# Smartive Card: Transforming English Vocabulary Learning for Elementary Students with Augmented Reality Technology

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## Abstract

Early English learning is very important for students to improve their language skills. However, learning English at the elementary school level has its own challenges, especially in understanding the material and boredom when studying in class. Therefore, a special approach and also interesting learning media are needed to increase students' interest and motivation to learn. In this case, the learning media itself has an important role in achieving learning goals. The presence of Augmented reality technology which is a modification of real objects equipped with the addition of sound, visuals, and various other elements can help make English learning fun and improve English vocabulary knowledge for elementary school students. This study aims to design interesting learning media, namely smartive cards based on augmented reality to improve elementary school students' English vocabulary knowledge. The method used is the ADDIE method, namely analysis, design, development, implementation, and evaluation. The subjects of the study were 3rd grade elementary school students with data generated through pre-test and post-test, observations and media validation results by experts. The results of the study showed that smartive card media can be an interactive media to improve English vocabulary knowledge and create a fun learning experience.

**Keywords:** english vocabulary learning, augmented reality, interactive learning media.

## INTRODUCTION

English is established as an international language used in various fields. In the 21st century, English is increasingly popular in various circles because it is driven by the increasing flow of globalization. Good English communication skills will provide great opportunities to produce progress in science, socio-political communication, economics, culture, and even provide real benefits in everyday life [1]. With the various benefits gained through mastering English, it is very important to master English language skills. Therefore, teaching English at the elementary school level is very important as a strategic step in building their language skills.

English learning at the elementary level has been widely implemented. However, as a foreign language, in practice, teachers often face various challenges. One of the biggest challenges is student boredom during the learning process which can reduce their interest in studying. This factor can be an obstacle to creating optimal learning outcomes. Therefore, to face this challenge, teachers need to create new media innovations to be able to provide a fun learning experience for students and encourage students to be able to participate actively in class [2].

One of the basic language skills that needs to be mastered is vocabulary mastery. This is because vocabulary is the main key to understanding information. In addition, a lack of vocabulary understanding can make us wrong in receiving or conveying information to others. Understanding vocabulary plays an important role, therefore teachers need to find the right techniques and strategies [3]. To help children master vocabulary, we can use flashcards. The flashcard method is a fun and

interactive teaching method. Using the flashcard method in teaching vocabulary can provide many benefits, including making students feel easier to understand the information provided [4]. This method has been proven to increase children's enthusiasm in learning vocabulary, encourage students to be more active, and prevent boredom when learning English vocabulary [5].

Interactive learning media is needed for learning English. The lack of interesting and interactive media can make students less active and passive because they do not understand the material they are studying [6]. In this case, of course, teachers need to be proactive and innovative in preparing, identifying, and choosing the best and interactive learning media to meet learning objectives and create an interesting learning environment for children [7]. To maximize the teaching and learning process, one of the skills that teachers need to have is the ability to use and promote technology [8]. The teaching process will be boring and uncomfortable for students if teachers do not apply computers in the teaching and learning process [9]. The use of the latest technology for English learning will create fun in learning in class [6].

Technological advances in this era provide great opportunities that we can take advantage of to create interesting and innovative English learning media. The application of technology concepts to solve learning problems and the development of technology as a learning resource is one of the real components of learning [7]. One technology that has great potential to support learning is Augmented Reality (AR). One of the learning media that can be used to answer the challenges of the current situation is Augmented Reality (AR). Augmented reality-based learning media can make learning materials more realistic, interactive, and provide an in-depth learning experience for students. Therefore, this media will attract their attention and increase the effectiveness of their learning activities [10]. Augmented reality has the potential to significantly improve our education system, although it is still in the early stages of its application in the field of education and research has previously proven that augmented reality has been successful in mastering English and can increase student motivation [11].

## METHOD

The method of implementing this research uses ADDIE research. The concept of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) is used to develop learning media. The ADDIE model was chosen because it is an effective approach to designing, developing, and evaluating learning media. The method of this research is media development research to solve problems in learning [12]. The analysis and results of the trials carried out in creating interactive English learning media are descriptive in nature [7] This research is a media development that aims to produce valid and interactive learning products. The subjects of the study were five 3rd grade elementary school students. The selection of these subjects was based on the need to test the effectiveness of the media on a small scale before being applied more widely in other classes.

The data collection was carried out through several instruments, namely:

1. Pre-test and post-test: Used to see the development of student knowledge before and after using the media.

2.  Interview: The interview stage was conducted with students and teachers to obtain in- depth information about student experiences in learning and teachers' opinions regarding the learning process while using the media.

3.  Expert validation: Learning media is evaluated by experts to see and assess the validity and effectiveness of media use in improving the ability to read English vocabulary for elementary school students.

The rating scale in data analysis uses the Likert scale technique as follows:

Table 1. Expert rating scale

| Evaluation | Scale Value |
|---|---|
| Very good | 5 |
| Good | 4 |
| Good enough | 3 |
| Not good | 2 |
| Very less | 1 |

The formula used to obtain the percentage is:

$$\text{Values Score} = \frac{\text{Score Obtained}}{\text{Maximum Score}} \times 100\%$$

The interpretation of the scale above is used to assess the feasibility of interactive English language teaching media for elementary school students based on the results of the expert assessment sheet examination.

## RESULTS AND DISCUSSIONS

All data collected based on testing activities and expert validation results. The data collected is focused on several points, namely media appearance, media benefits, materials, and student enthusiasm for the media. The following are the data results obtained from the questionnaire assessment results and expert responses to the media results.

Table 2. Expert validation results

| No | Validator | Average Validation Result | | | |
|---|---|---|---|---|---|
| | | Media Appearance | Media benefits | Materials | Student Enthusiasm for the media |
| 1 | Validator 1 | 5 | 4,5 | 5 | 4,75 |
| 2 | Validator 2 | 4,5 | 4,75 | 5 | 4 |
| | Criteria | Valid | Valid | Valid | Valid |

Based on the expert validation results above, the average expert validation results are more than 4.00 so that they are in the "very good" category and it can be concluded that the learning media is suitable for use. Furthermore, a pre-post test was conducted to measure student development regarding English vocabulary understanding. This pre-post consists of 11 questions that are completed in 15

minutes. The following are the results of the student's pre and post-test through normality test and paired t test:

1.  Normality Test

The normality test is carried out to see whether the data is normally distributed or not. The following are the results of the data normality test:

Tabel 3. Normality test results

|  |  | Pre-Test | Pos-Test |
|---|---|---|---|
| N |  | 6 | 6 |
| Normal Parameters [a,b] | Mean | 8.33 | 10.67 |
|  | Std. Deviation | 1.633 | .816 |
| Most Extreme Differences | Absolute | .492 | .492 |
|  | Positive | .342 | .342 |
|  | Negative | -.492 | -.492 |
| Test Statistic |  | .492 | .492 |
| Asymp. Sig. (2-tailed) |  | .000[c] | .000[c] |

From the data results above, it can be seen that the significance value is greater at 0.05, so the data is normally distributed and can be continued with the Paired sample T test.

2.  Paired Sample T test

The paired sample t test is a test of the difference between two paired samples. Paired sample t test is a testing method used to assess the effectiveness of treatment, characterized by the difference in the average before and after treatment is given. Here are the results of the paired sample t test:

Table 4. Paired sample t test results

|  | Paired Different | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|  |  |  |  | Lower | Upper |  |  |  |
| Pair 1 PreTest – PosTest | -2.333 | .816 | .333 | -3.190 | -1.476 | -7.000 | 5 | .001 |

Based on the table above, the significance value of the pre and post-test is 0.0001 which means it is less than 0.05. Thus, it can be concluded that there is a significant difference between the pre-test and post-test results after the ADDIE method is given so that the effectiveness of the method can be concluded as good. Next, interviews were carried out by four teachers. Based on the results of interviews with teachers, the teachers stated that this media is very interesting and creates a fun learning experience. The teachers also revealed that this media can increase students' interest in learning English with an interactive technological approach. As input, the teacher suggested that the implementation of this media needs to be prepared with a good and stable internet network. In addition, this media can also be expanded for implementation in classes with higher grade levels.

Based on the explanation above, here is the discussion. The first stage is analysis, which includes analysis of student needs, student characteristics, learning abilities, materials and classroom

atmosphere. This stage is carried out through classroom observation and interviews with teachers. The results of the analysis show that interactive media are needed to overcome student boredom in learning English. Through the use of augmented reality (AR) technology, it is concluded that it will provide a new experience that is fun and effective for students' English learning.

The second stage is design. In this stage, there are 4 important elements in determining the learning design, namely students, objectives, methods, and evaluation [13]. Therefore, the design stage is focused on choosing materials that are in accordance with student characteristics, compiling lesson plans, learning strategies with card implementation through games and also assessment and evaluation methods. The third stage is media development activities including making illustrations, text and card colors. A trial of appropriate materials for smartive cards was also carried out to make them attractive and comfortable for students to use.

The fourth stage is implementation. The results of the development are carried out in learning to determine their effect on the quality of learning. Implementation was carried out in grade 3 of elementary school totaling 6 people. At this stage, implementation was packaged through memory game activities to make it more challenging for students. Next, the final stage, namely the evaluation stage. At this stage, media evaluation was carried out by experts and also an evaluation at the end of the activity to determine the effectiveness of the media on student learning outcomes. Based on the results of expert validation, the media was already in the "very good" category so that no revision was needed on this media. While the evaluation at the end of the activity showed that this media was very interactive, effective, and also created a new learning experience that was enjoyable for students, while improving their learning outcomes.

## CONCLUSIONS

Based on the results of expert validation, the developed learning media is declared feasible to use with an average value of more than 4.00 so that it is included in the "very good" category. This media has succeeded in creating an interactive and interesting learning experience according to student needs. In addition, this media received a positive response from teachers and students because it not only helps them understand the material more easily but also increases their involvement and motivation to learn through a fun learning experience. The use of augmented reality (AR) technology in this media provides new innovations and is effective in overcoming student boredom in learning English.

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