Animal Kingdom Recognition Application using Augmented Reality Technology

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Keywords: Animal Kingdom Recognition, Augmented Reality, Educational Tool, Mdlc

Abstract: Sometimes students have no ideas what the look like of animals that their teacher talking about. It's because schools have no aided tools that can help students to grow their imaginations about that subjects. The objectives of study are to design and build an application of Animal Kingdom by using Augmented Reality technology that can be used on Android mobile devices. The method used the Multimedia Development Life Cycle (MDLC) that the procedures are concept, design, material collection, assembly, testing, and distribution. The application of Animal Kingdom used Augmented Reality Technology can be built for helping students in school to learn more informative and imaginary by visual (3D) appearance of the subjects.

1 INTRODUCTION

Many school students who attend teaching and learning activities without understanding clearly about the object being studied. This is especially true in subjects that learn about objects that have never been seen by them, for example the world of animal. For example, how can they understand the shape of the horn in rhinos while there are no rhinos in their area. Lack of learning aids that can visualize objects or animals themselves which results the students only being able to see from a limited perspective.

Some media to overcoming the problems above are with printed or digital books, videos, learning multimedia, articles, or tutorials from the internet. From these several alternatives, learning multimedia using augmented reality technology is the best choice. Multimedia learning referred to in this study uses an introduction model. The introduction model is a program that is designed to act as an identification application for students.

Therefore, it is deemed necessary to build learning multimedia application aids which in this study, Animal Kingdom Recognition Application using Augmented Reality technology that can provide a more detailed picture of the object being studied, that can be used by teaching staff in schools with android-based mobile devices they have.

2 LITERATURE REVIEW

Learning media can be understood as anything that can convey and channel messages from sources in a planned manner so that a conducive learning environment can be created where the recipient can carry out the learning process efficiently and effectively (Munadi, 2013: 7-8). In relation to the learning process, if the media carries messages or information that aims at instructional or contains teaching purposes, the media is called learning media (Arsyad, 2015: 4). Furthermore, Isdianto & Suyata (2014) describe learning media as anything that can be used to channel messages and can stimulate the mind, arouse enthusiasm, attention and willingness of students to encourage the learning process in them. Various types of media when viewed in terms of technological development by Seels & Glasgow (1990: 181-183) is divided into two broad categories, namely the traditional media and the latest technology media. Furthermore Asyhar (2012: 76) argues in general, there are four types of learning media, namely visual media, audio media, audio-visual media, and multimedia. Based on the above definition it can be concluded that learning media is information that contains messages and becomes a stimulus for students who are used to convey information. Based on the types of learning

Kumajas, S. and Komansilan, T.
Animal Kingdom Recognition Application using Augmented Reality Technology.
DOI: 10.5220/0009011603750377
In *Proceedings of the 7th Engineering International Conference on Education, Concept and Application on Green Technology (EIC 2018)*, pages 375-377
ISBN: 978-989-758-411-4

media available, this study focuses on developing media types of multimedia learning.

Augmented Reality (AR) is a tool that connects between three-dimensional visualization, the real environment, and the use of code that can be seen as a bridge that binds the real world to cyberspace (Fedeli & Rossi, 2014: 10). In many cases AR technology involves special devices such as glasses, head-mounted displays, and smartphones. AR allows users to see virtual objects two or three dimensions projected against the real world. Johnson, et al. (2011: 16) explains the educational use of mobile devices and the potential of AR technology which states that, one of the most promising aspects is that it can be used for visual and highly interactive forms that can display data to the real world as easily as simulating a process dynamic. Augmented Reality is needed as a technology for simulations to visualize objects from these animals.

3 RESEARCH METHODS

This study has the aim of developing an application for more interesting animal world recognition using Augmented Reality by utilizing the camera features of Android mobile devices. The research method used in this research is MDLC (Multimedia Development Life Cycle) where this method has 6 stages, namely concept, design, collecting material, assembly, testing and distribution (Luther, 1994) as shown in Figure 1.

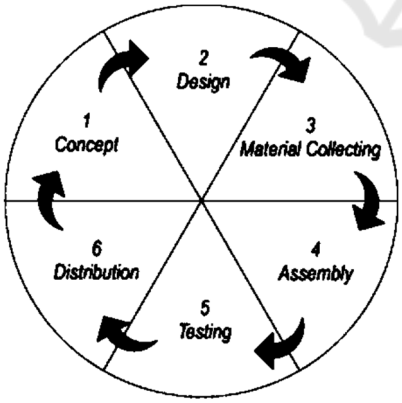

Figure 1: Multimedia development life cycle (MDLC) methodology.

First stage is concept, in which researcher need to decide what the purposed of his research, what kind of user will use it and how it will distribute. Second, at the design stage, the researcher will begin the design of the application; the design will be in the form of a storyboard and the design of the navigation structure in the form of a menu hierarchy.

The third is the Obtaining Content Material stage, where at this stage, researchers have collected materials and materials in accordance with applications such as logic links, scripts, images, animation, music and videos. The fourth stage is the build phase, which the building of the application is beginning.

The fifth stage is the testing phase when the application has been completed. And the last stage or sixth stage is how we chose to distribute the application to user.

4 RESULTS AND DISCUSSION

This research aim to build an application that can be used as educational aid tools in such topic Animal Kingdom Recognition using Augmented Reality technology. This research using MDLC methodology with 6 (six) stages.

First stage is concept; in this process researcher decided the application made is aimed at school students who are accompanied by teaching staff. Development of an application to introduce the animal kingdom and the application will build using Augmented Reality technology made based on mobile platform (android) with the extension .apk (Android Package File).

Second, at the design stage, the researcher will begin the design of the application, with making of storyboard and the design of the navigation structure. In this stage the opening will be design too, it will display the splash screen page before entering the main menu.

The third is the Obtaining Content Material stage. At this stage, researchers have collected materials such as logic links, scripts, images, animation, music and videos.

The fourth stage is the making/ build phase, including the background design of the application and determining the button icon that will be used. After processing the content has been made, then the next process is making an application using Open Space 3D where all the content that has been wrapped with the script and also the logic link will be processed and made into a .xos format project.

The fifth stage is the testing phase when the application has been completed, the system is tested and tried by users and media experts where the test aims to find out whether the application is in accordance with the plan and whether already functioning properly or not yet suitable for use.

After the testing phase on the application, then in the final stage or distribution stage, researcher compiling application in *apk format so that it can be run on an Android platform smartphone device. Figure 2 shows example of animal appearance.

Figure 2: Example of animal appearance.

5 CONCLUSIONS

An application of Animal Kingdom Recognition already built. It can be use as educational aids tools that can help students to learn more interactively and imaginary. It used Augmented Reality technology that can visualize 3D animals object. With that kind of visualization researcher hope that students will more eager to learn, more understandable and more enjoy learning and studying.

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