

Development of a Thunkable-Base Mobile Learning Application to Improve Students' Memorization in the Al-Qur'an and Hadith Course for 11th Graders at MAN Kota Palangka Raya

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Abstract: Students' ability to memorize the Qur'an still faces challenges due to the limitations of conventional teaching methods and media, making it necessary to develop more interactive alternative media. This study aims to develop the Maqdis application and test its validity, practicality, and effectiveness in improving the memorization skills of 11th-grade students regarding Surah Al-Mu'minun, verses 12–14. The study employed the Research and Development (R&D) method with a one-group pretest–posttest design, involving 21 students. Data on practicality were obtained through a student response questionnaire, while effectiveness was analyzed using pretest–posttest results and the N-Gain measure. The results indicate that the Maqdis app is valid according to experts, highly practical with an 85% student response rate, and effective in improving memorization, with average scores rising from 50 to 88 and an N-Gain of 0.76 (high category). The integration of audio, verse content, video, and memorization features into a single app fosters a more meaningful memorization process. It can be concluded that the Maqdis app is suitable for use as a learning medium for the Qur'an and Hadith because it meets the criteria of being valid, practical, and effective in improving students' memorization skills. This app can serve as an alternative solution for teachers to address the limitations of existing Qur'an memorization methods and media in schools.

Keywords: Mobile Learning Application; Memorization; Al-Qur'an Hadits; Research Development

Abstrak: Kemampuan menghafal Al-Qur'an siswa masih menghadapi kendala akibat keterbatasan metode dan media pembelajaran konvensional, sehingga diperlukan media alternatif yang lebih interaktif. Penelitian ini bertujuan mengembangkan aplikasi Maqdis serta menguji validitas, kepraktisan, dan

Artikel Info

Received:

22 July 2026

Revised:

27 August 2026

Accepted:

27 September 2026

Published:

10 October 2026

keefektifannya dalam meningkatkan kemampuan hafalan siswa kelas XI pada QS. Al-Mu'minun ayat 12–14. Penelitian menggunakan metode Research and Development (R&D) dengan desain one-group pretest–posttest, melibatkan 21 siswa. Data kepraktisan diperoleh melalui angket respons siswa, sedangkan keefektifan dianalisis dari pretest–posttest menggunakan N-Gain. Hasil menunjukkan aplikasi Maqdis valid menurut ahli, sangat praktis dengan respons siswa 85%, dan efektif meningkatkan hafalan dengan rata-rata nilai dari 50 menjadi 88 serta N-Gain 0,76 (kategori tinggi). Integrasi audio, kandungan ayat, video, dan fitur hafalan dalam satu aplikasi mendorong proses menghafal yang lebih bermakna. Dapat disimpulkan bahwa aplikasi Maqdis layak digunakan sebagai media pembelajaran Al-Qur'an Hadits karena memenuhi kriteria valid, praktis, dan efektif dalam meningkatkan kemampuan hafalan siswa. Aplikasi ini dapat menjadi alternatif solusi bagi guru untuk mengatasi keterbatasan metode dan media hafalan Al-Qur'an di sekolah.

Kata Kunci: Aplikasi *Mobile Learning*; Hafalan; Al-Qur'an Hadits; Media Pembelajaran; Penelitian Pengembangan

A. Introduction

The study of the Qur'an and Hadith is an important part of madrasah education because the Qur'an and Hadith are the primary sources of Islamic teachings, serving as the foundation for students' understanding of faith, Islamic law, and ethics (Damanik & Warda, 2025). This learning is not only oriented toward understanding the material but also encompasses the mastery of skills in reading, reciting, understanding, and memorizing verses from the Qur'an and Hadith (Aziz et al., 2025). Therefore, the learning process must be designed through active and purposeful learning experiences, such as repeated reading, muraja'ah, talaqqi, recitation of memorized verses, and evaluation, so that students can effectively master the memorization of Qur'anic verses (Santika et al., 2024).

In line with the need for such repetitive practice, memorization skills play a crucial role in learning because mastering verses accurately requires a continuous process of recall and repetition, as demonstrated in the implementation of the 3T+1M method (talaqqi, tiktirar, tasmi', muraja'ah), which emphasizes continuous repetition to

improve the quality of the Qur'an memorization (Kusumastuti et al., 2022). In this process, students need opportunities to read and listen to verses repeatedly in order to maintain their memorization, ensure accurate pronunciation, and recite the learned verses fluently, as seen in Generation Z's Qur'an memorization strategy, which combines repeated reading and regular listening to murottal to reinforce memorization (Aulia & Arif, 2026). Therefore, the process of learning the Qur'an and Hadith requires media that can support focused memorization activities and provide students with opportunities for repeated practice.

Given the importance of memorization in the study of the Qur'an and Hadith, it can be emphasized that this form of learning requires students not only to understand the content of the material but also to master the recitation, comprehend the meaning, and memorize verses and Hadith texts effectively (Adji & Sembiring, 2023). The ability to memorize plays a vital role as a means of both preserving and strengthening students' understanding of the sources of Islamic teachings (Saifullah et al., 2022). This is in accordance with the words of Allah SWT in Surah Al-Qamar, verse 17:

وَلَقَدْ يَسَّرْنَا الْقُرْآنَ لِلذِّكْرِ فَهَلْ مِنْ مُدَكِّرٍ

Meaning: "And indeed, We have made the Qur'an easy for remembrance, so is there anyone who will take heed?"

This verse emphasizes that Allah the Almighty has made the Qur'an easy for humans to study, understand, and memorize (Putri, 2026), making the act of memorization an essential part of the Qur'an and Hadith learning process. Strong memorization skills are also one of the indicators of successful Qur'an and Hadith learning in madrasahs (Hakim & Arifin, 2025). According to Rauf (2018), memorization is essentially a process of repeating something, whether through reading or listening; thus, repetition is key for students to retain verses and hadiths optimally.

On-the-ground conditions indicate that this indicator has not yet been fully achieved. Based on interviews with 11th-grade Qur'an and Hadith teachers at MAN Kota Palangka Raya, not all students are able to memorize verses or hadiths effectively; some students still struggle to recall and recite Arabic texts fluently. One factor suspected to influence this situation is the limited availability of learning materials,

which still rely on conventional printed books, while innovative learning materials specifically designed to facilitate and stimulate students' memorization are not yet available in these classrooms. As a result, memorization activities are monotonous/ because students only memorize Arabic texts without audio or visual support for the material, even though simultaneous auditory and visual repetition can help strengthen students' memory of the material (Dzulkifli et al., 2023).

Several previous studies have examined the development of instructional media to support the memorization of the Qur'an and the study of the Qur'an and Hadith. Syafrinal (2025) asserts that strengthening the memorization of the Qur'an requires a continuous process of recall and repetition through the methods of *tikrar* and *muraja'ah*; however, this discussion remains conceptual and has not yet led to the development of integrated mobile learning media to facilitate students' memorization practice in the classroom. At the Madrasah Aliyah level, HSY (2021) developed Android-based learning media for the Qur'an and Hadith subject; however, the primary focus was on understanding religious concepts, not on directly improving students' ability to memorize verses. In terms of the development platform, Saifullah et al. (2024) developed a Thunkable-based learning platform for the Qur'an and Hadith subject, but it has not specifically measured improvements in verse memorization ability.

Based on this review, a gap is evident: there has been no research specifically focused on developing a Thunkable-based mobile learning application to improve students' memorization of the Qur'an and Hadith at MAN, particularly at MAN Palangka Raya. Most previous studies have been conceptual in nature, limited to material comprehension, or have failed to link the Thunkable platform to the aspect of Qur'anic memorization. In fact, conditions on the ground indicate that students still struggle to remember and recite Arabic texts fluently. Therefore, this study aims to fill this gap by developing a Thunkable-based mobile learning application specifically designed to support and improve students' memorization in the Qur'an and Hadith course for 11th-grade students at MAN Palangka Raya.

With the development of technology, the use of digital learning media has become one alternative to support a more effective learning process (Rizqi et al., 2026). One

such method is through mobile learning applications-smartphone-based learning tools that allow students to learn flexibly anytime and anywhere (Mahande, 2023). Mobile learning applications also make it easier for students to access and review lesson material and to learn independently (Erlangga et al., 2025). In the study of the Qur'an and Hadith, mobile learning apps are particularly relevant because they effectively integrate the presentation of Qur'anic verses and Hadith texts, audio recitations (*murottal*), interactive exercises, and engaging visual elements (Nurdiana & Zainiyati, 2020), enabling students to review their memorization independently by listening to and reading the material simultaneously within a single app.

Mobile learning applications can be developed using no-code platforms such as Thunkable, a block-based mobile app development platform that enables the creation of both Android and iOS applications without requiring proficiency in complex programming languages (Sorong et al., 2025). This platform provides supporting components such as audio, video, databases, and interactive buttons that can be utilized to develop mobile learning-based instructional media more easily (Nikmah et al., 2024), making it relevant for supporting the development of interactive Qur'an and Hadith instructional media tailored to students' memorization needs.

Based on this description, the issues examined in this study include the process of developing a Thunkable-based mobile learning application, the level of its validity and practicality, and the improvement in students' memorization skills after using the application in the 11th-grade Qur'an and Hadith course at MAN Kota Palangka Raya. Therefore, this study aims to describe the development process, determine the levels of validity and practicality, and assess the improvement in the memorization skills of 11th-grade students in the Qur'an and Hadith course at MAN Kota Palangka Raya after using the Thunkable-based mobile learning application developed through a Research and Development approach using the ADDIE model.

B. Research Methods

This study employed the Research and Development (R&D) method, which is used to produce a specific product while simultaneously testing its feasibility for use in the learning process (Sugiyono, 2023). The R&D method aims to produce a product

through several stages-namely, problem identification, design, and development- which are expected to provide the most appropriate solution to the problems at hand (Waruwu, 2024). The product developed in this study is a Thunkable-based mobile learning application serving as a learning medium for the Qur'an and Hadith to improve students' memorization skills.

The development model used is the ADDIE model developed by Raiser and Molenda; this model consists of five stages: analysis, design, development, implementation, and evaluation. This model was chosen because it provides a systematic development process for learning media, in line with Branch's perspective, which describes the ADDIE model as a clear framework for instructional system design (Zamsiswaya et al., 2024). The following details the five stages of the ADDIE model implemented in this study.

Analysis stage: In this stage, three types of analysis were conducted: curriculum analysis, student characteristic analysis, and digital technology analysis. The curriculum analysis was carried out by reviewing the learning outcomes, content, and sequence of learning objectives for the 11th-grade Al-Qur'an and Hadith course to ensure that the material presented in the instructional media remains consistent with the current curriculum. The analysis of student characteristics was carried out through interviews with the Al-Qur'an and Hadith teacher and several students to identify students' abilities and needs regarding the learning media. The technology analysis was conducted by reviewing the Thunkable platform as the development platform to ensure that the resulting application functions properly and is accessible on various devices, such as Android and iOS.

The design phase includes developing learning materials for the Qur'an and Hadith subject, creating a flowchart to map out the app's navigation flow, and designing a storyboard as a visual blueprint for the app's interface. The app design includes several key features: a learning materials menu featuring Quranic verses and Hadith texts accompanied by audio recitations; a learning videos menu with a glossary to reinforce students' understanding; a memorization goals menu that interactively displays students'

memorization progress; and a memorization tips menu containing practical strategies to assist students in the memorization process.

The development phase involves turning the design into an actual app using the Thunkable platform, by creating the menu interface, learning materials, Quranic text with audio recitations, instructional videos, and several supporting features. The developed product is then validated by subject matter experts and media experts using a validation checklist. The validation results will serve as the basis for revising the product before it enters the implementation phase.

The implementation phase involves integrating the mobile application-which has been deemed suitable by the experts-into the Qur'an and Hadith curriculum for 11th-grade students at MAN Kota Palangka Raya. The evaluation phase involves a comprehensive analysis of data obtained from the expert validation results and student response questionnaires to determine the suitability of the developed learning media.

The instruments used in this study included validation sheets from media and content experts, student response questionnaires, and student memorization tests. The media expert validation form was used to assess the media's visual presentation and functionality, while the subject matter expert validation form was used to assess the accuracy of the content and its alignment with the curriculum. The student response questionnaire was used to measure the media's practicality in terms of visual presentation, ease of navigation, quality of content delivery, and its effectiveness in enhancing students' learning motivation and memorization skills.

The student memorization test is used to measure students' memorization ability and improvement regarding the material from Q.S. Al-Mu'minun verses 12-14 on the V process of human creation. The memorization test consists of two types: a pre-test (before the media is implemented) and a post-test (after the media is implemented). The tests were administered orally using the *talaqqi* method (direct recitation), and students' memorization abilities were assessed using a 1-5 scale rubric covering four indicators: fluency of recitation, accuracy of verse order, articulation points (*makharijul huruf*), and tajwid rules.

Data on the validity and practicality of the teaching material, obtained from expert validation sheets and response questionnaires, will be analyzed using quantitative descriptive techniques, by calculating the percentage of scores using the following formula:

$$P = \frac{\sum X}{\sum X_{maks}} \times 100\%$$

Explanation:

P : percentage of the assessment score
 $\sum X$: total score obtained
 $\sum X_{maks}$: maximum total score

The resulting media validity percentage will then be categorized based on the media feasibility criteria as presented in Table 1. A medium can be deemed suitable for testing if its assessment result reaches at least the "sufficiently feasible" category.

Table 1. Media Suitability Categories

Percentage Interval	Eligibility Category
84% < x ≤ 100%	Highly Suitable
68% < x ≤ 84%	Eligible
52% < x ≤ 68%	Fairly Acceptable
36% < x ≤ 52%	Not Quite Acceptable
20% < x ≤ 36%	Very Unacceptable

The resulting practicality percentages for the media will then be categorized based on the media practicality criteria as presented in Table 2. A medium can be deemed practical if its assessment result reaches at least the "fairly practical" category.

Table 2. Media Practicality Criteria

Percentage Interval	Feasibility Category
84% < x ≤ 100%	Very Pratical
68% < x ≤ 84%	Pratical
52% < x ≤ 68%	Fairly Pratical
36% < x ≤ 52%	Less Pratical
20% < x ≤ 36%	Very Impratical

The improvement in students' memorization ability was analyzed in two stages. The first stage involved calculating the final score (NA) from each student's pre-test and

post-test results based on the accumulated scores from the memorization assessment rubric, using the following formula:

$$FS = \frac{\text{Obtained Score}}{\text{Maximum Score}} \times 100$$

The second step is to calculate the extent of the students' improvement in memorization using the N-Gain (Normalized Gain) formula based on their pre-test and post-test scores, using the following formula:

$$g = \frac{S_{\text{posttest}} - S_{\text{pretest}}}{S_{\text{maximum}} - S_{\text{pretest}}}$$

The N-Gain score is used to determine the extent of improvement in students' retention after using the mobile learning app. The classification of improvement levels based on the N-Gain score is presented as follows:

Table 3. N-Gain Value Classification

N-Gain Score	Classification
$g > 0,70$	High
$0,30 \leq x \leq 0,70$	Moderate
$g < 0,30$	Low

(Supriadi, 2021)

C. Result and Discussion

The result of this research is a mobile learning application called Maqdis, developed using the Thunkable platform as a learning aid for 11th-grade Quran and Hadith classes, specifically for memorizing Quranic Surah Al-Mu'minun, verses 12-14. This application is designed to integrate several learning features, including: (1) presentation of verse material in the form of Arabic text along with its translation, (2) audio recitations of individual verses or the entire surah, (3) instructional videos, (4) a memorization goal feature, and (5) memorization tips. The following is an excerpt from the storyboard for the Home Screen design:

Table 4. Home Screen Storyboard

Appearance	• A soft cream-colored background • In the top center is the MAQDIS app logo-a dark green circle featuring an icon of an open Quran resting on a stand • Below the logo is the app name "MAQDIS" and the subtitle "Grade 11
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	Quran and Hadith Learning Media” Below that is a 2-column by 2-row grid menu containing 4 icon cards: Materials, Instructional Videos, Memorization Goals, and Memorization Tips
Content/Text	- Title: MAQDIS - Subtitle: "Quran and Hadith Learning Media for 11th Grade" - Menu 1: Materials (document icon, gray) - Menu 2: Instructional Videos (purple play icon) - Menu 3: Memorization Goals (orange target icon) - Menu 4: Memorization Tips (pink lightbulb/idea icon)
Interaction & Navigation	- Tap 'Materials' to go to the Materials Screen - Tap 'Learning Videos' to go to the Learning Videos Screen - Tap 'Memorization Goals' to go to the Memorization Goals screen - Tap 'Memorization Tips' to go to the Memorization Tips screen

In the final product, the storyboard shows that there are no changes to the home screen layout. The home screen displays only the app logo, the "Materials" menu, the "Educational Videos" menu, the "Memorization Goals" menu, and the "Memorization Tips" menu. The home screen layout is shown in Figure 1.



Figure 1. Home Screen Display

Next is the Content Screen menu; below is a storyboard excerpt for the Content Screen design:

Table 5. Content Screen Storyboard

Appearance	A dark green header labeled "Content" and a back button (<) on the left. The content is divided by verse (verses 12, 13, 14 of Surah Al-Mu'minun), each with a dark green label
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	- Each verse displays the Arabic text, the Indonesian translation, and a green "Listen to the verse" audio button - At the bottom are the "Play all verses (12-14)" and "Verse content" buttons
Content/Text	- Title: Surah Al-Mu'minin, Verses 12-14 - Verse 12: Arabic text + translation - Verse 13: Arabic text + translation - Verse 14: Arabic text + translation - Button: Listen to verses 12/13/14 (audio per verse) - Button: Play all verses (12-14) - 'Listen to all verses to review your memorization' - Button: Verse content - 'Study the content of Surah Al-Mu'minin, verses 12-14'
Interaction & Navigation	- Tap the back button (<) to return to the Home Screen - Tap 'Listen to verses (12/13/14)' to play the audio recitation of the relevant verses - Tap 'Play all verses' to play the audio for verses 12-14 in sequence - Tap 'Verse Content' to display an explanation of the verse's content

Next, in the content menu, you'll find the Arabic text of Surah Al-Mu'minin, verses 12-14, along with their translations, recitation audio for each verse and the entire verses, as well as a brief explanation of the verses' content. This is shown in Figure 2.



Figure 2. Content Screen Display

Next, on the Video Screen, the instructional video content is integrated with a glossary to help students understand the concept of human creation as described in Quranic Surah Al-Mu'minin, verses 12-14. The Material Screen display can be seen in Figure 3.



Figure 3. Video Screen Display

Next, on the Memorization Target Screen, there is a percentage indicating the student's memorization progress verse, indicating that the along with checkboxes that can be checked for each verse, indicating that the has been memorized. The Memorization Target Screen is shown in Figure 4.

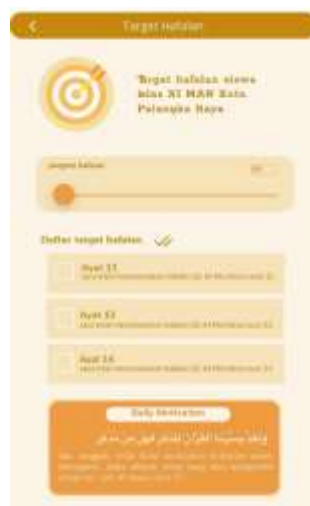


Figure 4. Memorization Target Screen

Next is the final screen in the application, the Memorization Tips Screen. Below is a storyboard excerpt for the Memorization Tips Screen:

Table 6. Memorization Screen Tips Storyboard

Appearance	• A dark pink header that reads "Memorization Tips" with a back button • A call-to-action subtitle below the header • Four tip cards arranged vertically, each with a circular icon (eye, headphones, book, and checkmark) on the left and a title and description on the right.
Content/Text	• Subheading: "To make sure your knowledge of the Process of Human Creation sticks firmly in your heart, let's follow these 4 practical tips!" • Focus on the Verse Pattern, along with a brief explanation below it • The "Listen Again" Method, with a brief explanation below it • Understand the Scientific Logic, with a brief explanation below. • Memorize in Small Steps, with a brief explanation below
Interaction & Navigation	• Tap the back button (<) to return to the Home Screen • Scroll to view the four tips in sequence

In the development results, it is evident from the storyboard that there are no changes to the appearance of the memorization tips. This page displays a guide to learning strategies that focusing on verse patterns, the audio repetition method, understanding the flow of scientific meaning, and the technique of memorizing in stages. The display of the memorization tips can be seen in Figure 5.



Figure 5. Memorization Tips Screen Display

The integration of text and audio in the app allows students to read and listen to examples of verse pronunciation simultaneously, while the video feature, memorization targets, and memorization tips support the process of understanding meaning and gradual, structured memorization repetition. The combination of text, audio, visual elements, and memorization-supporting activities in this single mobile-based application reflects the application of multimodal learning principles, which, theoretically, can strengthen the process of encoding information into memory through dual representation pathways-namely, verbal and visual (Nabila et al., 2025). Maqdis was developed not only as a tool for presenting material but also as a medium that provides a more interactive and flexible learning experience, while supporting students in conducting independent memorization practice outside of formal class hours. The final results of the Maqdis app can be seen in the following images.

Before being implemented in the classroom, the Maqdis mobile learning app was first validated by experts to ensure the product's suitability in terms of both media and content. The validation was conducted by two experts: a media expert and a content expert. The media expert assessed the app's visual design, navigation, technical aspects and interactivity, while the content expert assessed the suitability and accuracy of the content in relation to the learning objectives for the Qur'an and Hadith regarding Surah Al-Mu'minin, verses 12-14. The results of these evaluations served as the basis for determining the product's suitability and as a reference for revisions before the app was implemented in the classroom.

Media validation in the development of the Thunkable-based mobile learning application was conducted by Ms. Ayatusa'adah, M.Pd. The results of the media expert's validation showed that the Maqdis application achieved a suitability rating of 82.8%, falling into the "Suitable" category. This assessment covered aspects of visual design, ease of navigation, technical quality, and content presentation. These results indicate that the application has met the eligibility criteria as a mobile-based learning medium.

Table 7. Mobile Learning Application Validation Result

No.	Aspect	Obtained Score	Maximum Score
1.	Appearance	25	30
2.	Ease of Navigation	20	25
3.	Technical Quality	24	30

4.	Presentation of Material	18	20
Total		87	105
Persentase		82, 85%	
Eligibility Category		Eligible	

The validation of the content in the development of a Thunkable-based mobile learning app was conducted by Mr. Saiful Lutfi, M.Pd.I. The results of the subject matter expert validation showed that the Maqdis app achieved a feasibility rating of 82.5%, falling into the "Feasible" category. These results indicate that the content presented in the app meets the feasibility criteria in terms of curriculum alignment, content accuracy, feature suitability, and language usage. The recommendations provided by the subject matter expert were subsequently used as the basis for refining the app's content before it was implemented for students.

Table 8. Content Validation Result

No.	Aspect	Obtained Score	Maximum Score
1.	Curriculum Alignment	18	20
2.	Accuracy and Truthfulness of the Material	23	30
3.	Suitability of Learning Features	17	20
4.	Language	8	10
Total		66	80
Persentase		82, 5%	
Eligibility Category		Eligible	

After the application was deemed valid based on the experts' assessment results, the next step was to test the application's practicality through its implementation in the learning process. The practicality test for the Maqdis app was conducted by administering a student response questionnaire consisting of 12 statements using a 1-5 Likert scale. This questionnaire was completed by 21 11th-grade students who served as research subjects, with the aim of determining students' responses regarding the app's interface, ease of use, quality, and usefulness as a tool to support Quran memorization practice. Based on the questionnaire analysis, the percentage of student response scores was 85%, which falls into the "very practical" category. These results indicate that the Maqdis app is considered suitable and easy for students to use in supporting the learning process of memorizing Quranic Surah Al-Mu'minun, verses 12-14; thus, it can be concluded that this app meets the practicality criteria as a learning medium. The results of the student response questionnaire are presented in the following table.

Table 9. Student Response Survey Result

No.	Initials	Statement												Obtained Score	Maximum Score
		1	2	3	4	5	6	7	8	9	10	11	12		
1.	AHA	5	5	5	4	4	5	5	5	4	4	3	4	53	60
2.	AIR	5	5	5	4	4	5	4	5	5	3	3	3	51	60
3.	AMI	5	4	4	5	5	3	4	4	5	4	3	3	49	60
4.	AZN	4	4	4	5	4	4	5	5	4	5	3	4	51	60
5.	AY	5	4	5	4	5	4	5	4	5	4	3	4	52	60
6.	FHA	5	5	4	5	4	4	4	5	5	4	4	5	54	60
7.	IS	3	5	5	4	3	4	3	4	3	4	3	5	46	60
8.	KSR	4	5	4	4	4	4	5	4	3	5	5	5	52	60
9.	LER	4	5	5	5	4	4	4	4	4	3	3	4	49	60
10.	MA	5	4	5	5	5	5	4	5	5	4	4	4	55	60
11.	MIA	3	3	5	5	4	4	3	3	4	3	4	4	45	60
12.	MR	4	4	4	5	5	5	5	5	5	4	4	4	54	60
13.	MRH	5	4	4	5	5	5	5	5	5	3	3	3	52	60
14.	MSR	4	4	5	5	4	4	4	5	5	4	4	4	52	60
15.	NS	3	4	4	5	4	4	5	4	4	4	5	5	51	60
16.	NA	4	5	3	3	4	5	4	5	4	5	3	4	49	60
17.	NS	5	5	4	4	5	4	5	5	4	5	5	5	56	60
18.	NFD	5	5	5	4	5	4	5	4	4	5	4	4	54	60
19.	RAH	4	5	5	4	5	5	5	5	5	4	4	3	54	60
20.	SNA	5	4	5	3	3	4	3	3	5	4	4	4	47	60
21.	ZAR	3	4	5	4	5	3	4	4	5	5	4	3	49	60
Total														1075	1260
Persentase														85, 31%	
Eligibility Category														Highly Practical	

After the Maqdis app was deemed practical based on student responses, the next step was to test the app's effectiveness in improving students' memorization skills. The study employed a one-group pretest-posttest design, beginning with a pretest to assess students' initial memorization abilities before the intervention.

Next, students participated in the learning process using the Maqdis app as a supportive tool for memorization practice. At this stage, students were first introduced to the Maqdis app and its features. Students were then guided to open the text and audio menu containing Surah Al-Mu'minin, verses 12-14, along with a recitation (*murottal*), so that they could listen to and read the verses simultaneously. Next, students studied the content of the verses through a menu explaining their meanings and interpretations, as well as watched instructional videos provided to aid in visualizing and understanding the verses' content. To support the memorization process, students also utilized the memorization goal menu to track their progress and the memorization tips menu, which

contained effective strategies for memorizing the Qur'an. Students carried out this entire series of activities independently under the guidance of the researchers, with the aim of improving their ability to memorize Surah Al-Mu'minun, verses 12-14, prior to the posttest.

After the entire treatment series was completed, students took a posttest to assess the improvement in their memorization ability following the use of the application. The pretest and posttest results were then compared to determine the significance of the improvement in students' memorization ability. The pretest and posttest data from the 21 students who were the subjects of this study are presented in the following table.

Table 10. Pretest and Posttest Data

Data Statistik	Pretest	Posttest
Nilai Terendah	30	60
Nilai Tertinggi	80	100
Nilai Rata-rata	50	88

The measurement results show a change in students' memorization ability after the implementation of the Maqdis app. The average memorization score increased from 50 in the pretest phase to 88 in the posttest phase. This increase indicates a change in students' memorization achievement after learning using the Maqdis app. For more details, see the following image.

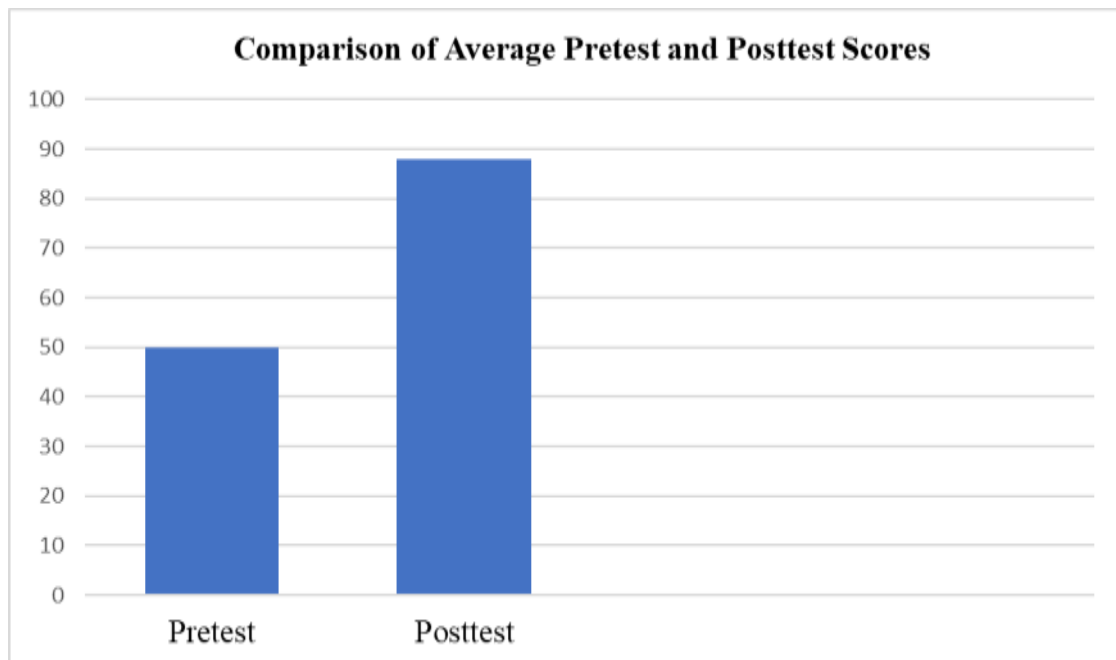


Figure 6. Comparison of Average Pretest and Posttest Scores

To determine the magnitude of the increase more objectively, an N-Gain calculation was performed, with the following results.

Table 11. N-Gain Calculation Results

Jumlah Siswa	Skor N-Gain	Kategori
21	0,76	High

The improvement in memorization skills following the use of the Maqdis app demonstrates that integrating various forms of media into a single app can support students memorization practice. The audio feature allows students to access examples of correct verse pronunciation that they can listen to and repeat independently. This aligns with research showing that murottal media has proven effective in supporting tahfidz learning as evidenced by improvements in students memorization outcomes in terms of both quantity and quality, particularly regarding tajwid and reading fluency (Hanifah & Dayusman, 2024).

In addition to audio, the Maqdis app provides a verse content menu and instructional videos that allow students to access information through visual and verbal representations. Presenting the content of the verses helps students understand the meaning of the material being memorized, so that the memorization process is not

merely focused on rote memorization but is also directed toward developing an understanding of the verses being studied. This aligns with multimedia learning theory, which states that the simultaneous integration of visual and verbal elements can enhance students' information processing and comprehension (Mayer, 2021). In the context of the Maqdis app, the integration of text, audio, and video provides students with the opportunity to study verses through multiple forms of representation, thereby supporting the process of understanding and retaining the material. Meanwhile, supporting features such as memorization targets and memorization tips also contribute to students' motivation and independent learning, as students can monitor their own memorization progress and gain additional strategies for the memorization process.

Although an improvement was observed, the N-Gain analysis results indicate that the improvement in students' memorization ability falls into the moderate category. These results suggest that the use of the Maqdis app has improved memorization ability, but the improvement achieved has not yet reached the high category. One factor suspected to influence these results is the limited duration of the intervention conducted in a single session, meaning students' opportunities for intensive memorization practice remain limited. The process of memorizing the Qur'an requires consistent practice and repetition. Therefore, using the app for longer durations and with greater frequency has the potential to provide students with more opportunities to reinforce their memorization and retain the information they have learned. This finding also indicates that improvements in memorization ability are influenced not only by the availability of the medium but also by the intensity and continuity of the students' practice.

From a practical standpoint, student responses to the Maqdis app showed an 85% rating in the "very practical" category. These results indicate that the app is well-received and effectively used by students to support the memorization learning process. This positive response also indicates that the app's characteristics in terms of its interface, ease of use, and available features align with students' needs during the practice process. However, student response results should be viewed as an indicator of the product's practicality and not directly used as evidence of effectiveness. Effectiveness or an improvement in memorization ability-in this study was

demonstrated through changes in pre-test and post-test scores as well as N-Gain analysis. Based on these overall results, the Maqdis app can be deemed valid and practical and demonstrates an improvement in students' memorization ability regarding the material from Surah Al-Mu'minun, verses 12-14.

D. Conclusion

This study produced the Thunkable-based MAQDIS mobile learning app, which is suitable for use as a memorization learning medium for the Qur'an and Hadith course in 11th grade at MAN Kota Palangka Raya. The development of the app, which integrates text, audio, video, voice recordings, and quizzes, demonstrates that the use of multimedia within a single platform can provide a more interactive memorization learning experience and enable students to practice independently. The research findings also indicate an improvement in students' memorization skills after using the MAQDIS app. Thus, MAQDIS not only meets the criteria for a viable learning medium but also has the potential to serve as an alternative digital medium that supports the practice and improvement of Qur'an and Hadith memorization skills.

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