CHAPTER I

INTRODUCTION

1.1 Background

In the 21st century features of different tools, different communication, different information, and different jobs. With this change, education must shift to combine computer-based electronic technology that integrates learning with this technology in the context of academic subjects (Niess, 2005). Learning science using technology is a new challenge that must be faced by the educational sector today. However, we found some difficulties faced by teachers and students. The difficulty experienced by teachers in combining learning material using technology in this case is a learning application. Based on the results of observations that we have found in the field that most teachers are still unfamiliar with Android-based learning applications. Specifically how to use it or make it. Most teachers in Indonesia only utilize existing learning media, but this is felt to be less given the insistence from the government to continue to develop learning in the classroom but the lack of facilities provided. Niess (2015) stated that learning about subject matter with technology is different from learning to teach subject matter with technology. Some teachers have been taught to teach their subject matter with technology and as found by a survey by the Center for National Education Statistics, only 20% of current state school teachers feel comfortable using technology in their teaching (Rosenthal, 1999). With the development of science and technology, the discomfort felt by the majority of teachers have found a bright spot for the problems with the technology of mobile applications.

A mobile application is software or a program that runs on a mobile device whose job is to perform certain tasks for its users. Mobile applications are also one of the new things and a fast-growing segment of global information and communication technology (Islam & Mazumder, 2010). Islam & Mazumder (2010) stated that Mobile application easy, user friendly, inexpensive, can be downloaded and run capable on most cellphones including cheap and entry

level cellphone. Mobile applications are extensive used for a wide area of function such as calling, messaging, browsing, chatting, social networking, communication, audio, video, games etc. Alzahrani, Alalwan, & Sarrab (2014) stated that The advantages of mobile applications today is have a cell phone, internet and email access point, gaming systems, PDAs, MP3 and the other players.

The mobile application is also a handheld device that can improve class dynamics because of its calculations and communication ability, which adds face-to-face interaction (Liu and Kao, 2007) and can support collaboration learning scenario (Hoppe, Joiner, Milrad, and Sharples, 2003). The mobile application also utilizes the brain in a smartphone that provides unique software applications to help deal with unlimited details in today's busy life. The mobile application allows users to customize their mobile with certain requirements and needs. Most users generally want internet access to search or email, and depend on their preferences along with many items needed. Jones (2002) states that most students having computers and wireless devices with almost 80 percent believing that the use of the Internet enhances their learning experience. User requirements can be fulfilled in the current multimedia smartphone with the appropriate application. Applications that are appropriate for use by students should be combined with interactive multimedia.

Special interactive multimedia for learning applications can help students not only to go further and simply allow students to choose their own path through an application by pointing and clicking various menu items and buttons (Cairncross, & Mannion, 2001). Mobile applications combined with interactive multimedia in this study will be focused on mobile applications about earth scince. At present, mobile applications of earth science is emerging to be made. The material presented in this application is the layer of the earth. In this material there are a number of sub-topics, however, only the topic of the atmospheric and sliding layers are presented. This is because based on the Indonesian curriculum, the 2013 curriculum for 7th-grade students is more focused on understanding the two materials. Without prejudice to other additional material. Both of these

materials are difficult for students to understand because of the many terms and keywords based on each characteristic of the layers. Therefore we developed an android learning application about the material layers of the earth. The previous works have developed mobile applications to support the material of Earth Sciences such as Secret of the Earth AR, Scolar Scope, The Aerth by Tinybop, Earth's Core, Earth-Augmented Reality, Earth Science-QuexBook, and Earth Science Quiz Game.

This application has been applied in class by the teacher in the teaching and learning process. By reviewing this application, we have found several limitations. Some applications are not suitable for junior high school students because of the incompatibility of the material with basic competencies for students at certain levels of education, lack of assessment to measure students' understanding after using the application, the material in the application only helps students play by viewing images with the help of virtual reality, and the application is too difficult for users to use. Therefore, we viewed that a Novel Mobile Application suitable to junior high school students was required to be developed through this research. We will here propose the application entitled "E-layer". The app discusses the earth layer packaged as an interactive multimedia. The E-layer has several features that are connected to the needs of students such as features that can help students understand the material contained therein, easy to understand videos, sound menus to help students with audio learning styles, and quizzes to measure students' abilities after using the application. This application also discusses physical material on the topic of the earth layer. This application will be constructed using Unity software. Unity is software has an advantage to develop some applications for games or learning applications in two dimensions or three dimensions. To ensure that the application was appropriate to students, we will examine the quality by expert judgments, refining the apps, and testing the apps to students, respectively.

1.2 Research Problem

According to the background which has already stated, the problem of this research is "How to develop an android mobile application as interactive multimedia in earth layer topics for junior high school ?"

1.3 Research Question

To describe the research problem, this study seeks the following questions:

a. How does the android mobile application as interactive multimedia designed and developed in this study ?
b. What are the characteristics of the android mobile application as an Interactive Multimedia in earth layer topic for Junior High School developed in this study ?
c. How does the review of experts on content, language, and media of mobile learning application in this study ?
d. How does the implementation and response of mobile learning application projects by students and science teachers' as a user in this study ?

1.4 Limitation of Problem

In order to avoid widening of a problem on this research, the research will be limited for following things:

a. The android mobile application is created using a unity software. In 2 dimensional design is equipped with various features. The features include other videos, text, animation, dual langusge, voice guidance, and so on. The purpose of this application making is to make students easier to understand material that is in accordance with 2013 curriculum. the topic discussed in this application is about the material layers of the earth in general, however, in the process of making an application it is finally determined that the material presented is still the material layer of the earth but on the topic of the atmosphere layer and the geosphere layer. The topic is specifically for students in grade 7 with the 2013 curriculum.
b. This android learning application is packed with interactive multimedia. In this application there is a quiz with 15 questions that are used to measure the user's ability after using this application.

1.5 Research Objective

Below is the research objectives that have been defined as follows:

a. To analyze the characteristics of the android mobile application as an Interactive Multimedia project.
b. To analyze the evaluation review of experts on content, language, and media of mobile learning application as an interactive multimedia projects.
c. To analyze the implementation and response of mobile learning application projects by students and science teachers' as a user.

1.6 Research Benefit

Below are the research benefit that are expected to provide benefits to the parties concerned, as follows:

a. Teachers

   The results of the study for teachers are expected to be able to use the Android mobile learning application as a supporting media in improving the teaching and learning process, make effective teaching-learning process, and Provides the opportunity for students to learn to use the media that is expected to support science teaching in line with expectations science learning in the 21st century.

b. Students

   The results of this research for pupils are expected to help increase pupils' knowledge about the topic of the earth's layers, increase the flexibility of learning that is not limited by place and time, and encourage pupils to learn lithosphere topics by doing projects. And helping pupils change their perspectives or understanding that learning science is not difficult but fun.

c. Another researcher

Research results for other researchers are expected to have a share in contributing to the development of mobile learning applications and as references to the same focus study for this type of research.

1.7 Organizational Structure of Research Paper

The organizational structure of thid research paper divided into five chapter, which are:

a. Capther I : This Chapter consits of background, research problem, limitation of problem, research objective, research benefit, and oragnization of research paper structure
b. Chapter II : This chapter arranged by literature review of android mobile application, multimedia interactive, and earth layer.
c. Chapter III : This chapter describe the research methodology that uses in this research, research method, research design, population and sample, operational definition, research instrument, instrument validation, data collection, data analysis technique, and research procedure.
d. Chapter IV : This chapter explain the result and discussion of this research based on data.
e. Chapter V : This chapter stated the conclusion and recommendation regarding the research based on the discussion on chapter IV.