteel Ai in reciting the Qur'an

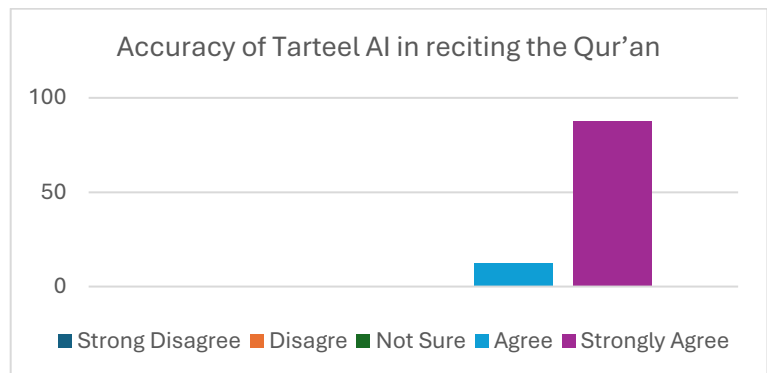| Accuracy of Tarteel Ai in reciting the Qur'an	
Strongly Disagree	0%
Disagree	0%
Not Sure	0%
Agree	12.5%
Strongly Agree	87.5%

Table 1

Diagram 1

Based on the table and diagram above, the respondents who **strongly disagree, disagree and are not sure** about the Accuracy of Tarteel Ai in reciting the Qur'an are **none or 0%**. While those who **agree are 2 people or 12.5%.** Respondents who **strongly agree** with the Accuracy of Tarteel AI

are as many as **14 people or 87.5%.** Therefore, the majority of respondents strongly agree with the accuracy of Tarteel AI in reciting the Qur'an.

4.8.2 Reliability of Al Qur'an reading in Tarteel AI

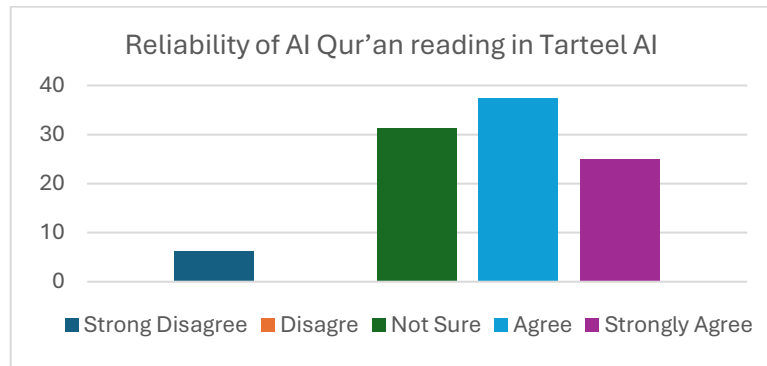| Reliability of Al Qur'an reading in Tarteel AI	
Strongly Disagree	**6.3%**
Disagree	**0%**
Not Sure	**31.3%**
Agree	**37.5%**
Strongly Agree	**25%**

Table 2   **Diagram 2**

Based on the table and diagram above, the respondents who **strongly disagree are 1 person or 6.3%**, while the people who **disagree are 0 people or 0%**. There are also respondents who are **not sure** about the reliability of Qur'an reading in Tarteel AI, the number of respondents is **5 people or 31.3%.** While those who **agree are 6 people or 37.5%**. Respondents who **strongly agree** with the reliability of Qur'an reading in Tarteel AI are as many as **4 people or 25%.** Therefore, the majority of respondents agree on the reliability of reciting Qur'an in Tarteel AI.

4.8.3 Accuracy in the translation and interpretation of the Qur'an in Tarteel AI

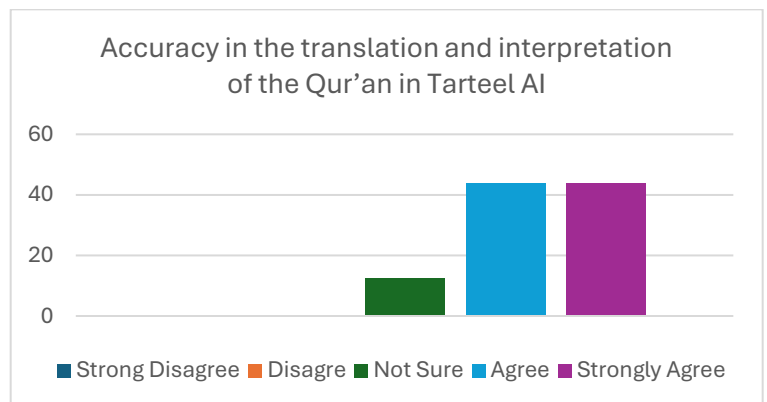| Accuracy in the translation and interpretation of the Qur'an in Tarteel AI	
Strongly Disagree	**0%**
Disagree	**0%**
Not Sure	**12.5%**
Agree	**43.75%**
Strongly Agree	**43.75%**

Table 3   **Diagram 3**

Based on the table and diagram above, respondents **who strongly disagree and disagree** with the Accuracy of Tarteel Ai in reciting the Qur'an are **none or 0%.** While those who are **not sure are 2 people or 12.5%.** Respondents who **agree are 7 people or 43.75%** and respondents who **strongly agree are 7 people or 43.75%.** Therefore, the majority of respondents agree with the accuracy of the translation and interpretation of the Qur'an in Tarteel AI.

4.8.4 Flexibility of interaction by Tarteel AI users in terms of correction and training

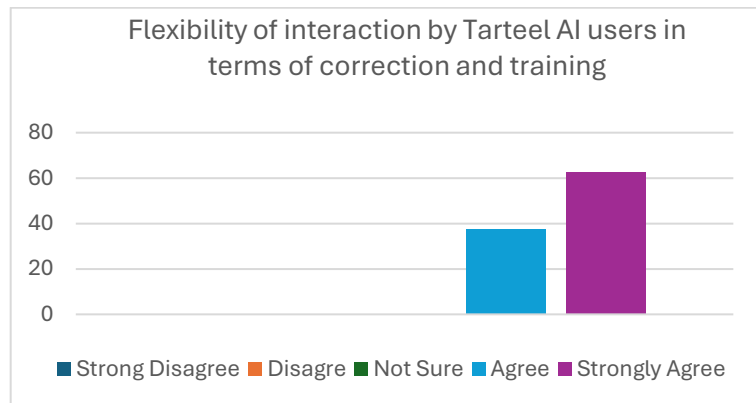| Flexibility of interaction by Tarteel AI users in terms of correction and training	
Strongly Disagree	0%
Disagree	0%
Not Sure	0%
Agree	37.5%
Strongly Agree	62.5%

Table 4

Diagram 4

Based on the table and diagram above, respondents who **strongly disagree, disagree and are not sure** about the flexibility of interaction by Tarteel AI users in terms of correction and training are **none or 0%.** While those who **agree are 6 people or 37.5%**. Respondents **who strongly agree** with the flexibility of interaction by Tarteel AI users in terms of correction and training are as many as **10 people or 62.5%**. Therefore, the majority of respondents strongly agree with the flexibility of interaction by Tarteel AI users in terms of correction and training.

4.8.5 Diversity in reading styles in Tarteel AI

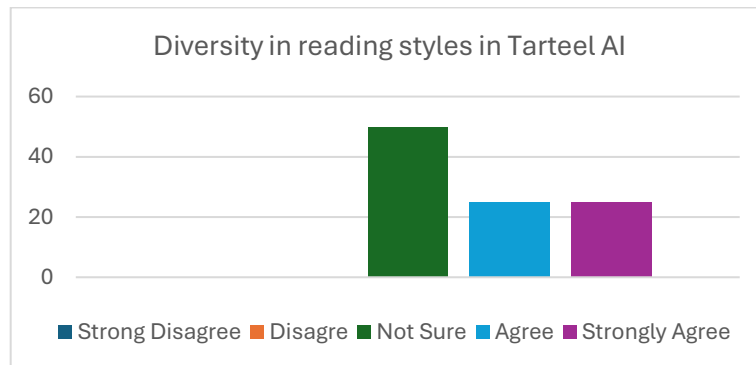| Diversity in reading styles in Tarteel AI	
Strongly Disagree	0%
Disagree	0%
Not Sure	50%
Agree	25%
Strongly Agree	25%

Table 5

Diagram 5

Based on the table and diagram above, respondents who **strongly disagree and disagree** with diversity in reading styles in Tarteel AI **are none or 0%.** While those **who are not sure are 8 people or 50%.** Respondents who **agree are 4 people or 25%** and **strongly agree** with diversity in reading styles in Tarteel AI is as many as **4 people or 25%.** Therefore, the majority of respondents strongly agree with diversity in reading styles in Tarteel AI.

4.8.6 The rate of reading speed in Tarteel AI is appropriate

The rate of reading speed in Tarteel AI is appropriate	
Strongly Disagree	**0%**
Disagree	**0%**
Not Sure	**0%**
Agree	**43.75%**
Strongly Agree	**56.25%**

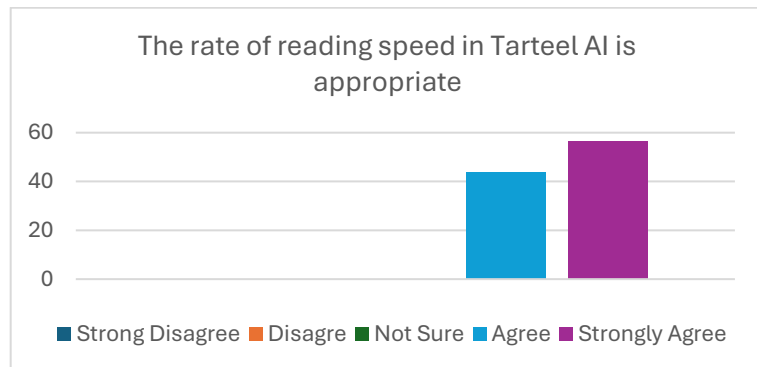**Table 6**   **Diagram 6**

Based on the table and diagram above, the respondents who **strongly disagree, disagree and are not sure** about the rate of reading speed in Tarteel AI is appropriate are **none or 0%.** While those **who agree are 7 people or 43.75%.** Respondents who **strongly agree** with the rate of reading speed in Tarteel AI is appropriate are **9 people or 56.25%.** Therefore, the majority of respondents strongly agree that the rate of reading speed in Tarteel AI is appropriate.

4.8.7 Usability of the Tarteel AI application in teaching the Qur'an

Usability of the Tarteel AI application in teaching the Qur'an	
Strongly Disagree	**0%**
Disagree	**0%**
Not Sure	**25%**
Agree	**37.5%**
Strongly Agree	**37.5%**

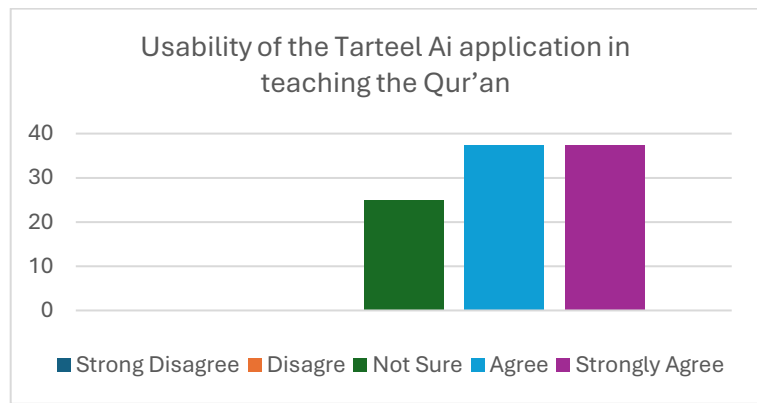**Table 7**   **Diagram 7**

Based on the table and diagram above, respondents who **strongly disagree and disagree** with the usability of the Tarteel AI application in teaching the Qur'an are **none or 0%.** While those who **are not sure are 4 people or 25%.** Respondents **who agree and strongly agree are 6 people or 37.5%** about the usability of the Tarteel AI application in teaching the Qur'an. Therefore, the majority of respondents agree and strongly agree with the usability of the Tarteel AI application in teaching the Qur'an.

4.8.8 Does Tarteel AI follow Tajwid rules?

Based on the table and diagram below, respondents who **strongly disagree and disagree** with does Tarteel AI follow Tajwid rules **are none or 0%.** There are **9 people or 56.25% who are not sure** about whether Tarteel AI follows the rules of Tajwid. While the **respondents who agree** with

whether Tarteel AI follows the rules of Tajwid **are 4 people or 25%.** Respondents **who strongly agree** with Tajwid Tarteel AI are as many as **3 people or 18.75%.** In this survey, the majority of respondents are not sure whether Tarteel AI follows the rules of Tajwid.

Does Tarteel AI follow Tajwid rules?	
Strongly Disagree	**0%**
Disagree	**0%**
Not Sure	**56.25%**
Agree	**25%**
Strongly Agree	**18.75%**
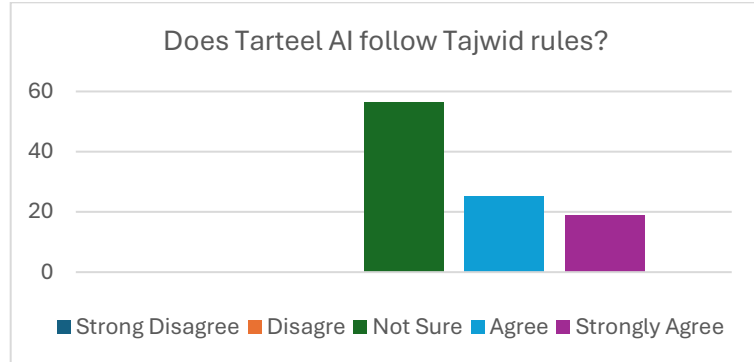
Table 8   **Diagram 8**

4.8.9 The Tarteel AI application is easy to use

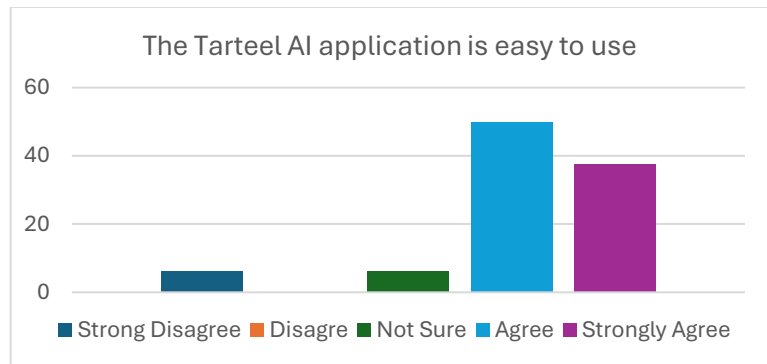| The Tarteel AI application is easy to use	
Strongly Disagree	**6.3%**
Disagree	**0%**
Not Sure	**6.3%**
Agree	**50%**
Strongly Agree	**37.5%**

Table 9   **Diagram 9**

Based on the table and diagram above, the respondents **who strongly disagree are 1 person or 6.3%,** while the people who disagree are 0 people or 0%. There are also respondents **who are not sure** about the Tarteel AI application is easy to use, the number of **respondents is 1 person or 6.3%.** While those **who agree are 8 people or 50%**. Respondents **who strongly agree** with the Tarteel AI application is easy to use are **6 people or 37.5%.** Therefore, the majority of respondents agree that the Tarteel AI application is easy to use.

4.8.10 The pronunciation of letters and words clear in Tarteel AI

Based on the table and diagram below, the respondents **strongly disagree, disagree and are not sure** related to the pronunciation of letters and words clear in Tarteel AI is **no one or 0%.** While those **who agree are 6 people or 37.5%.** Respondents **who strongly agree** with the pronunciation of letters and words clear are as many as **10 people or 62.5%.** Therefore, the majority of respondents strongly agree with the pronunciation of letters and words clear in Tarteel AI.

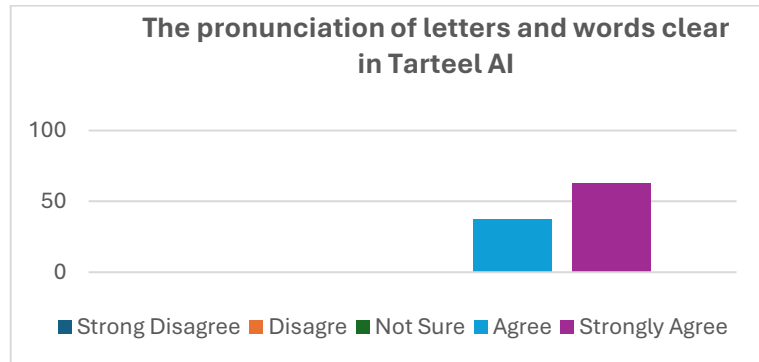| The pronunciation of letters and words clear in Tarteel AI	
Strongly Disagree	**0%**
Disagree	**0%**
Not Sure	**0%**
Agree	**37.5%**
Strongly Agree	**62.5%**

Table 10

Diagram 10

5.   Conclusion

Integrating artificial intelligence (AI) into Qur'anic recitation education presents both significant opportunities and challenges. This study has explored various aspects of using AI, such as Tarteel AI, in aiding Qur'anic recitation and memorization. The findings highlight AI's potential to provide personalized learning experiences and real-time feedback, which can greatly enhance the educational process. However, the study also underscores several key challenges. Capturing the spiritual essence of Qur'anic recitation through AI, ensuring strict adherence to Tajwid rules, and addressing accessibility barriers, especially in technologically underserved areas, are significant obstacles. The study's methodology, involving surveys and expert consultations, revealed diverse perspectives on these issues and identified practical strategies for improvement.

Working together with Tajwid professionals on an ongoing basis is crucial to addressing the intricacy of Tajwid regulations. This can guarantee that AI systems are continuously improved and verified against professional recitations. Furthermore, the precision of AI in applying Tajwid rules can be improved by incorporating hybrid systems and cutting-edge machine learning algorithms. Creating offline solutions and giving educators and students support and training are necessary to remove accessibility obstacles. By taking these steps, the digital divide can be closed and more accessible AI-powered Qur'anic education resources can be made available.

In conclusion, even while AI programs like Tarteel AI have a lot of potential to improve the teaching of Qur'anic recitation, they also have a lot of difficulties. Through a combination of spirituality, technological precision, and accessibility, engineers and educators can make the most of artificial intelligence (AI) to enhance the Qur'anic learning process for all. To fully realize the promise of AI in Qur'anic education, it is imperative to prioritize ongoing refinement, expert collaboration, and accessibility concerns.

6.   References

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