Learning Through Mobile Taranum; The Analysis and The Acceptance

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Abstract

Tarannum al-Quran, a melodious recitation style of the Quran, is a revered art form that enriches the spiritual experience of Islamic worship. However, in Malaysia, learning Tarannum is a significant challenge due to the scarcity of qualified teachers. The intricate nature of this art form demands profound knowledge and mastery, which are often limited to a select few. This study aims to address this issue by exploring innovative approaches to teaching and learning Tarannum, making it more accessible to a wider audience and preserving this invaluable Islamic heritage. The method used during this project is Multimedia Mobile Content Development (MMCD) as it is suitable and fast for this project. This project will publish the application in android based and the period for this project is short. The expected result for the project is an application that will ease anyone that is interested in learning Tarannum rather than only watching YouTube videos and others. The acceptance rate for this application is 55 %. This acceptance rate is based on 10 users from Sekolah Kebangsaan Kota Masai who involved in the beta testing.

1. Introduction

Muslims in Malaysia often obtain rudimentary Quranic recitation instruction from their parents or local teachers. There is a knowledge gap since the subtle art of Tarannum is not covered in this fundamental instruction. Those without access to specialized Tarannum schools may continue to be unaware of its variety, believing falsely that it only entails reciting the Quran in a pleasing tone. Tarannum, on the other hand, has a variety of forms, including "Jiharkah," which is well-known in Malaysia and frequently performed in online recitations (Nurul Auji Hasbullah et al., 2020). In the modern era, where digital connectivity is paramount, there is a growing demand for educational resources accessible through gadgets. While online videos attempt to teach Tarannum on platforms like YouTube, young learners may find the learning process uninspiring (Sakkir et al, 2020). Furthermore, locating dedicated Tarannum instructors for face-to-face learning proves challenging. Consequently, aspiring Tarannum learners often resort to online videos, leading to incomplete understanding and dwindling interest. As stated in the Quran Surah al-Muzzammil: Verse 4 which carries meaning by Sahih International (Assami, Kennedy & Bantley, 1997):

<div dir="rtl">

أَوْ زِدْ عَلَيْهِ وَرَتِّلِ ٱلْقُرْءَانَ تَرْتِيلًا ٤

</div>

Meaning: Or a little more;And recite the Quran in slow, measured rhythmic tones) (73: 4)(Al-Kaf et. al,2021).

To address these issues and cater to individuals genuinely interested in mastering Tarannum, "Mobile E Tarannum" emerges as a potential solution. This Android based application seeks to provide an interactive learning experience, bridging the gap in Tarannum education (Mulyadi & Aimah, 2021). The app will cover various Tarannum styles, offering audio recitations of Quranic chapters with accompanying Tarannum. Users can focus on individual verses with a line-by-line audio playback feature, ensuring a step-by-step understanding of correct Tarannum techniques. Ultimately, this application aims to empower users with comprehensive Tarannum knowledge, differentiating between various styles and facilitating accurate Quranic recitation with Tarannum.

Moreover, understanding the Quranic verses' meanings is vital to convey the intended message effectively. By combining the beauty of Tarannum with a deep comprehension of the Quranic text, practitioners can elevate the spiritual significance of their recitation (Hapini et.al,2023). This study aims to address these challenges by exploring innovative approaches to teaching and learning Tarannum, making it more accessible to a wider audience and preserving this invaluable Islamic heritage. Teenagers and young children in Malaysia, however, frequently face major difficulties in learning Tarannum. Tarannum teaching is not taught in traditional educational institutions, and it is often believed that Tarannum is only for extraordinarily gifted students. As a result, many people are still unaware of the various styles of Tarannum. Muslims in Malaysia often obtain rudimentary Quranic recitation instruction from their parents or local teachers. There is a knowledge gap since the subtle art of Tarannum is not covered in this fundamental instruction. Those without access to specialized Tarannum schools may continue to be unaware of its variety, believing falsely that it only entails reciting the Quran in a pleasing tone. Tarannum, on the other hand, has a variety of forms, including "Jiharkah," which is well-known in Malaysia and frequently performed in online recitations (Nurul Auji Hasbullah et al., 2020).

In the modern era, where digital connectivity is paramount, there is a growing demand for educational resources accessible through gadgets. While online videos attempt to teach Tarannum on platforms like YouTube, young learners may find the learning process uninspiring (Sakkir et al., 2020). Furthermore, locating dedicated Tarannum instructors for face-to-face learning proves challenging. Consequently, aspiring Tarannum learners often resort to online videos, leading to incomplete understanding and dwindling interest. The existing application that similar to Mobile E Tarannum such as *Belajar Membaca AlQuran, Belajar Al-Quran* and *Panduan Tarannum* 1 are reviewed and compared. 17 2.4.1 Belajar Al-Quran Figure 3: Icon of Belajar Membaca Al-Quran Belajar *Membaca Al-Quran* is an application designed by Iman Budi Setiawan in 2016. It focused on learning to read Al-Quran for the beginner that can understand Malay and Indo language. This application is free and can be download in App store. The platform that supports this application is IOS 12 or later. This application does not require internet access or connection. The topics that are covered in this application are learning the alphabet in Al-Quran, the basic way to read and the *tajweed.*

In this part, a comparison is made between all the existing application that just been stated before in Table 1 which is *Belajar Membaca Al-Quran*, *Belajar Al-Quran* and *Panduan Tarannum* 1 with the proposed application in this report which is *Mobile E Tarannum*. The comparison made is based on various aspect which is displayed as Table 1:

Table 1 *Comparison on developed mobile apps for Tarannum*

ELEMENT	BELAJAR MEMBACA AL-QURAN	BELAJAR AL-QURAN (2017)	PANDUAN TARANNUM 1	MOBILE E TARANNUM
LANGUAGE	Bahasa Indonesia	Bahasa Indonesia	Bahasa Melayu	English
MODULE	Learn	Learn and Play	Learn	Learn and Play
SETTING	Not Available	Available	Not Available	Available
CONTACT	Available	Available	Not Available	Available
PLATFORM	IOS 12 and later	IOS 12 and later	Android 3 and later	Android 5.0 and later
INTERNET CONNECTION	Not Require	Not Require	Require	Require
CONTENT TYPE	-Long Text -Audio	-Long Text -Audio	-Long Text -Audio	-Infographic -Audio
BUTTON	Inconsistent	Inconsistent	Consistent	Consistent

MUSIC	Not available	Available	Not Available	Available
SOUND EFFECT	Available	Available	Not Available	Available
EXIT CONFIRMATION	Available	Not Available	Not Available	Available
FONT	Serif	San Serif	Calligraphic	San Serif

1.1 Background of Studies

The comparison has highlighted several factors of these applications such as language, platform, and others. Therefore, every factor that has been compared, the proposed application will be better in every way. It purposely made to be better than these existing applications so the application will stay in the market and can be used for a long time. Most importantly, the benefits of the proposed application will be much more rather than these existing applications that just been stated before.

These methods need to be mastered to ensure that the Tarannum is accurate and it is referred to as a methodology. These methods aim to distinguish between the Tarannum of the Quran and other tarannums. This means that a reciter needs to understand and master a Tarannum skillfully. Without this kind of understanding, it is bound to mix between several harakat tarannum without the right method. This way of reading is out of the desired Tarannum method (Muhammad et. al, 2021). Although several technological acceptance models have already addressed the use of digital media in education, there is a dearth of research on the relationship between acceptance and assessment utilizing mobile devices, which is a reality in educational institutions (Ortiz-López et al,2024).

Belajar Al-Quran is an application designed by Hendri Saputra in 2017. It focused on learning basic knowledge of Al-Quran for the beginner. This application is free and can be download in App store. The platform that supports this application is IOS 1**2** or later. This application does not require internet access or connection. The topics that are covered in this application are learning the alphabet in Al-Quran, the basic way to read, to write and the tajweed. There are 4 topics provided for those 2 modules (learning module and game module) which are *Huruf Hijayah, Harakat, Tanwin, Tajwid*. A setting console provided to the user to adjust volume only. The content inside this application is in Indonesia language. This application consists of basic knowledge to learn to read Al-Quran and write it. The good point about this application is having many topics and modules so the user does not go the other application to learn. It also has background music, and a great interface to make the application interesting. The weak point is the module consists of long text instead of infographic which can make user easily understand and more effective. Other than that, it does not show the way to write a complete verse in Al-Quran only word by word.

Belajar Membaca Al-Quran is an application designed by Iman Budi Setiawan in 2016. It focused on learning to read Al-Quran for the beginner that can understand Malay and Indo language. This application is free and can be download in App store. The platform that supports this application is IOS 1**2** or later. This application does not require internet access or connection. The topics that are covered in this application are learning the alphabet in Al-Quran, the basic way to read and the tajweed. There are 6 modules provided which are *Huruf Hijayah, Tanda Baca , Merangkai Huruf , Bacaan Panjang, Hukum Bacaan, Waqaf dan Ibtida'* , Bacaan *Gharib* and *Evolusi Bacaan*. A setting console provided to the user have nothing to setting, User can not adjust volume, language and anything else but just given the privacy policy, social page and more apps. All this element should be in a new main interface not in the menu or setting. This application consists of basic knowledge to learn reading Al-Quran. The good point about this application is having much module so the user does not go the other application to learn. The weak point is the module consist of long text instead of infographic which can make user easily understand and more effective . Other than that, lack of main interface and setting console, it can make a bad user experience because of the inconvenience.

Panduan Tarannum **1** is an application designed by (Zainul,2020). It focused on learning about Tarannum. This application is free and can be download in GooglePlay store. The platform that supports this application is android **3** or later. This application require internet access or connection. The topics that covered in this application are learning the Tarannum in Al-Quran, hearing the example of Tarannum. There are 8 topics provided for this application which are *Panduan Tarannum* and example of Tarannum in a certain chapter. A setting console is not provided to the user. The content inside this application is in Malay language but using Jawi writing. This application consists of an example of Tarannum and the guide to Tarannum. The good point about this application is having many examples and guides so the user does not go to the other application to learn. It also has

background voice for example. The weak point is the module consists of long text instead of infographic which can make user easily understand and more effective. Other than that, it uses the Jawi writing style which makes people who do not know it cannot read it.

Through this Tarannum mobile app development, user acceptability testing is the process of evaluating software on behalf of the intended user base to ascertain its acceptability. Lastly, it is anticipated that the completed software will be deployed during the deployment phase, after the completion of user acceptance testing. The developer has accountability for this in charge of deployment (Ryan et. al, 2022). The evaluations are explained in section 4 of this writing.

2. Materials and Methods

The first step of MMCD is the application idea creation which will be shown in the Table 2 below. It gathers the information needed to develop the application before beginning the process of designing and developing the application.

Table 2 *Mobile platform specification*

Item	Description
Type of application	Learning application
Target device	Android mobile
Target user	9-12 years old
Graphical User Interface	Main interface, setting interface, learning module, game module.
Images	Infographics, icons, button
Video	Note video
Animation	Game object, cursor
Audio	Background music, sound effect and narration
Application Synopsis	Mobile E-Tarannum is a Tarannum learn

2.1 Structure Analysis

The second step of MMCD is the structure analysis. There are two main components that will be analyzed which are the navigation analysis and object analysis. These two components need to be analyzed in detail and properly because it can cause the whole designing and development process will become problematic in the future. To avoid this from happening, a content structure check list will be shown in the Table 3 below:

Table 3 *Content structure check list*

Item	Description	
Layers design	Layer 1: Background images	
	Layer 2: Content	
	Layer 3: C# Scripting for Unity	
Frame design	Frame 1: Launching interface interface	Frame 2: Home
	Frame 3: Module Interface	Frame 4: Learning 1
	Frame 5: Learning 2	Frame 6: Learning 3
	Frame 7: Learning 4	Frame 8: Game module
	Frame 9: Setting interface confirmation	Frame 10: Exit
Menu and navigation	-Home button	
	-Setting button	
	-Menu button	
	-Next button	
	-Exit button	
Main GUI	Application Logo	
Sub GUI	None	

Image	-Icon		
	-Button		
	-Infographic		
Video	-Learning module		
Animation	-Curson in learning 4		
	-Game module		
Audio	-Background music		
	-Sound effect		
	-Narrator		

2.2 Process Design Stage

Process Design Stage main objective is to prepare all the items that have been stated in the content structure table above. This process consists of two components which are designing objects and writing single function prototype scripting. For this project, certain software that will be used such as Unity for the compiler of all objects, Adobe Illustrator as the software used to design graphics, Capcut to edit video, C++ and C# will be the scripting language in this project. The prototype that will be completed shall have in terms of graphic and object designs, all frames with at least a single script. The next thing to do is write the initial scripting and make all the functions required work as the expected outcome.

The main function in this application is the navigation between all the interface and the menu such as to learning 1 until learning 4, the main interface to the setting interface and the others. In the learning module, the navigation using the button to go back or forward needs to be fully functional or it will become a problem to the user. For the gaming module, the function is to make the drag and drop decision to be working. The script will determine whether a choice is correct or wrong.

2.3   User Analysis

User analysis is where the requirements of end users being identified. A set of questionnaires has been distributed to the target users also an observation has been made. An interview has been conducted with Ustaz Abdul Rauf Bin Hassan from Universiti Putra Malaysia, who is also subject matter expert for this research, has been conducted who is also the subject matter expert of doing this project. The user analysis has been tabulated into below Table 4.

Table 4 *User analysis*

Stakeholder Category	Role in product	Design implication	Action needed
Subject Matter Expert	Content consultant expert	Simple user intercae design	Instead of using long text explanation, use a simple infographic.
			Use font type and size that are readable by multiple type of android phone.
			Don't use font color that are too bright.
		Easy to navigate	Contain all the basic navigation button such as home, back, play, pause and button.
			All buttons must be easy to understand as it children
		Easy to learn	All instruction given is simple and clear.

			Easy gameplay for the gaming module.
			Use simple words for the context.
General user	End user of the application.	Based on questionnaire, improve application.	Add a little more design in the app so it improves the user mood.

3. Implementation

Implementation phase is important in Mobile E Tarannum development. This phase is proof that this application has reached its objectives. Several that have been used will be shown below and the function for each script. The script is in C# language and have each have unique function for this application.

Fig. 1 *Main mobile Tarannum interface*

Fig. 1 shows the home interface of Mobile E Tarannum. When the user clicks the application button, it will direct to here. They will see the name of this application and a play button. The play button will direct the user to the next interface which is the selection interface.


```csharp
using UnityEngine.SceneManagement;

public class SceneLoader : MonoBehaviour
{
    public string sceneToLoad;  // Variable to hold the scene name

    public void LoadScene()
    {
        SceneManager.LoadScene(sceneToLoad);
    }
}
```

Fig. 2 *Coding for code snippet to move scene*

Fig. 2 shows a snippet of code used in the interface. This function will allow the application to move from one scene to another scene by clicking a button that has assigned this script.

Fig. 3 *Interface for Tarannum or quiz*

Fig. 3 shows the interface for selection. In this interface, the user can choose between types of Tarannum and the Quiz. Once the user has selected their choice, the user will be directed to another interface. Users also can go back by using the back button provided. The script that is responsible for this interface is the same as Fig. 2.

Fig. 4 *First learning interface*

This is the first learning interface as shown in Fig. 4. It has a mind map that simplifies the basic concept of the Tarannum. It also has a video that teaches the user some general knowledge about the Tarannum. The back and

next button are also provided so users can navigate to selection interface or go to the next learning interface as shown in Fig.5.

```
// Method to seek the video when slider value changes
public void OnSliderValueChanged()
{
    videoPlayer.time = slider.value;
}

// Method to play the video
public void PlayVideo()
{
    videoPlayer.Play();
    playButton.gameObject.SetActive(false); // Hide play button
    pauseButton.gameObject.SetActive(true); // Show pause button
}

// Method to pause the video
public void PauseVideo()
{
    videoPlayer.Pause();
    playButton.gameObject.SetActive(true); // Show play button
    pauseButton.gameObject.SetActive(false); // Hide pause button
}
```

Fig. 5 *Code snippet for learning module*

Fig. 6 *Interface for last learning module*

Fig. 6 is the interface for the last learning module. It will straight on play the audio until the Tarannum finished. Users can pause and play the audio by using the play button. After the play button being used, the button will change into a pause button.

```
{
    if (audioSource.isPlaying)
    {
        audioSource.Pause();
    }
    else
    {
        audioSource.Play();
    }

    // Update the button sprite after toggling play/pause
    UpdateButtonSprite();
}

private void UpdateButtonSprite()
{
    if (buttonImage != null)
    {
        buttonImage.sprite = audioSource.isPlaying ? pauseSprite : playSprite;
    }
    else
    {
        Debug.LogError("Button Image component not found. Make sure it is assigned to the 'playPauseButton'.");
    }
}
```

Fig. 7 *Code snippet for pause audio*

Fig. 7 shows the snippet script responsible for the play pause audio. It also updates the icon of the button so it will change after the user uses the button. It will start with the play button and then become the pause button.

Fig. 8 *Quiz interface*

Fig. 8 shows the quiz interface. It has 10 quizzes about Tarannum. Users need to drag the choices of answer and drop it in the blank space provided. After they answer, a panel will pop out and tell whether it is correct or not. There are two types of questions which are user need to hear the audio and guess the Tarannum used and the other one is general information and user need to answer based on the question.

```csharp
public void OnDrag(PointerEventData eventData)
{
    rectTransform.anchoredPosition += eventData.delta;
}

public void OnBeginDrag(PointerEventData eventData)
{
    // Store the initial position of the object
    initialPosition = rectTransform.position;
}

public void OnEndDrag(PointerEventData eventData)
{
    // Check if the dragged object is dropped over a drop zone
    PointerEventData pointerEventData = new PointerEventData(EventSystem.current);
    pointerEventData.position = Input.mousePosition;
    List<RaycastResult> results = new List<RaycastResult>();
    EventSystem.current.RaycastAll(pointerEventData, results);

    bool droppedOnCorrectObject = false;
    foreach (RaycastResult result in results)
    {
        if (result.gameObject == correctObject)
        {
            droppedOnCorrectObject = true;
            break; // Exit the loop if we found the correct object
        }
    }

    // Update position and panel based on drop location
    if (droppedOnCorrectObject)
    {
        // Snap the dropped object to the correct zone's position
        rectTransform.position = correctObject.transform.position;
        correctPanel.SetActive(true);
        wrongPanel.SetActive(false);
        audioSource.Stop();  // Stop the audio source when correct panel is active
    }
    else
    {
        // Reset position if not dropped on correct object
        rectTransform.position = initialPosition;
        wrongPanel.SetActive(true);
        correctPanel.SetActive(false);
        audioSource.Stop();  // Stop the audio source when wrong panel is active
    }
}
```

Fig. 9 *Shows on drag and drop mechanism*

Fig. 9 shows the script responsible for the drag and drop mechanism. The script covers from the start of the drag until the object drops. It also has the function to display the panel after the object being dropped. The script is attached to the draggable object, and the blank space will be tagged as "dropzone".

4. Testing

The testing phase is one of the crucial phases in developing an application. This phase aims to ensure that the application runs in accordance with the established requirements. It functions to identify any errors and mistakes so that they can be corrected. All module functions have been tested. During the testing process, several errors were found that need to be fixed. The acceptance rate for this application is 55 %. This acceptance rate is based on 10 users who are involved in the beta testing.
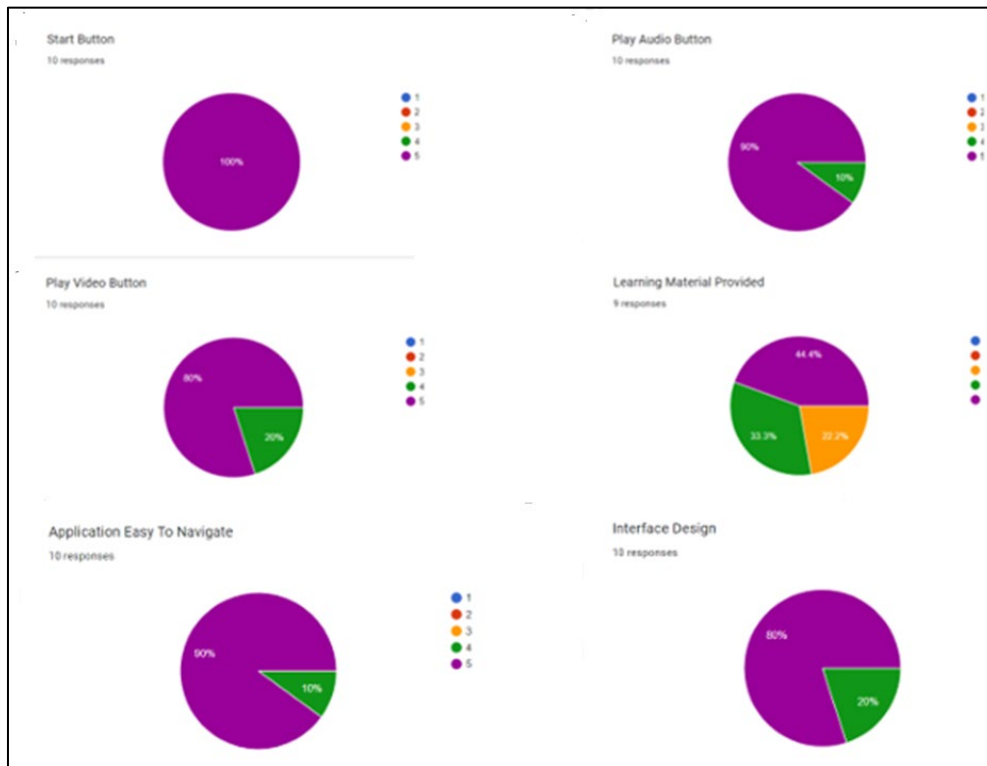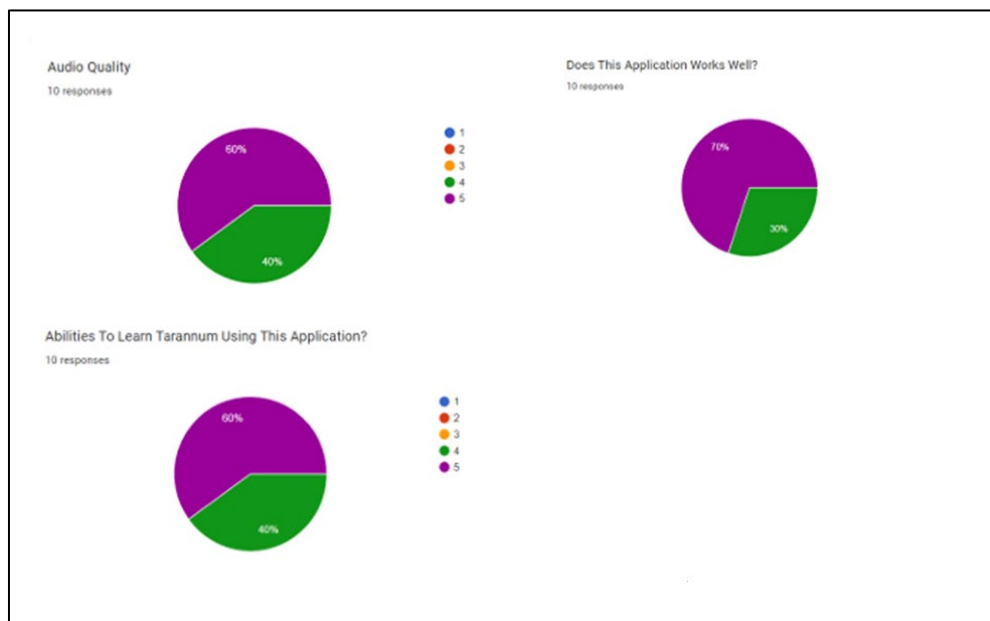
Fig. 10(a) *Beta testing results*

Fig. 10(b) *Beta testing results*

From the Fig. 10(a)(b) is shows on the acceptance level for Tarannum mobile learning apps that has been developed whereby most of the users agreed that the application is easy and helpful to use, learning material are provided, audio quality and the interface design are interesting and suitable to be use for Tarannum learning. It should be noted that there is no point below 3. This proves that this application is working smoothly. The lowest score, which is 3, is because learning material is limited since there are less notes of Tarannum theoretically. The application is very easy to navigate since the application uses a simple button which is arrow to show next or back button. The interface gets a high average mark since it uses a bright color that is very interesting and increases the mood of the user. A well-developed application deserves to get a good score for functionality since it gets high score in works well application. All the buttons are working and have no errors when using it.

The highest System Usability Scale score for this application is 83. Respondents react to the ten assertions (questions) in the SUS questionnaire by rating their degree of agreement on a 5-point Likert scale (1 being strongly disagreed and 5 being highly agreed). An overall usability score is provided by the results, indicating how simple (or complex) the system is to use.

5. Conclusion

Overall, the mobile learning application has functions as planned during the planning process. However, there are still limitations and weaknesses that need to be overcome or improved in the system to produce a better learning application. The notes about Tarannum are very simplified which is very suitable for the target user which is 9-12 years old. They can understand it easily. ii. The interface is very interesting. This learning application uses bright colors to attract users to stay on the application. Users also can see anything more clearly. iii. Mobile E Tarannum is interactable compared to other learning applications. Users can watch videos, play audio, and play quizzes using drag and drop. Not only display a long type of notes.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

*The authors confirm contribution to the paper as follows: **study conception and design:** Amiruddin, Hidayu; **data collection:** Hidayu; **analysis and interpretation of results:** Amiruddin, Hidayu, and Rauf; **draft manuscript preparation:** Amiruddin, Hidayu, and Rauf. All authors reviewed the results and approved the final version of the manuscript.*

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