

**The Development of Augmented Reality Android
Application: M-Learning to Build Students' Speaking Skills**

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Abstract

The objectives of the research are to explain the procedure of how to develop Augmented Reality Android Application (ARAA) which is suitable for science lesson bilingual class in grade 1 of MI Roudlotul Jannah. This research is a type of Research and Development (R&D) with using the combination of Borg and Gall and ADDIE development model. The subject of the research was First grade student of MI Roudlotul Jannah academic year 2019/2020. The instrument used in this research is a questionnaire validation of media experts and questionnaire responses student. Data obtained from expert assessments and product trials are analysed in quantitative descriptive manner. Based on the results of research, learning media Augmented Reality Android Application (ARAA) which is suitable for science lesson bilingual class in grade 1 of MI Roudlotul Jannah is fulfils several criteria as in accordance with learning objectives, presenting a variety of animal, activating students, and according to several principles visual media. This media is appropriate to use based on the results of validation from media experts, as well as the results of field trials. Media validation got an average score of 4.39 (good), and the user response got an average score 4.7 (very good).

Keywords: *Augmented Reality, M-Learning, Build Student Speaking Skill*

Introduction

English is an international language; many people want to learn English. Regardless of the language, English is one a country that has a unique culture, like

the way how they visit or how to eat. According to Richards & Rodger (1986) many people in various countries use the English language as a communication tool in various important international meetings. Mastery of English becomes very important because of almost all global information sources in various aspects of Life using this language.

Crystal (2000) stated that English is a Global language. This statement can be interpreted that English is used by various countries to communicate between one country to another countries throughout the world. Therefore, English is one of the international languages and also a global language. Learning and Understanding English becomes a necessity that cannot be avoided. By speaking English, someone will open his mind and knowledge internationally. All the uniqueness above makes many people want to learn English especially Indonesia.

English is one subject that is required to teach in most schools in Indonesia, starting from kindergarten, elementary, junior high school, senior high school to university. English itself consists of four main abilities that cannot be separated from one to another, it is: listening, speaking, reading and writing. One of the main goals in English is to be able to communicate with other people, therefore talking about the highest place that can be in the middle is quite essential to master (Bright & McGregor, 1970). Speaking is one of the productive skills in language and an essential part of learning languages.

As stated by Spratt, Mary, et. Al (2005), speaking is a productive skill, such as writing that involves gratitude for meaning for others. So, speaking is a productive skill that does not only require active or productive participants but also participants who receptive participants. Speaking is one of the skills that are very prominent and must be mastered by students. Speaking itself is also a part of people daily life. They can communicate what they think to make an interaction with others become meaningful.

In Lazarton (kurniawati, 2013), speaking is an active interaction between the speaker and the listener as a process for building and sharing purpose that involves several components like pronunciation, spelling, grammar, vocabulary, fluency, and understanding. Based on the facts above, the researchers felt the need to develop an Android-based application Augmented Reality that could be used

for media to support the teaching and learning process, especially speaking material at a bilingual class of MI Bilingual Roudlotul Jannah. By using Augmented Reality Android Application media students can be easier to learn English everywhere because it can be said to be quite effective and efficient. Therefore, students can learn English more intense.

Research Methodology

This research used Research and Development research (R&D). (Sugiyono, 2012) states that research and development is used for developing or validating educational or learning products. Research and Development is a type of research used for produce or develop certain products. Nana Syaodih Sukmadinata (2010) suggest that research and development are a process or steps to develop a new product or improve existing products, which can be guaranteed. Research and development are widely used for develop teaching materials, learning media and learning management. Moreover, the goal of R & D is to take the research knowledge and incorporate it into a product that can be used in school. Borg and Gall (1963) also described that R & D is a research method which consists of a cycle in which a version of the product is developed, implemented, field tested and revised on the basis of the field-test data.

In this study, the researchers implemented ADDIE's instructional design model. ADDIE is an abbreviation that represents the steps of instructional design, namely (1) Analyze, (2) Design, (3) Develop, (4) Implement, and (5) Evaluate. Roger (2002) develops ADDIE model into those five steps. These steps provide dynamic and flexible guidelines which are used for effective and efficient instruction. Therefore, the researchers combined both research method of R & D cycle and ADDIE (Analyze, Design, Develop, Implement, and Evaluate) Model. Based on the understanding by the experts, it can be concluded that Research and Development is the method research used to develop new products or improve existing products. Products produced in research and development in the form of Augmented Reality Android Application in class I MI Roudlotul Jannah.

Results

There were some steps of developing the Augmented Reality Android Application. The first step is Collecting Information (Analysis). At this stage, the researcher conducts a preliminary study and literature study. Preliminary studies are activities to analyze learning media and the learning resources used by the teacher during the learning process in bilingual class of MI Roudhotul Jannah which is done by observation and interview with the teacher. The results of observations and interviews are as follows; the student grade is not satisfied, the teacher teaches by writing vocabulary or sentences on the board then the students take notes, learning resources used are in the form of text books, students appear to be less actively involved in learning activities, and learning media is needed for student.

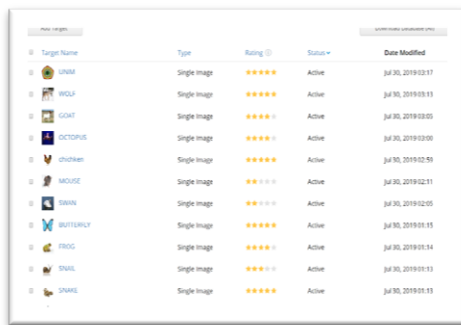
The second step is Planning. In this step-in product planning are determining goals which students will achieve through the use of media, conducting material reviews about the variety of animal in science, and making designs of Augmented Reality Android Application. Details regarding the steps of product planning is as follows; learning objectives are formulated in the use of Augmented Reality Android Application base is to make it easier for students to learn science, material review is carried out to determine the material to be used in making media and preparing supporting images which will be printed on the market card and the application, the Augmented Reality Android Application design developed containing images of animal (shark, octopus, frog etc.) the application itself is not enough because to show how the augmented reality work it need a marker. The program used in developing this application is Unity 3d and Vuforia.

The third step is development. Augmented Reality Android Application media developed by using three-dimensional visuals style. The marker is rectangular with a size of 10 x 15 cm. The quantity of the card is adjusted to the first-class students' hands so that students efficiently use it. The picture on the marker is downloaded from a free resource on Google and edit it on Microsoft word while the base of the application design is made using Unity 3d. In the Unity application to apply the Augmented Reality script so that the application can run

properly requires an add on from Vuforia which aims to insert a marker into the application;

1. Database Marker

The database created is the marker database that will be entered into the application. Database created with tools from vuforia SDK is the target manager that can be accessed through the website vuforia. Examples of markers created in the target manager are presented in picture below;



Target Name	Type	Rating	Status	Date Modified
WMM	Single Image	★★★★★	Active	Jul 30, 2019 03:17
WOLF	Single Image	★★★★★	Active	Jul 30, 2019 03:13
GOAT	Single Image	★★★★★	Active	Jul 30, 2019 03:05
ICTOPUS	Single Image	★★★★★	Active	Jul 30, 2019 03:00
chicken	Single Image	★★★★★	Active	Jul 30, 2019 02:59
MOUSE	Single Image	★★★★★	Active	Jul 30, 2019 02:51
BBAN	Single Image	★★★★★	Active	Jul 30, 2019 02:05
BUTTERFLY	Single Image	★★★★★	Active	Jul 30, 2019 01:15
FROG	Single Image	★★★★★	Active	Jul 30, 2019 01:14
TRAIL	Single Image	★★★★★	Active	Jul 30, 2019 01:13
SPARK	Single Image	★★★★★	Active	Jul 30, 2019 01:13

Figure 1. Display marker in Vuforia

2. The Application

Generally, consists of timeline and autokey to make animation key on timeline. How to make an animation that is by setting the animation time first on the timeline. The tools used are use the slider and make a keyframe with the autokey. Animations can be made using displacement modifications place or circular motion.

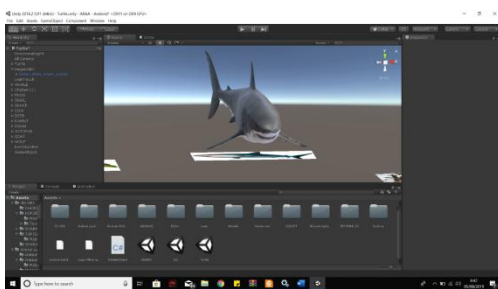


Figure 2. Display Augmented Reality Application in Unity 3D.

The animation movement was made by using select and move, rotate, or scale that found on the Main Toolbar. After the 3D object and its animation are finished, then the next step is to export the 3d object inside format (.fbx). This

form was chosen because the format (.fbx) is one of format that is compatible with Unity 3D as a tool which is used to make augmented reality applications.

Making animation using the Create and Play Back section Animation in the display above. Generally, consists of timeline and autokey to make animation key on timeline. How to make an animation that is by setting the animation time first on the timeline. The tools used are use the slider and make a keyframe with the autokey. Animations can be made using displacement modifications place or circular motion. The animation movement was made by using select and move, rotate, or scale that found on the Main Toolbar. After the 3D object and its animation are finished, then the next step is to export the 3d object inside format (.fbx). This form was chosen because the format (.fbx) is one of format that is compatible with Unity 3D as a tool which is used to make augmented reality applications.

Augmented Reality Android Application, it is best to name the category according to the contents of the marker. The category name can be taken from one of the animal name in English language. The range of languages chosen is English because more English languages often used and sound familiar to students the more they master new vocabulary. For example, "shark", "frog", "wolf", and so on.

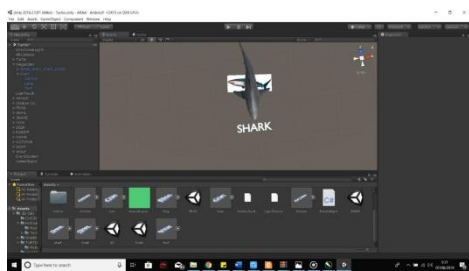


Figure 3. ARAA in Unity 3d after validated

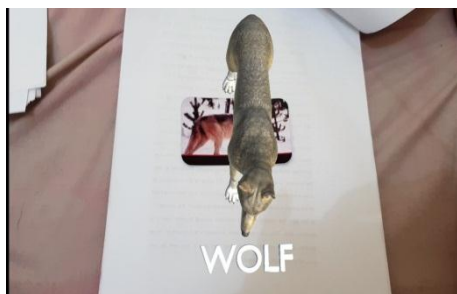


Figure 4. ARAA Final Product

The ARAA application provides materials that concern with speaking skills. The consideration of designing media was based on the Textbook for I Elementary School students. After investigating the textbook, the researcher then determined the topics and learning indicators. The topics and learning indicators then were elaborated to create appropriate media. The media are also in line with the aspects of speaking skill (Brown, 2001; Nunan, 2003; Richard & Renandya, 2002). The aspects are the students' oral proficiency communicative competence, and types of speaking activities. The consideration of designing materials and activities are in accordance with the micro and macro skills of speaking (Brown, 2004), types of speaking activities, i.e. imitative and responsive (Brown, 2000), and also the material appropriateness which according to School-based curriculum (BSNP, 2006). Therefore, ARAA contains activities and exercises which are related to those speaking aspects. It is aimed to help the students to learn English speaking skill either in the classroom or outside the classroom. Those speaking aspects were integrated to be used as the guideline in developing the materials and activities in the application. In this part, the researcher would elaborate several aspects related to speaking skills. They are pronunciation, vocabulary, and grammar. Those aspects are also related to each other and also in line with fluency, comprehension, and other speaking aspects.

Discussions

In this part of discussion, the researchers explained about the process of making sense of the data that has been collected, analyzed, and presented. As the researcher wrote at the first chapter, this research purposed to know the process of making Augmented Reality Android Application for speaking skill and to know how Augmented Reality Android Application build students' speaking skill. The researcher is focus on to know the process of making Augmented Reality Android Application for speaking skill. In this discussion, the researcher will explain about the different with the previous study, according to Nakaya and Murota (2013) which developed an Android Application that can be used by the learners to talk whenever and wherever they want. The research participants were bachelor and

master course students who have already learned all basic grammar, but tend to be reluctant to speak English.

The development of Augmented Reality Android Application is based on the limitations of the media at MI Roudlotul Jannah Kajartenguli Prambon. In fact, the media can help students understand the subject matter delivered by teacher. As explained Nana Sudjana and Ahmad Rivai (2010) the benefits of media in the learning process is the subject matter can understand easily. This media presentation is based on several considerations of visual aspects, including simplicity, cohesiveness, color selection, lines and shapes, and texture. Media that have been designed are validated by media experts. Assessment in terms of material consists of aspects of conformity with the objectives learning, compatibility with students, and support for the material.

From the result, the researchers did analysis in order to answer the research problem. This part presents some points concerning in research in research design, collecting data method and analyzing data based on in finding. The data was collected by using two instruments. The first instrument was questionnaire is to answer the questions based on their feelings and opinion. The second was interview is analyzing the students' need in the speaking learning process and designed application.

From the analysis, the researchers got the result as follow; the results of the first media validation get a score. An average of 4.39 with Good criteria, but there are still some things that must be revised again. The size of the marker to be adjusted to the hands of grade 1 students and the corners of the card to make it curved / elliptical so it is safer for student. And then there is no name of the category in the initial design of Augmented Reality Android Application. It is best to name the category according to the contents of the marker.

The category name can be taken from one of the animal name in English language. The range of languages chosen is English because more English languages often used and sound familiar to students the more they master new vocabulary. For example, "shark", "frog", "wolf", and so on, field Testing followed by 17 students and the average scores is 4.7 with very good criteria. Augmented Reality Android Application activity starts from the teacher explains

the rules how to use the Application. The rules of the application are the student should have the marker and an Android phone that has been installed Augmented Reality Android Application. Then the student gets directing the camera to the marker and the 3d animation will pop up.

Through the testing activities of Augmented Reality Android Application media, first grade students MI Roudlotul Jannah can feel the benefits of using media directly. Students feel interested and happy to use Augmented Reality Android Application. Even there were some students who repeatedly asked about Augmented Reality Android Application. Learning media can be said to be feasible if they are fulfilled some criteria, according to learning objectives and provide learning enthusiasm student, the media of Augmented Reality Android Application with a picture, animation and colour will get student attention and foster student enthusiasm for learning. An Activity playing while learning also makes students happy. Then students will be able to write and speak a story using appropriate English. Then it is a picture and animation on a marker which is a picture of the animal, experienced students will make it easier for students to understand the material. The learning media is in the form of Augmented Reality Android Application carried out in accordance with the characteristics of students who still like to play. Through the use of Augmented Reality Android Application, students can also achieve assignments its development, such as learning to get along with peers, develops basic language speaking English, and develop attitudes towards groups through game play in groups (Rita Eka Izzaty, 2008), from the affective side by using Augmented Reality Android Application students can learn together with their friends. This is can be seen when researchers observe students, when they study by using Augmented Reality Android Application.

From the psychomotor side, students learn to speak so that students' speaking skills increase. In addition, after students understand materials, students are able to speak a simple sentence. Based on the observations of researchers directly during the field trial it shows that the Augmented Reality Android Application media is interesting and can make students more enthusiastic about learning because it is fun. There are many benefits that can be obtained by

students through the use of Augmented Reality Android Application. Therefore, it is hoped that this media can increase student enthusiastic and help students learn English especially in the speaking skill.

Conclusion

Based on the results of the study, it can be concluded that the media Augmented Reality Android Application is suitable for use in subjects Science Bilingual class of MI Roudlotul Jannah that is that meets several criteria among others in accordance with the learning objectives, presenting a variety of Animal and their animation, according to the characteristics of students, and according to some visual media principles.

This media is possible to use with the results of validation from material experts, as well as the results of field trials. The results of media validation got score an average of 4.3 with good criteria. And the field trials result received an average score of 4.7 with very good criteria.

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