

Development of Education Game for Fruit Recognition based in Mobile Device

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Abstract: The purpose of this research is to design Education Game for fruit recognition based in mobile device which will be used in learning process. This research uses development method of Multimedia Development Life Cycle system which has six stage, namely Design, Obtaining Content Material, Assembly, Testing and Distribution. After conducting experiments conducted by the makers and material experts, the researcher concludes that the educational game of fruit name recognition has been feasible for use in the learning process and has been in accordance with the concept of product design, and from the test results that been done the application has been running well based on the purpose development and no errors occurred during the operation of the application.

1 INTRODUCTION

The application of games for educational media or what is called education game stems from the rapid development of video games and makes it an alternative medium for learning activities. Educational game is very interesting to develop. There are several advantages of educational games compared to conventional learning methods. One of the players enjoys the learning process because of the interaction of the game.

Early childhood It is generally difficult to concentrate on an activity for a long time. He always quickly turns his attention to other activities. They will interact longer with an activity that is fun, varied, and not boring. Early childhood is also very curious about the world around them so they often observe new things to fulfill their curiosity about something they see.

Children aged 2-4 years develop their brain growth very quickly towards things around them, and they need to be introduced to new things, among which are about Fruit. They still do not know the kinds of fruit, they only know the fruit around them that they often consume, whereas in fact there are still many other kinds of fruit that are not yet known, therefore a media about fruit recognition and in the

form of games is needed for help introduce various kinds of fruit.

Based on the above background, the researchers are interested in making research on "DEVELOPMENT OF MOBILE-BASED FRUIT NAME EDUCATION GAMES".

With the educational game, it is expected that children can learn while playing so that they feel happy and excited in the learning process taking place and in their daily environment.).

2 THEORETICAL BASIS

2.1 Game

Games according to Jhon M Echols and Hasan Shadily¹ (in Marshel Julio Rogi 2014) Games in the Indonesian English dictionary means playing, playing or matching English words called "games" (nouns), "to play (verbs)", "Toys" (nouns) are derived from the main word means to do deeds for the purpose of having fun (with certain tools or not); something to do with what you like, just as original. The game is an act that contains preoccupation and is carried out on its own will, free without coercion with the aim of gaining pleasure when doing the activity.

2.2 Type of Game

Based on the type of game that is usually played on cellphones and computers, including:

a. Adventurous Action

This genre combines action and adventure gameplay, for example players are invited to explore underground caves while defeating enemies, and looking for ancient artifacts, or crossing rivers.

b. Simulation, Construction, and Management

In this game given the freedom to build in a particular project with limited raw materials.

c. Arcade

Arcade games are game genres that are not focused on stories, but are only played "just for fun" or to chase after points / highscore.

d. Word game

This game is often designed to test skills with language or to explore its properties. Word games are generally used as a source of entertainment, and have been proven to be used for education as well.

Based on the description above it can be concluded that the game is a result of the multimedia process in the form of tools for fun can be used as a medium to play while learning.

2.3 Education

According to Sugihartono² (in Dewi) education comes from students, or educates which means maintaining and forming exercises. While in the big dictionary Indonesian (1991) education is defined as the process of changing attitudes and behavior of a person or group of people in business and training.

Based on the description, it can be concluded that education is a conscious and continuous effort carried out by the government, family and society for the purpose of transforming an individual into a better direction and direction, in all aspects of his life.

2.4 Education Game

Educational games are games that are designed or made to stimulate thinking including increasing concentration and solving problems³.

So, based on this description it can be concluded that educational games are one form of game that can be useful to support the teaching and learning process in a more fun and more creative way, and is used to teach or increase user knowledge through an interesting and unique media. better direction and direction, in all aspects of his life.

2.5 Theory of Children

Early age is a period of development and growth that greatly determines the future development. Various studies conducted by experts concluded that children's education from an early age can improve achievement and increase the productivity when he/she become of an adult at work⁴.

3 RESEARCH METHODOLOGY

3.1. Data Collection Techniques

In this research process, it requires data that is truly accurate, relevant, valid, and reliable so that it gets the expected results. First, do research to collect information data in the following ways:

3.1.1. Literature Study

This study was conducted by studying books and browsing on the internet related to the development of mobile-based educational games and various data related to the data needed in the study.

3.1.2. Similar Literature Studies

The author makes comparisons to similar studies that have been done before, by visiting a library or with seeing similar thesis.

3.2 Development Methodology

According to Luther (in Iwan Binanto) Multimedia Development Life Cycle as shown in Figure 1. This development methodology consists of six stages, namely Concept (design), Design (Design), Obtaining Material Content (Material Collection), Assembly (Testing), Testing (Testing), and Distribution. This development method is very suitable in the process of developing an application system as a goal to obtain the expected application results.

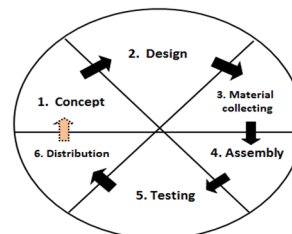


Figure 1: Multimedia Development Life Cycle.

4 RESEARCH RESULTS AND DISCUSSION

4.1. Research Results

4.1.1. Application Making Process

a. Concept

The design of educational games for childrens was made based on MOBILE with .apk format. The description of the concept of this application is as follows. The picture is in Figure 2.

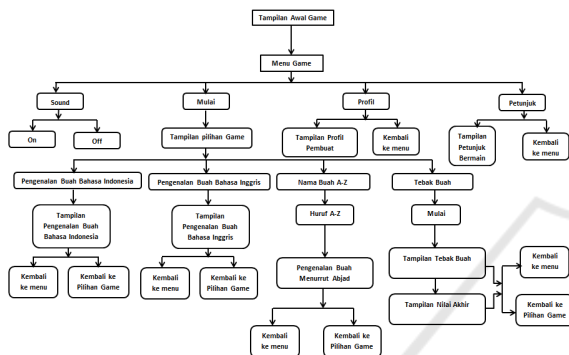


Figure 2. Hierarchy Menu.

b. Design

After the concept process is complete, the next stage is Game Design. At this stage the researcher will begin the application design, the researcher will do the storyboard design and design the navigation structure in the form of a menu hierarchy.

c. Obtaining Content Material

At this stage, the manufacturer has collected materials and materials that are suitable for applications such as scripts, images, animation, and audio. Taken from various sources and others are made by the author.

d. Assembly

For the manufacturing process in the Educational Game Application Introduction to the Fruit, hardware and software are needed to support the manufacturing process.

1) Application Creation

After processing Background, Sound, Buttons, Animation, the image that will be used in making the game application has been finished, then the next process is the creation of application games using Construct 2-r245 where all image files, existing

material are processed and make a project with HTML5 format.

Results on the process The storyboard design that has been designed can be seen in the following figure:

- The Welcome scene is the result of the Storyboard design in Figure 3.



Figure 3. Welcome Scene.

- The game menu results are the result of the Storyboard design in Figure 4.



Figure 4 Menu Scene.

- Game selection results are the result of the Storyboard design in Figure 5.



Figure 5 Game Selection.

After going through several production processes, the next stage is the export process to Apk.

e. Testing

After the game has been finished, then the system will be tested and tried by the user. The test aims to find out whether this educational game is in accordance with the plan and whether it is functioning properly or cannot be used.

- Developer Test

For testing games that have been created or designed researchers use software with the following specifications: - ASUS_Z007

a). Version of Android 4.4.2 Kitkat

b). A Fruit Recognition Game has been installed

f. Distribution

After testing the application phase, the Compile application formatted in the final stage is done so that it can run on an Android smartphone device.

4.1.2. Validation of Media Quality by Expert Material Teachers

The material expert who became the validator in this study had the following requirements, namely: Kindergarten teacher, has competence in the field of learning media especially knowing educational games and can operate Android smartphones.

Phase I Questionnaires and Applications with learning formats were evaluated by previously providing educational game products. The material expert gave an assessment of the quality of the media on the material aspect with an average of 4.27 including the "very good" criteria.

Data obtained from the validation results are then analyzed and used as a basis for revising this learning media product. Data from material expert validation consisted of 30 items in the learning media product assessment questionnaire. Based on the data obtained from the assessment of material experts in Phase II regarding this learning media product is "very good" with a mean score of 4.63.

4.2. Discussion

In the process of developing this Mobile Fruit-Based Fruit Learning Education Game, it takes various stages that must be considered so that the maker can get satisfactory results, because in the development of the Application requires testing so that the manufacturer can find out the application can work well or vice versa.

In the application the writer makes it more directed to the voice button and the image than the text, so that the child is easier to learn with the voice button than having to spell letters one by one.

5 CONCLUSIONS AND RECOMENDATIONS

This educational game application can be developed and can be run using the MDLC method (multimedia Development Life Cycle). Thus this application can be used with the theme of Fruit Recognition (Indonesian Fruit Recognition, English Fruit Recognition, Alphabetical Fruit Name, Guess Fruit), and this application has made learning easier and children will know the names of fruits especially in children's education early age.

There are suggestions that might help to make this application more interesting

1. The application will be developed again to support all types of mobile resolutions.
2. Adding another theme is also very useful to make the application more interesting.
3. By adding game objects so that children are more interested in using the application.
4. The application will be developed again so that it can be used on all smartphone devices.

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