Hijaiyah Letters Educational Game "EFRA" Based on Android as Learning Alternative at Darul Hawasyi Recitation

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Abstract. "EFRA" is an educational game. Educational games are games designed for learning. This game is designed using the Unity game engine with the C# programming language. There are 5 mini-games, namely Kartu Hijaiyah, Pasang Hijaiyah, Harakat Hijaiyah, Puzzle Hijaiyah and Menulis Hijaiyah. Besides mini-games, there are also 3 learning menus, namely Hijaiyah, Vocabulary and Harakat this menu is used for learning. This game is designed for children aged 7 years or above and anyone who wants to learn Arabic letters. The test was carried out using BlackBox testing, alpha testing and beta testing methods through a survey on Darul Hawasyi School.

INTRODUCTION

Educational games are games that are packaged to stimulate thinking and are one of the ways to train users to increase concentration [1]. "EFRA" is a mobile-based educational game that is single-player. This game is designed so that children can still learn hijaiyah letters during situations that require reducing activities outside the house, including direct learning during the Covid-19 pandemic. The name "EFRA" itself is taken from the letters in the sentence "B**e**laja Huru**f** A**ra**b" or "Learning Arabic" are, the letters taken are the letters in bold and underlined. In this game there are 5 mini-games related to hijaiyah letters, those are Kartu Hijaiyah, Pasang Hijaiyah, Harakat Hijaiyah, Puzzle Hijaiyah and Menulis Hijaiyah. Mini-game Kartu Hijaiyah is a game of pairing hijaiyah cards, mini-game Pasang Hijaiyah is to pair hijaiyah's letters with its corresponding sound by drag and drop the cable from hijaiyah letter to its corresponding sound or vice versa, the Harakat Hijaiyah mini-game is a game that gives harakat (punctuation) as spoken speaker by drag and drop harakat to its correct position on hijaiyah letter, the Puzzle Hijaiyah mini-game is a game of arranging irregular parts of hijaiyah image into a clear and orderly image of hijaiyah letter and the Menulis Hijaiyah mini-game is a game of writing hijaiyah letters by following the dotted lines that have been provided. This game also provided learning modules such as Hijaiyah to learn hijaiyah letters, Kosakata to learn hijaiyah vocabulary and Harakat to learn punctuation. The purpose of EFRA is to provide an alternative media to learn hijaiyah letters for children. In this game players will recognize, write and read hijaiyah letters. Example of educational game that has been made is Hafiz Quran by Kirey Larasati. In this game children can learn hijaiyah letters and Qur'an verses [2]

Darul Hawasyi School of Qur'an Learning certainly has an important role in society, especially in terms of teaching children about the Arabic language used for reading Qur'an. But in this pandemic situation, student must learn from home. That is why needed interesting learning innovation even though it is done from home. This is where EFRA come for. With Guidance from Darul Hawasyi Recitation, EFRA trying to solve those problem. EFRA trying to become alternative learning for teaching hijaiyah, especially in Darul Hawasyi case. Darul Hawasyi Recitation can be seen in Fig 1.

FIGURE 1. Darul Hawasyi School of Recitation

METHODOLOGY

Before making a game, A design method is needed as a benchmark in the process of making a game and also determines the scope of the game. Several things must be considered, as follows: [3]

1. High Concept

   High Concept is a short description of the game. EFRA game is an educational game that aims to introduce Arabic letters (hijaiyah) to children. In this game, players will be introduced to Arabic letters, write Arabic letters and train children's memory.

FIGURE 2. EFRA Main Menu

2. Gameplay

   Gameplay describes what can be done in the game and how to do it. This game can only be played by one person from a smartphone with Android OS and controlled using the touch screen. Some things are also an important part of gameplay, as follows:

   a. Control Design

      This stage is the phase which aims to determine what devices are used for control of the game. EFRA using the touch screen on the smartphone to control the game.

b. Object Design
Object design describes the function of the objects in the game. The objects used in this game are hijaiyah letters and basic harakat (basic punctuation marks).
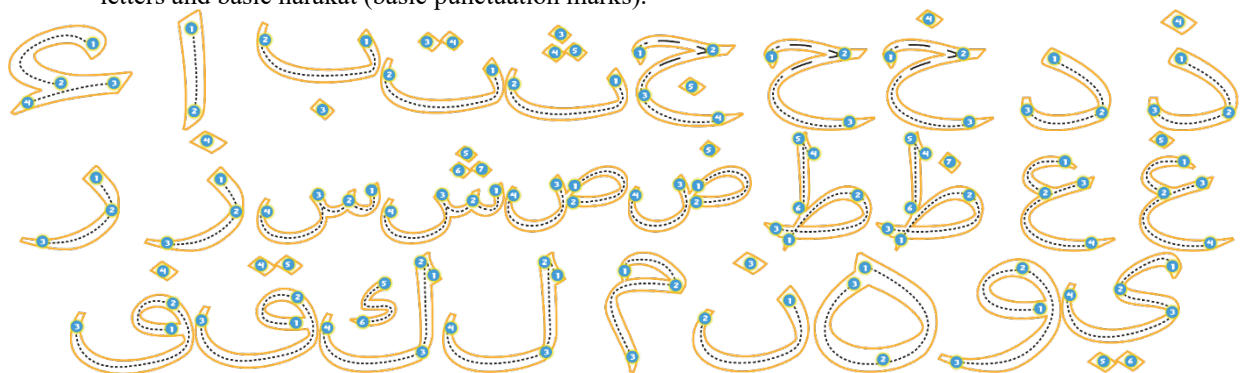

FIGURE 3. Hijaiyah Letter writing pattern

c. Mini Games Design
There are 5 minigames for student to learn and play with.

FIGURE 4. 5 Minigames available on EFRA

i. Kartu Hijaiyah
Kartu Hijaiyah is a game where we search for pair of hijaiyah letter in pile of cards

FIGURE 5. Kartu Hijaiyah Minigame

ii. Pasang Hijaiyah
Pasang Hijaiyah is a game where we connect hijaiyah letter for its matching sound pronunciation. There are play sound button to check the audio in the right-side area.
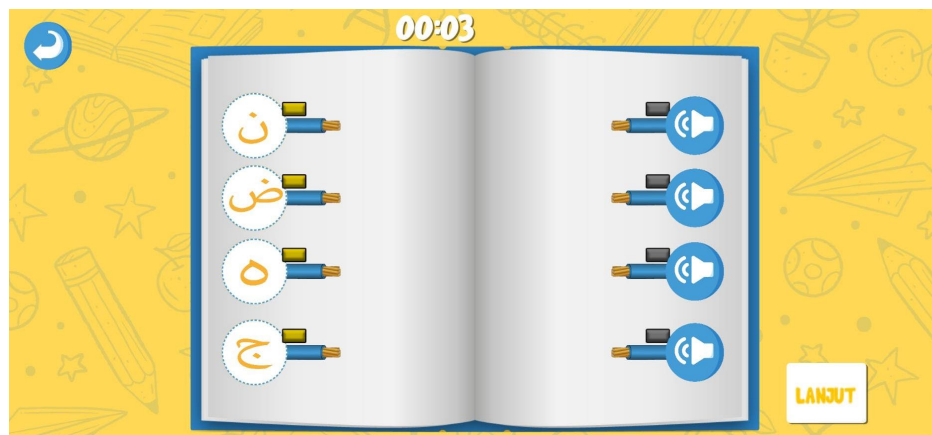
FIGURE 6. Pasang Hijaiyah Minigame

iii.   Harakat Hijaiyah

Harakat Hijaiyah is a quiz game to test player knowledge for finding correct harakat from its sound pronunciation. Play sound button located on the upper right screen.

FIGURE 7. Harakat Hijaiyah Minigame

iv.   Puzzle Hijaiyah

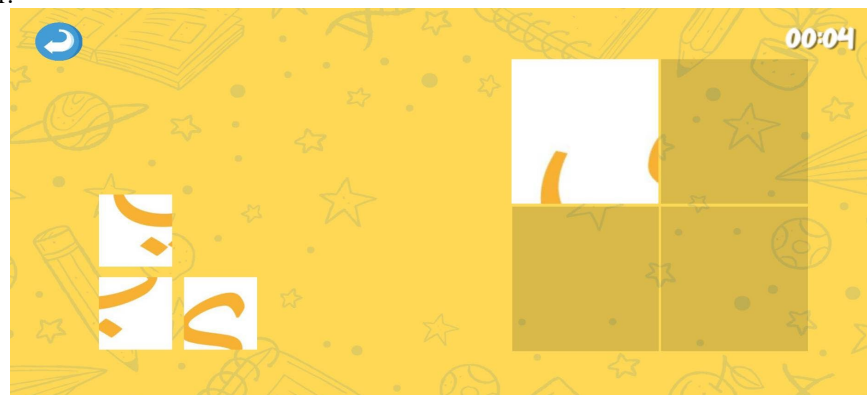Puzzle Hijaiyah is a jigsaw puzzle style game where player must arrange puzzle pieces to form hijaiyah letter.

FIGURE 8. Puzzle Hijaiyah Minigame

v.   Menulis Hijaiyah

Menulis Hijaiyah is asking player to write hijaiyah letter stroke in correct order.
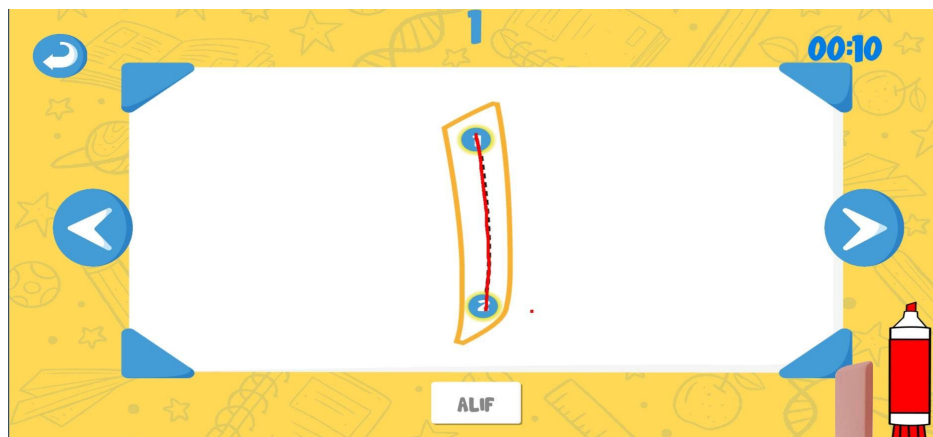
FIGURE 9. Menulis Hijaiyah Minigame

   d. Sound Design

Background music and sound effects are one of the elements that support the atmosphere in the game. The sound effects of hijaiyah letters and harakat (basic vowels) used in the game "EFRA" are voices recorded by a colleague namely Nurfita, who is a one of Qur'an teacher for children in Darul Hawasyi.

3. Hardware

This part describes the minimum specifications of the hardware to run the game. EFRA is developed for Android-based smartphone.

4. Testing

There are 3 testing phases in EFRA, which are BlackBox testing, alpha testing, and beta testing at Darul Hawasyi Recitation.

Game Genre

Educational games are designed to be fun and educational for the players [4]. In addition, educational games are designed for educational enrichment (supporting teaching and learning), using interactive multimedia technology [5]. Games with educational genres aim to provide children's interest in learning while playing EFRA.

Hijaiyah

Hijaiyah letters are letters derived from Arabic language. The word hijaiyah comes from the verb hajja which means spelling (reading letter by letter). Hijaiyah letters are also called tahjiyyah letters And the Qur'an is indeed compiled using hijaiyah letters with different makhraj (pronunciation) [6].

In teaching hijaiyah letters the teacher applies the iqro' method, the children are introduced to hijaiyah letters by the teacher using the iqro' book then at the end of the lesson the teacher evaluates the learning by asking the children again about the hijaiyah letters and the teacher writes the hijaiyah letters on the blackboard. This iqro' method in practice does not require various tools, because it emphasizes the reading. Direct reading without spelling. This means that the names of hijaiyah letters are introduced by means of active student learning (CBSA) and are more individual. [7]

In EFRA, hijaiyah letters are the main object in learning. This game uses 29 hijaiyah letters based on Iqro'. The 29 letters are ا (Alif), ب (Ba'), ت (Ta'), ث (Tsa'), ج (Jim), ح (Ḥa), خ (kha'), د (Dal), ذ (Dzal), ر (Ra), ز (Za'), س (Sin), ش (Syin), ص (Shad), ض (Dha'), ط (Tha), ظ (Zha), ع ('Ain), غ (Ghain), ف (Fa'), ق (Qaf), ك (Kaf), ل (Lam), م (Mim), ن (Nun), ه (Ha'), و (Wau), ء (Hamzah), ي (Ya'). [8]

TESTING AND DISCUSSION

The testing phase is the stage that is carried out after the game creation has been completed. Testing phase aims to ensure that the completed game is corresponding with the initial design and tests whether the game has an error or not. EFRA is made using Unity Game Engine with the C# programming language. EFRA is developed for a

smartphone with Android Operating System. The testing of EFRA will be using 3 testing methods. The methods are Black Box testing, alpha testing, and beta testing. From this point, EFRA still in development. Blackbox testing will run several times until all bugs in software fixed.

Black Box Testing

Blackbox Testing is done by running each of the existing modules of the game that has been made to find errors or bugs and ensure that all the functions contained can run smoothly. After several testing and bug fixing, all module reached fully functionality. The screenshot of 5 mini-games in EFRA can be seen in Fig 2.

FIGURE 2. Gameplay of 5 Mini-Game

CONCLUSION

After all of the testing has been completed, the conclusions that can be drawn as follows:
1. "EFRA" is still in the development phase
2. Testing in Blackbox is already done and has several revisions
3. The game "EFRA" has an attractive display and gameplay so that players will be happy while learning.
4. EFRA will soon go through alpha & beta testing stage at Darul Hawasyi Recitation.

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