

Quran Memorization Quiz-Based Mobile Applications: A Comparative Study of Retain Quran and Cinta Quran Memorization Hafiz

Nurul Izzah Yussof

Faculty of Quranic and Sunnah Studies, Universiti Sains Islam Malaysia

Abdul Muhaimin Ahmad

Faculty of Quranic and Sunnah Studies, Universiti Sains Islam Malaysia

Nadiyah Ramlan

Faculty of Quranic and Sunnah Studies, Universiti Sains Islam Malaysia

Zulkifly Mohd Zaki

Faculty of Science and Technology, Universiti Sains Islam Malaysia

Abstract

Quran memorization holds significant spiritual and cultural value within the Muslim community, necessitating discipline, consistency, and effective retention tools. This study aims to (1) analyze two selected Quran memorization quiz applications available on the Play Store or App Store, specifically Retain Quran and Cinta Quran Memorization Hafiz, (2) examine user reviews of Retain Quran and Cinta Quran Memorization Hafiz, and (3) provide insights for potential improvements to guide application developers and researchers in designing better Quran memorization applications in the future. The research employs a qualitative approach comprising three main techniques: (1) direct observation of the selected applications to assess functionality, design, and their potential in supporting memorization; (2) comparison of key features, including quiz question variety and gamification elements; and (3) analysis of user reviews to obtain insights from actual user experiences. The findings underscore the potential of digital tools to modernize traditional Quran memorization methods through quiz-based mobile applications. The study concludes that quiz-based mobile applications demonstrate strong potential in supporting Quran memorization. Nevertheless, future research should explore broader features and advanced technologies to further enhance the learning experience and address diverse user preferences.

Keywords: Digital learning tools, Quiz, Quran, Quran memorization, *Tahfiz* education.

Article Progress

Received: 09 January 2026

Revised: 23 January 2026

Accepted: 09 February 2026

1. INTRODUCTION

For centuries, Muslims have devoted themselves to Quran memorization, a practice that requires discipline, consistency, and effective tools to strengthen retention. This process holds profound spiritual and cultural significance, as it preserves the word of Allah and reinforces the bond between the memorizer and the Creator.

Memorization is defined as the act or process of learning something so that it can be remembered exactly. It involves committing information to memory, allowing for later recall. In the context of Quran memorization, this means memorizing every verse of the Quran, accompanied by the pure intention to preserve the Quran verses from any alteration, whether in the form of addition, elimination, or manipulation (Shukri et al., 2020).

Quran memorization is classified as *fardhu kifayah*, meaning that if an individual or a group fulfills this obligation, it is lifted from others. Forgetting Quran memorization due to laziness, negligence, or preoccupation with worldly matters is considered sinful. Conversely, if a person earnestly attempts to retain Quran memorization but forgets due to natural limitations of memory, it is not deemed sinful (Mufti Wilayah Persekutuan, 2018; Daud et al., 2022).

`Abdullah narrated:

بِسْمَا لِأَحَدِهِمْ يَقُولُ نَسِيْتُ آيَةَ كَيْتٍ وَكَيْتَ بَلْ هُوَ نُسِيَّ اسْتَذَكِرُوا الْقُرْآنَ فَلَهُوَ أَشَدُّ تَفْصِيًّا مِنْ صُدُورِ الرِّجَالِ مِنَ النَّعَمِ
بِعُفْلِهَا

Which means, “The Prophet (ﷺ) said, ‘It is a bad thing that some of you say, ‘I have forgotten such-and-such verse of the Quran,’ for indeed, he has been caused (by Allah) to forget it. So, you must keep on reciting the Quran because it escapes from the hearts of men faster than camel do.” (Sahih al-Bukhari. 5032).

As highlighted in the aforementioned hadith, Prophet Muhammad SAW emphasized the responsibility of memorizers to retain their memorization of the Quran. Repetition is a critical component of this process and should not be neglected. Memorizing the Quran is inherently challenging, and the subsequent repetition required further increases this difficulty. Achieving the target number of memorized verses at any given time demands considerable patience and discipline (Mohd Nawawi et al., 2021).

Nowadays, with the rapid growth of technology, many tools can be used to learn the Quran. Digital tools, particularly mobile applications, provide a flexible, accessible platform that enables users to access information and services regardless of location, thanks to the integration of mobile computing and wireless communication technologies (Wang et al., 2004). From an educational perspective, it helps improve learning outcomes by offering innovative and interactive methods that replace traditional teaching strategies (García-Martínez et al., 2019).

One approach that has attracted interest is the implementation of quizzes. Quizzes can greatly improve memory retention and comprehension of a study (Yang et al., 2021). This technique, known as active recall, enables individuals to retrieve information from memory more easily, thereby boosting long-term retention. Research indicates that quizzes, particularly when administered at intervals and repeated, are more effective at enhancing long-term memory retention than passive study techniques. This phenomenon is known as the quizzing effect, in which active retrieval during quizzes improves memory retention over time (McDaniel et al., 2013).

Besides that, quizzes encourage active learning and engagement by challenging students to recall, understand, and apply their knowledge directly rather than passively receiving information (Cook et al., 2017). Moreover, quizzes give teachers and students the chance to identify areas of weakness so they can focus on strengthening them, particularly in Quran memorization. They can spend more time on the area rather than repeating without focus. It is proven that quizzes with corrective feedback, conducted regularly over a longer period, are more effective as a learning method for improving students’ achievement.

Quiz applications are a creative way to get users interested in interactive learning. By incorporating quiz-based applications, these applications can also assist students in self-learning and provide immediate feedback, allowing them to correct their mistakes (Rüth et al., 2021). This interactive approach not only enhances user engagement but also promotes a deeper understanding of the subject matter through active participation and instant evaluation.

1.1 Short-Term and Long-Term Memory

Information Processing Theory is a cognitive framework that emphasizes how the human mind receives, processes, stores, and retrieves information. It compares human cognition to computer processing, treating the brain as hardware and cognitive processes as software (Gurbin, 2015). This theory has been widely used to understand and improve results across a variety of fields, such as organizational management, design, and education. According to Gurbin (2015), there are three

components of information processing theory which are: (1) sensory memory, (2) working memory, and (3) long-term memory.

Sensory memory is the initial stage of memory that briefly holds sensory information from the environment through senses such as sight, sound, touch, smell, and taste in its raw form, allowing the brain to process and interpret incoming stimuli before being processed further into short-term or long-term memory (Cowan, 2008; Wan et al., 2019). Working memory, or short-term memory, serves as the brain's notepad, allowing temporary storage and manipulation of information and facilitating cognitive tasks and retrieval from long-term memory (Baddeley, 2006). However, working memory has a limited capacity and can only retain information for a few seconds unless actively practiced (Jamaludin, 2022). This is supported by Ebbinghaus Forgetting Curve (1913), which proves that memory loss occurs rapidly within the first hour after learning, but then the rate of forgetting gradually slows over time.

Long-term memory, on the other hand, is like a big library where info can stay for years and be found when needed. This is the last stage at which data is permanently stored, which is crucial for retaining knowledge and skills. It is divided into several categories, such as procedural, semantic, and episodic memory, each representing a distinct type of experience and knowledge (Eysenck, 1988). Studies show that the neural mechanisms underlying encoding, rehearsal, and retrieval during the shift from working memory to long-term memory overlap (Vo et al., 2021).

In the context of Quran memorization, new memorization is stored in short-term memory, while actively repeated memorization is stored in long-term memory. Gurbin (2015) emphasized continuous repetition to strengthen the consolidation of memories into long-term memory. However, a study compares restudying and testing, showing that an active retrieval process strengthens memory more effectively, enhancing long-term memory retention, compared with passive review such as reading or listening (McDermott et al., 2014). This testing effect has been observed through various populations, including university students, Alzheimer's patients, and elementary school students, indicating that active recall strengthens memory formation, consolidation, and retrieval (Betsch et al., 2015; Arkin, 1997).

As quizzes are one type of testing method, studies show that quizzes encourage students to read before class, thereby increasing active learning and engagement in large-scale lectures, and helping students understand the content more deeply (Cook & Babon, 2017). Supporting this, McElroy (2016) found that incorporating quizzes into educational settings can significantly improve students' ability to retain and recall information. Thus, the principles and testing effect of active recall are highly relevant to Quran memorization and educational gamification, as they significantly improve memorization, especially compared to passive review techniques.

Although quizzes are proven to be an effective learning tool, their effectiveness depends on the students' cognitive load. Cognitive load theory holds that human working memory is limited in both capacity and duration. If cognitive load exceeds working memory capacity, learning performance will be negatively affected (Sweller et al., 2019; Paas et al., 2010). Therefore, it is important to provide flexible levels of quiz questions to fulfil the students' varying cognitive loads. Heitmann et al. (2021) found that when quiz difficulty is adjusted based on students' perceived cognitive load, students show higher knowledge retention and better performance, as the adaptation helps maintain an optimal level of challenge without overwhelming them.

2. PROBLEM STATEMENT

Dasar Pendidikan Tahfiz Negara (DPTN) strives to establish *tahfiz* education as a complete process for producing literate children capable of reading, memorizing, and comprehending the Quran. Students are expected to combine *naqli*, the knowledge received through divine revelation, and *aqli*, the knowledge gained through intellect, to ensure a good mind, spirit, emotion, and body. The idea

behind its implementation is to foster effective generations of huffaz who actively contribute to national development and the well-being of the ummah.

However, a study by Hussin et al. (2023) revealed that more than 70% of *tahfiz* students in Malaysia who attended interviews to continue their studies in the field of *tahfiz* and qiraat were unable to maintain their Quran memorization, even though they had successfully memorized 30 chapters. This situation indicates that the biggest challenge in Quran memorization is not only memorization itself, but also maintaining it consistently. Common problems include a lack of motivation, discipline, and time management, as well as emotional disturbance. Ahmad et al. (2022) agree that motivation is crucial to students' ability to complete Quran memorization.

Besides, emotional challenges may negatively affect their desirability and, at times, lead them to plan to drop the memorization process altogether (Abdullah et al., 2021). The stress of failing to memorize verses can leave students feeling frustrated or even depressed. If this matter is not addressed, it can lead to burnout among *tahfiz* students, causing them to lose motivation to continue memorizing. Therefore, in addition to moral support from family and teachers, an inclusive teaching and learning approach is essential to help students overcome these emotional challenges and remain motivated in their efforts to memorize the Quran.

A previous study by Hashim (2015) proves that *tahfiz* learning styles affect the students' performance. In particular, traditional methods in *tahfiz* learning have been identified as a factor affecting students' performance (Ahmad et al., 2022; Hussin et al., 2023). Consequently, several researchers suggest using the technology in *tahfiz* learning to improve students' performance (Salihin et al., 2022). Although there are challenges in using technology in learning, it cannot be denied that it also offers innovative solutions. The combination of traditional methods and technology will improve students' memorization quality (Sofii, 2024).

Therefore, this study emphasizes the need to examine how mobile applications, specifically quiz-based ones, can support and enhance Quran memorization. With the increasing number of applications available, this comparative analysis is expected to identify the strengths and areas for improvement of each application, as well as to provide guidance for the development of Quran memorization applications aligned with the objectives of *tahfiz* education in Malaysia.

3. OBJECTIVES

The focus of this study is to:

- i. Analyze two selected Quran memorization quiz applications available on the Play Store or App Store, specifically Retain Quran and Cinta Quran Memorization Hafiz.
 - ii. Examine user reviews of Retain Quran and Cinta Quran Memorization Hafiz.
 - iii. Provide insights for potential improvements to guide application developers and researchers in designing better Quran memorization applications in the future.
- Analyze the application of Retain Quran and Cinta Quran Memorization Hafiz.

4. METHODOLOGY

This study employs a qualitative approach with content analysis as the main method. This method was chosen to allow authors to examine and evaluate in depth the features, functions, and user reviews of quiz-based mobile applications. Through content analysis, data was obtained from online platforms, Google Play Store and App Store. The authors chose to analyze two Quran memorization quiz-based mobile applications which are Retain Quran and Cinta Quran Memorization Hafiz based on their popularity and high user ratings which are 4.8 to 5.0, reflecting actual user experience. in supporting their Quran memorization journey.

To conduct an analysis of the applications, the data collection involves 3 main approaches.

1. **Direct observation** by using selected application before analyzing both applications. During the observation, the authors focus on observing the main features and functions of the application. Data is obtained through observation notes and screenshots to support the analysis.
2. **Comparison of key features** is used to compare the applications. Among the features evaluated are quiz question variety, and gamification elements. This data is systematically analyzed to identify similarities, differences, and potential improvements that can be made to the quiz-based mobile applications.
3. **User review analysis** was carried out by examining selected feedback from the Play Store and App Store. A total of 100 latest user reviews posted between year 2023 and 2025 were selected. The reviews were selected using purposive sampling based on their relevance to the study focus, particularly comments discussing quiz functionality, user experience, and memorization support. The applications were observed and tested for a period of two weeks to examine their features, navigation, and quiz functionality.

Then, thematic analysis was conducted by coding relevant statements from user reviews and grouping them into recurring themes such as usability, quiz functionality, technical issues, memorization support, and improvement suggestions. This coding process enabled the researchers to systematically interpret user feedback and identify common patterns related to the strengths and limitations of the applications. Refer to Table 1 below.

Table 1: Coding Procedure in Thematic Analysis of User Reviews

Sample User Review	Initial Code	Theme
Simple and easy to use	Simple, easy	Usability
The quiz is very useful	Quiz, useful	Quiz functionality
Many bugs on data keeping	Bugs	Technical issues
Suitable for memorizing Quran	Suitable, memorizing	Memorization support
Please add search bar option to search page number	Add search bar	Improvement suggestions

4. FINDINGS

Retain Quran was developed in collaboration with developer Mohamed Barkhad and the DynamoLogic Solutions team, starting around 2021 as a non-profit project to help Muslims retain their Quran memorization. It was first released on 12 October 2022 with the latest update on 6 November 2025. This application is available on both Android and iOS platforms, with more than 500,000 downloads. The overall user rating on the Play Store is 5.0 out of 5, indicating high user satisfaction.

Cinta Quran Memorization Hafiz was developed by Hedi Herdiana from Indonesia and first launched on 19 February 2021, with the latest update on 17 October 2023. Compared to Retain Quran, Cinta Quran Memorization Hafiz is available only on Android and has more than 100,000 downloads. In contrast, Cinta Quran Memorization Hafiz received an overall rating of 4.8 out of 5, slightly lower than Retain Quran. Both applications are free, but Cinta Quran Memorization Hafiz contains advertisements that may interrupt the user experience.

Based on the researchers' direct observation, both Retain Quran and Cinta Quran Memorization Hafiz applications provide reading functionality with audio and translations. Retain Quran offers more than 20 reciters, while Cinta Quran Memorization Hafiz offers more than 50. As Cinta Quran Memorization Hafiz only provides Mushaf Uthman, Retain Quran offers five choices, including Mushaf Medina. Considering that both applications are designed to help users retain their

Quran memorization, the reading functionality includes memorization features that allow users to repeat selected verses.

This shows that both applications aim to improve Quran retention and memorization through visual and auditory learning tools. By enhancing engagement, comprehension, and critical thinking among students with diverse learning styles, visual learning is the most effective sensory modality for learners (Kurdekar et al., 2020), supporting inclusive teaching methods (Lhoussine Qasserras, 2024). According to Winarto et al. (2020), using audiovisual materials to teach Islamic religious education enhances students' engagement, performance, and overall learning outcomes, despite potential drawbacks related to time management and electrical issues.

Focusing on the quiz functionality, it was found that Retain Quran utilizes spaced repetition system in the form of flashcards. Users need to add new cards first before start reviewing with options of surah or selected verses from the surah. Based on these, several weaknesses were identified. First, there is no selection for chapters, or, much less, a combination of chapters and surahs. Second, users need to manually select the surah by clicking each option. This technical limitation may negatively affect the overall user experience.

For the quiz, there are only two question styles. First is by answering one random missing sentence in a page, or second is by answering one missing page except a verse left, which is either the first or last verse in the page. All the questions will be given according to the page arrangements. However, there is no automatic integration with the quiz review, so users have to manually review by clicking the answer button each time, which is more time-consuming.

On the other hand, Cinta Quran Memorization Hafiz incorporates repetition and quiz-based reinforcement, allowing users to select specific surahs, pages, or chapters, but not a combination of them. It also comes with various styles of quiz questions, including continuing-verse, memorizing-verse, numbers, meanings of verse, and even word meanings. Interestingly, the continuing verse quiz offers three levels of difficulty, which shows a more adaptive approach to the user's pace and cognitive load by providing options.

Both the spaced-repetition system in Retain Quran and the inclusion of multiple quiz styles in Cinta Quran Memorization Hafiz align with retrieval practice and the spacing effect, which are among the most effective methods when combined with active learning techniques to enhance long-term retention (Carpenter et al., 2022). By engaging users through varied question styles and timed repetition, the application supports the reinforcement of memory traces, a critical factor in Quran memorization. Gay et al. (2016) agreed that people tend to forget newly learned material within a matter of days or weeks unless they actively review it.

Besides that, interface design also plays an important role in good user experience. Retain Quran features with high levels of white or negative space, with clear spacing between elements such as text or buttons. In addition, the application comes with a simple colour palette, white and blue, with limited visual elements and consistent typography. Overall, the application interface displays only essential components, without any additional, irrelevant elements, with a balanced layout and clear visuals, which can be classified as a minimalist design with the motto "less is more" (Khazanehdarloo, 2025). Gumber (2023) also supports the idea that minimalist design creates a sense of harmony and clarity that appeals to users through negative space, limited colour palettes, and straightforward typography.

Contrasting with Retain Quran, Cinta Quran Memorization Hafiz has low levels of white or negative space with lots of colours and typography used. The application also displays a large number of content items on the main screen, including various buttons, which make the interface appear more compact. This is called maximalist design with the motto of "more is more". Söderström et al. (2019) noted that maximalist design can be too overwhelming for some users, as it often features vibrant

colours and a packed layout. Vibrant visuals can increase motivation and enjoyment, but excessive use of colours can distract students and reduce focus while memorizing, hence, Llinares et al. (2021) suggest cold hue colours to improve performance in attention and memory tasks.

Lastly, the gamification elements. The design of Cinta Quran Memorization Hafiz demonstrates a strong integration of gamification and digital learning principles. According to a study by Miranda et al. (2024), gamification features such as leaderboards, badges, and points foster a rewarding, competitive atmosphere that can boost students' motivation to memorize the Quran. From an educational perspective, gamification is meant to make learning enjoyable. Manzano-León et al. (2021) have shown that students learn more efficiently and develop a deeper understanding of the material through the interactive nature of gamified experiences. While Retain Quran focuses on visual and audio formats without integrating gamification, this results in a static user experience.

Therefore, based on the analysis by researchers, Retain Quran shows several strengths, particularly through its use of a spaced-repetition system, a method proven effective in improving long-term memory (Carpenter et al., 2022). Next, this application has a minimalist, user-friendly interface with minimal visual distractions, helping users focus solely on memorization. However, several areas for improvement have been identified. Among them is the need to add a more flexible quiz question selection function, such as selection by chapters or by a combination of chapters and surahs. Besides, adding a variety of quiz question styles and difficulty levels to meet users' individual needs. Lastly, addressing technical issues is also important for improving the overall user experience.

To compare, Cinta Quran Memorization Hafiz's strengths lie in the flexibility of quiz question selection and style. Above all, this application allows users to choose a specific memorization range by chapters, for example, chapters 1-10 or 1-20. Additionally, there is a voice recognition feature to help users check their memorization through audio recordings. Other than that, there are gamification elements, such as point systems with encouraging words during quizzes, and a clear progress report that helps boost users' motivation. However, several areas for improvement were also identified. Among them is the need to add a function to select a combination of chapters and surah for quiz questions. The developer also needs to ensure the application's availability on the Play Store is consistent, as some devices require third-party apps to download it. Lastly, it is recommended to reduce the design's compactness to improve the user experience and avoid distractions.

Table 2: Comparative analysis of selected Quran memorization quiz applications

Criteria	Retain Quran	Cinta Quran Memorization Hafiz
		
Platform compatibility	Android and iOS	Android
Number of Downloads	500K+	100K+
Rating	5.0	4.8
Free	Yes	Yes
Contains Advertisement	No	Yes
Reading Functionality	Yes	Yes
Quiz Questions Selection	Surah only	Surah or chapter or page
Quiz Questions Style	Limited	Diverse
Level of Difficulty	Not available	Available
Interface Design	Minimalist	Maximalist
Gamification Elements	No	Yes
Strengths	<ol style="list-style-type: none"> 1. Spaced repetition system is a proven method to help long-term memory retention. 2. A user-friendly interface without excessive visual distractions helps to focus on memorization. 	<ol style="list-style-type: none"> 1. Flexible quiz question selection, and styles, including range of chapter selection such as 1-10 chapters. 2. Voice recognition checker to helps check the user's memorization by audio. 3. Gamification elements help in boosting users' motivation.

Area of Improvements	<ol style="list-style-type: none"> 1. Add chapter selection and combination of chapter and <i>surah</i> for quiz questions. 2. Add more variety of quiz questions. 3. Add level of difficulty to cater individual needs. 4. Improve technical issues in the application for a better user experience. 	<ol style="list-style-type: none"> 3. Clear achievement evaluations and progress reports provide an overview of user performance. 1. Add selection for a combination of chapter and <i>surah</i> for quiz questions. 2. Availability on the Play Store needs to be consistent because some device needs to use third-part to download the application. 3. Reduce the compactness of the design interface for more user-friendly experience.
-----------------------------	---	---

Next, user reviews on Play Store for both applications are generally positive. Both applications get praise for their effectiveness in enhancing Quran memorization. The main themes that emerged from the thematic analysis are support for retaining Quran memorization and the ease of access to the application. Several Retain Quran users see the application as a great way to keep up with revision, particularly for those with busy lifestyles, since it is designed for accessibility and quick use. Similarly, most users emphasized the application’s effectiveness in retaining Quran memorization, indicating that the quiz function is useful. Contrarily, the thematic analysis also highlighted several recurring negative issues that indicated areas for improvement. Users reported technical issues, including data storage issues and inconsistencies in the repetition data. Also, selecting multiple cards is a hassle, and the audio instability needs to be fixed for a smooth user experience.

Likely, many users praise Cinta Quran Memorization Hafiz, especially for its comprehensive and engaging approach to enhancing memorization. The main themes that emerged from the thematic analysis are the variety of functions, including quiz features and memorization tips, and the application's ease of access. Most users emphasized that this application is very suitable for memorization because its interactivity and functional support make daily repetition easier. However, several issues have been identified. One of them is the application’s performance, which is sometimes slow or lags, and the lack of a bookmark function, which can make navigation easier.

From the above user reviews, it shows that Retain Quran stands out for its clean, user-friendly interface, but falls short in quiz variety and gamification, while Cinta Quran Memorization Hafiz stands out for its variety of quiz questions and flexibility. Table 2 below presents a comparative analysis of Retain Quran and Cinta Quran Memorization Hafiz, as mentioned in the methodology section.

Table 3: User Reviews for Retain Quran

User selected reviews for improvements
Great app. Very useful. But many bugs on data keeping, ayah or surah reset. Repetition data not synchronized.
A highly required app but full of bugs. Does not open the selected Surah when viewing with translation. Screen does not remain on without intervention. Ayah highlighting in audio does not continue to next page if the Ayah is split onto next page. Still, it is very useful. Three stars are for the functionality of this app and not for the contents.
Simple and easy to use. I like that the format is each page of the Mushaf. Each Aya is its own flashcard, which is wonderful. I do wish there was a different way to select a large number of cards. Right now, you have to click each box, which can get tedious quickly, especially for longer surahs. The app also automatically rotates if my phone is on the side--even if my phone is locked in portrait mode. Also, the boxes don't cover the harakat all the way.
I was finding for many days such kind of app, and finally I've found it. Obviously this app is sooo much efficient & one of the best Quranic App I have ever searched for. Alhamdulillah. zakaallahukhairan (May Allah give you best rewards)
Excellent apps not only for memorizing new verses but also to renew and strengthen retention of previous verses we have memorized before that are starting to fade in our memory. One request : There is already a feature to delete cards by Surah. Please add the ability to delete cards by verse in case we add a new verse by mistake.

Table 4: User Reviews for Cinta Quran

User selected reviews for improvements
<i>Ok.. alhamdulillah, Kalau bisa yang mode menghafal per halamannya FULL SCREEN 😊</i>
<i>Ok.. alhamdulillah. If possible the memorization mode per page is full screen.</i>
<i>Baguss, cocok untuk menghafal Al-Qur'an. Cuma perlu diperbaiki sedikit agar apk tidak lag.</i>
<i>Good, suitable for memorizing the Quran. It just needs to be fixed a little so that the application does not lag.</i>
<i>Aplikasi yang sangat bagus dan cukup lengkap memudahkan dalam proses menghafal. Bila memungkinkan dapat ditambah fungsi bookmark surah atau ayat. Terimakasih 🙏</i>
<i>A very good and complete application that facilitates the memorization process. If possible, add the surah or verse bookmark function. Thank you.</i>
<i>Aplikasi ini memiliki pelbagai kemudahan contohnya salin ayat, play ayat dan lain- lain. Aplikasi ini sangat sesuai untuk menghafal kerana mempunyai tips untuk menghafal dan kita boleh menjawab kuiz.</i>
<i>This application has various functions, for example, copy sentences, play audios, and others. This application is very suitable for memorizing because it has tips for memorizing and we can answer quizzes.</i>
<i>Aplikasi yang sangat bagus dan sangat membantu dalam menghafal al-qur'an. Lanjutkan mas.santi.</i>
<i>This application is very good and very helpful for memorizing the Quran. Please keep it up.</i>

5. CONCLUSION

In conclusion, this study underscores the significance of quiz-based mobile applications in supporting Quran memorization. The findings indicate that Retain Quran is well-suited for users who prioritize functionality, clarity, and ease of use due to its straightforward interface design and accessibility. In contrast, Cinta Quran Memorization Hafiz offers advantages in gamification features, a more engaging user interface, and a diverse range of quizzes that may increase learner motivation. Through interactive learning strategies that encourage repeated practice and active recall, both programs demonstrate significant promise for supporting long-term memorization.

From a theoretical perspective, this study contributes to the emerging field of digital *tahfiz* education and Islamic educational technology by demonstrating how quiz-based mobile applications can support retrieval-based Quran learning. According to cognitive learning theories, the results show how components like gamification, various quiz formats, and spaced repetition might support

memorization processes. Therefore, this study gives a conceptual reference for the future development of gamified Quran learning applications as well as preliminary insights into incorporating educational technology into Quran memorization methods.

Based on the findings, several suggestions for enhancing current and upcoming Quran memorization applications can be made. First, quiz-based memorization programs should offer more versatile quiz selection options, such as surah and chapter range combinations so that users can tailor revision to their level of memorization and learning requirements. Second, adding adaptive difficulty levels could help manage cognitive load and provide a more customized learning environment. Finally, by promoting student interaction, adding competitive or collaborative quiz features may increase user motivation and engagement. It is intended that researchers and application developers will be able to use the study's findings as a guide when creating future Quran memorization programs that are more efficient and user-friendly.

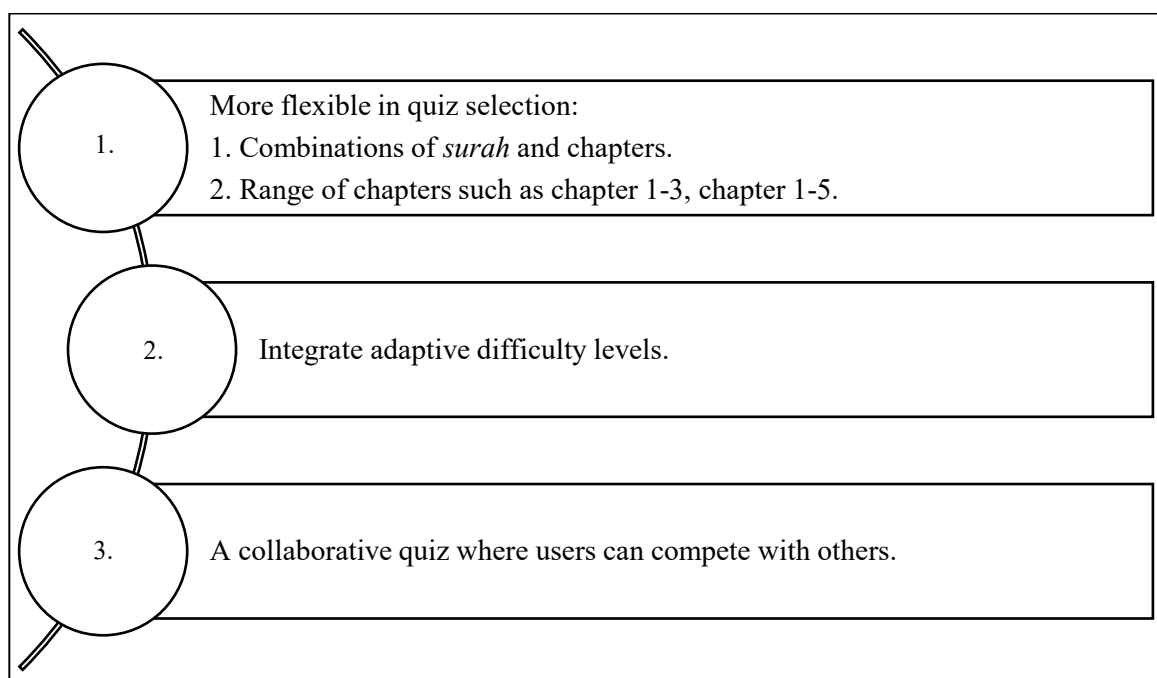


Figure 1: Insights for improvements

REFERENCES

- Abdullah, N. M. S. A. N., Rahim, F. N. B. A., & Omar, R. A. B. M. I. @. (2021). EXPLORING THE CHALLENGES OF SUSTAINING QUR'ANIC MEMORIZATION: A CASE STUDY. *Journal of Islamic Educational Research*, 6(1), Article 1. <https://doi.org/10.22452/jier.vol6no2021.1>
- Ahmad, M. R., Bahri, S., Wong, M. S. A., & Ismail, A. T. (2022). Isu Dan Cabaran Pelajar Plus Tahfiz Dalam Mengekalkan Hafazan Al-Quran Di UiTM: The Issues and Challenges of Plus Tahfiz Students in Maintaining the Memorisation of The Quran in UiTM. *Journal of Fatwa Management and Research*, 27(2), Article 2. <https://doi.org/10.33102/jfatwa.vol27no2.435>
- Al-Bukhari, M. I. (1987) *Sahih al-Bukhari*. Beirut: Dar al-Kutub al-'Ilmiyyah.
- Arkin, S. M. (1997). Alzheimer memory training: Quizzes beat repetition, especially with more impaired. *American Journal of Alzheimers Disease and Other Dementias*, 12(4), 147–158. <https://doi.org/10.1177/153331759701200402>
- Baddeley, A. D. (2006). Working Memory: An Overview (pp. 1–31). Academic Press. <https://doi.org/10.1016/B978-012554465-8/50003-X>
- Betsch, T., Quittenbaum, N., & Lüders, M. (2015). On the Robustness of the Quizzing Effect under Real Teaching Conditions. *Zeitschrift Fur Padagogische Psychologie*, 29(2), 109–114. <https://doi.org/10.1024/1010-0652/A000149>
- Carpenter, Shana & Pan, Steven & Butler, Andrew. (2022). The science of effective learning with a focus on spacing and retrieval practice. *Nature Reviews Psychology*. 1-16. 10.1038/s44159-022-00089-1.
- Casriati, C., & Gazali, S. (2023). PERAN TEKNOLOGI DALAM MENGEMBANGKAN MEDIA PEMBELAJARAN PADA PENDIDIKAN AGAMA ISLAM. *Darul Ulum Jurnal Ilmiah Keagamaan Pendidikan Dan Kemasyarakatan*, 14(1), 9–27. <https://doi.org/10.62815/darululum.v14i1.124>
- Cook, B., & Babon, A. (2017). Active learning through online quizzes: better learning and less (busy) work. *Journal of Geography in Higher Education*, 41, 24 - 38. <https://doi.org/10.1080/03098265.2016.1185772>.
- Cowan, N. (2008). 2.03 – Sensory Memory (Vol. 2, pp. 23–32). <https://doi.org/10.1016/B978-012370509-9.00172-8>
- Daud, Zainora & Ahmad, Abd Muhaimin & Alias, Norazman & Ibrahim, Norhasnira. (2022). Persepsi Pelajar terhadap Penggunaan Gamifikasi Tahfiz Global dalam Pengajaran dan Pembelajaran Subjek Muraja'ah al-Quran: Students' Perceptions Towards The Use of Global Tahfiz Gamification In Teaching And Learning The Subject of Muraja'ah al-Qur'an. *Journal of Quran Sunnah Education & Special Needs*. 6. 62-78. 10.33102/jqss.vol6no2.163.
- Ebbinghaus, H. (1913). Our knowledge concerning memory. (H. A. Ruger, C. E. Bussenius, H. A. Ruger, & C. E. Bussenius, Trans.). In H. Ebbinghaus, *Memory: A contribution to experimental psychology*. (pp. 1–6). Teachers College Press. <https://doi.org/10.1037/10011-001>

- Eysenck, M. W. (1988). *Models of memory: information processing* (Vol. 6, pp. 3–11). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-73288-1_1
- García-Martínez, I., Fernández-Batanero, J., Sanchiz, D., & De La Rosa, L. (2019). Using Mobile Devices for Improving Learning Outcomes and Teachers' Professionalization. *Sustainability*, 11, 6917. <https://doi.org/10.3390/su11246917>.
- Gay, Sandie & Bishop, Michelle & Sutherland, Stuart. (2016). Teaching Genetics and Genomics for Social and Lay Professionals. <https://doi.org/10.1016/B978-0-12-420195-8.00008-2>.
- Gumber, Sugandha. (2023). MINIMALISM IN DESIGN: A TREND OF SIMPLICITY IN COMPLEXITY. *ShodhKosh: Journal of Visual and Performing Arts*. 4. 10.29121/shodhkosh.v4.i2.2023.539.
- Gurbin, T. (2015). Enlivening The Machinist Perspective: Humanising The Information Processing Theory With Social And Cultural Influences. *Procedia - Social and Behavioral Sciences*, 197, 2331–2338. <https://doi.org/10.1016/j.sbspro.2015.07.263>
- Hashim, A. (2015). Correlation between Strategy of Tahfiz Learning Styles and Students Performance in Al-Qur'an Memorization (Hifz). *Mediterranean Journal of Social Sciences*. <https://doi.org/10.5901/mjss.2015.v6n2s5p85>
- Hashim, A. (2017). Latar Belakang Guru Tahfiz Dan Amalan Kaedah Pengajaran Tahfiz Al-Quran Di Malaysia. *O-JIE: Online Journal of Islamic Education*, 1(1), Article 1. <https://ejournal.um.edu.my/index.php/O-JIE/article/view/5537>
- Heitmann, S., Grund, A., Fries, S., Berthold, K., & Roelle, J. (2021). The quizzing effect depends on hope of success and can be optimized by cognitive load-based adaptation. *Learning and Instruction*. <https://doi.org/10.1016/j.learninstruc.2021.101526>.
- Hussin, H., Ahmad, A. R., Saleh, M. H., Yahaya, M., Zakaria, R., & Haridi, N. H. M. (2023). MOTIVASI EKSTRINSIK: ANALISIS TERHADAP CABARAN MENGEKALKAN HAFAZAN AL-QURAN DALAM KALANGAN PELAJAR SARJANA MUDA PENGAJIAN QIRAAT USIM: Extrinsic Motivation: An Analysis of the Challenge of Retaining Al-Quran Memorization Among Undergraduate Students of Qiraat USIM. *QIRAAT: Jurnal Al-Quran Dan Isu-Isu Kontemporari*, 6(2), Article 2. <https://doi.org/10.53840/qiraat.v6i2.72>
- Jamaludin, D. N. (2022). Information Processing and Memory in Learning. *JEID: Journal of Educational Integration and Development*. <https://doi.org/10.55868/jeid.v2i2.109>
- Khazanehdarloo, A. (2025). Minimalism vs. Complexity: User Experience and Cognitive Load.
- Kurdekar, S., & Sushma, S. (2020). Visual or Auditory: The Effective Learning Modality in Multimodal Learners. *International Journal of Physiology*. <https://doi.org/10.37506/ijop.v8i2.1269>.
- Llinares, C., Higuera-Trujillo, J., & Serra, J. (2021). Cold and warm coloured classrooms. Effects on students' attention and memory measured through psychological and neurophysiological responses. *Building and Environment*, 196, 107726. <https://doi.org/10.1016/j.buildenv.2021.107726>.

- Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M. A., Guerrero-Puerta, L., Aguilar-Parra, J. M., Trigueros, R., & Alias, A. (2021). Between Level Up and Game Over: A Systematic Literature Review of Gamification in Education. *Sustainability*, 13(4), Article 4. <https://doi.org/10.3390/su13042247>
- McDaniel, M., Thomas, R., Agarwal, P., McDermott, K., & Roediger, H. (2013). Quizzing in Middle-School Science: Successful Transfer Performance on Classroom Exams. *Applied Cognitive Psychology*, 27, 360-372. <https://doi.org/10.1002/ACP.2914>.
- McDermott, K. B., Arnold, K. M., & Nelson, S. M. (2014). The testing effect (pp. 183–200). Sage Publications Inc. <https://doi.org/10.4135/9781446294703.N11>
- McElroy, P. (2016). Using Quizzes to Improve Exam Scores. 8, 103. <https://doi.org/10.13021/G8G02Q>
- Miranda, A., Rahmawati, S., & Adiyono, A. (2024). Gamifikasi dalam pembelajaran al-qur'an dan hadits di madrasah aliyah: meningkatkan motivasi dan partisipasi siswa. *FIKRUNA Jurnal Ilmiah Kependidikan Dan Kemasyarakatan*, 7(2), 70–85. <https://doi.org/10.56489/fik.v7i2.150>
- Mohd Nawī, Muhammad & أميرول محمد, Omar, Mohd & Muhamad, Norhisham. (2021). Pembacaan Al-Quran dalam Pendidikan Masa Kini: Satu Tinjauan Umum (Quran Recitation in Education Today: A General Review). 6. 43-55.
- Paas, F., Gog, T., & Sweller, J. (2010). Cognitive Load Theory: New Conceptualizations, Specifications, and Integrated Research Perspectives. *Educational Psychology Review*, 22, 115-121. <https://doi.org/10.1007/s10648-010-9133-8>.
- Qasserras, L. (2024). THE ROLE OF VISUAL LEARNING AIDS ACROSS DIVERSE LEARNING STYLES IN HIGH SCHOOL EDUCATION. *European Journal of Applied Linguistics Studies*. <https://doi.org/10.46827/ejals.v7i2.550>.
- Rüth, M., Breuer, J., Zimmermann, D., & Kaspar, K. (2021). The Effects of Different Feedback Types on Learning With Mobile Quiz Apps. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.665144>.
- Salihin, M. S., Pisol, M. I. M., Yahaya, M., Hamid, M. H. A., & Harun, Z. (2022). Penguatan Hafazan Al-Quran: Cabaran & Penyelesaian: Al-Quran Memorization Enhancement: Challenges and Solution. *QIRAAT: Jurnal Al-Quran Dan Isu-Isu Kontemporari*, 5(2), Article 2.
- Shukri, N. H. A., Nasir, M. K. M., & Razak, K. A. (2020). Educational Strategies on Memorizing the Quran: A Review of Literature. *International Journal of Academic Research in Progressive Education & Development*. 9(2), 632-648. <http://dx.doi.org/10.6007/IJARPED/v9-i2/7649>
- Söderström, Ulrik & Carlsson, Lovisa & Mejtoft, Thomas. (2019). Comparing Millennials View on Minimalism And Maximalism in Web Design. 92-95. 10.1145/3335082.3335104.
- Sofii, M. A. I. (2024). Menghafal Al Qur'an Di Era Digital: Problematis Dan Metodologis. *Al Furqan: Jurnal Ilmu Al Quran Dan Tafsir*, 7(1), Article 1. <https://doi.org/10.58518/alfurqon.v7i1.2436>

- Sweller, J., Van Merriënboer, J., & Paas, F. (2019). Cognitive Architecture and Instructional Design: 20 Years Later. *Educational Psychology Review*, 31, 261 - 292. <https://doi.org/10.1007/s10648-019-09465-5>.
- Vo, V., Vo, V., Sutterer, D., Foster, J. J., Sprague, T. C., Awh, E., & Serences, J. T. (2021). Shared Representational Formats for Information Maintained in Working Memory and Information Retrieved from Long-Term Memory. *Cerebral Cortex*. <https://doi.org/10.1093/CERCOR/BHAB267>
- Wan, C., Cai, P., Wang, M., Qian, Y., Huang, W., & Chen, X. (2019). Artificial Sensory Memory. *Advanced Materials*, 32. <https://doi.org/10.1002/adma.201902434>.
- Wang, W., , C., Georgiopoulos, C., & Bork, J. (2004). Cross-platform multi-network mobile application. *Proceedings of the IEEE 6th Circuits and Systems Symposium on Emerging Technologies: Frontiers of Mobile and Wireless Communication (IEEE Cat. No.04EX710)*, 1, 1-6. <https://doi.org/10.1109/CASSET.2004.1322891>.
- Winarto, W., Syahid, A., & Saguni, F. (2020). Effectiveness the Use of Audio Visual Media in Teaching Islamic Religious Education. , 2, 81-107. <https://doi.org/10.24239/ijcied.vol2.iss1.14>.
- Yang, C., Luo, L., Vadillo, M. A., Yu, R., & Shanks, D. R. (2021). Testing (quizzing) boosts classroom learning: A systematic and meta-analytic review. *Psychological Bulletin*, 147(4), 399–435. <https://doi.org/10.1037/bul0000309>

Nurul Izzah Yussof (Corresponding author)
Faculty of Quranic and Sunnah Studies
Universiti Sains Islam Malaysia
Bandar Baru Nilai
71800, Nilai, Negeri Sembilan, MALAYSIA
Email: nurulizzahyussof23@gmail.com

Abdul Muhaimin Ahmad
Faculty of Quranic and Sunnah Studies
Universiti Sains Islam Malaysia
Bandar Baru Nilai
71800, Nilai, Negeri Sembilan, MALAYSIA
Email: muhaimin@usim.edu.my

Nadiah Ramlan
Faculty of Quranic and Sunnah Studies
Universiti Sains Islam Malaysia
Bandar Baru Nilai
71800, Nilai, Negeri Sembilan, MALAYSIA
Email: nadiahramlan@usim.edu.my

Zulkifly Mohd Zaki
Faculty of Science and Technology
Universiti Sains Islam Malaysia
Bandar Baru Nilai
71800, Nilai, Negeri Sembilan, MALAYSIA
Email: zulkifly@usim.edu.my