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The Development of Game App 'Find the Object' to Improve English Vocabulary Mastery

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Abstract

English is a communication international language with more than 50 countries using it as their primary language. Therefore, understanding and ability to communicate in English is needed. During this time, the method of learning English is mostly delivered using the Teacher Centered Learning (TCL) method and there are still a few English vocabulary learning media in the form of applications used in the learning process in the classroom. The purpose of this study was to create a game called Find the Object to help students, especially the elementary school level, to learn English vocabulary to make it more interesting. There is a pre-test and post-test to conclude whether this game significantly managed to improve the mastery of English vocabulary. This needs to be proven through observing the value of the pre-test and post-test.

Keywords: *Education game; English vocabulary; find the object.*

1. Introduction

Language is a crucial thing for human life. Through language, people can communicate with each other, exchange information, express opinions, and so on. Yovita (2004) explained that language is a verbal communication that is learned to share one's knowledge with others to maintain the existence of tradition and culture and specifically to maintain human relations [1]. English, as explained by Sundayana (2003), is a foreign language as a global language used throughout the world. Most multilingual communities use it as an official language in the fields of law, administration, trade and education. This is corroborated by the statistical data that English language users around the world in 2017 which are the main languages are 371 million people and as a second language as many as 611 million [3]. In Indonesia, English is taught to children from an early age. English has become one of the subjects in the Education curriculum in Indonesia, ranging from Elementary School to High School.

In Elementary School (SD), students are taught the basics of English, namely vocabulary or vocabulary. Students in elementary school are taught to know the vocabulary around them such as the names of animals, vehicles, fruit, and so on, because in general children will be more interested in learning what is around them. Class II - III Elementary School is a period that very suitable for introducing new words he knows because at the age of class II - III elementary school students' memory is still strong so that it can help students to reach the next stage [4]. From vocabulary mastery, students will be easier to be taught to a more difficult level, namely composing a sentence [5, 6].

During this time, English learning is delivered using a less interactive lecture method for students, so students became bored to better understand English vocabulary. The use of instructional media is very minimal, for example wall pictures that contain English vocabulary. There is no media for learning English vocabulary in the form of an application. The use of learning media at the learning orientation stage will greatly help the effectiveness of the learning process, the delivery of the message of the lesson, and the mission of the lesson.

One of media that can be used in language learning is a game of finding hidden objects or hidden objects. Hidden object playing media is one of the effective media to build students' abilities in vocabulary [7, 8]. Through hidden object media, which is one type of puzzle game, students can distinguish objects around them and train children's memory of the names of objects displayed in English. Based on the background of the problem above, the author tries to make a presentation of learning media in the form of interactive educational media, therefore the author takes the title "Development of Find the Object Game Application as a Means of Learning English Vocabulary".

Based on the background of the problem above, the researchers provide a learning media for interactive educational learning. Therefore this authors provides study entitled "The Development of Game App 'Find the Object' to Improve English Vocabulary Mastery".

2. Method

In developing learning media, there are stages that must be passed from the beginning to the end of development. Multimedia development is carried out based on 6 stages, namely concept, design, collecting materials, assembly, testing, and distribution [9]. The stages with the Luther methodology do not need to be sequential, the stages can exchange positions but still start from the concept stage first and end with the distribution phase. Luther's version of multimedia development can be seen in Figure 1 below.

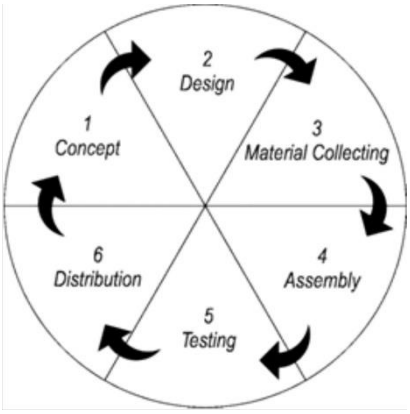

Figure 1. Multimedia Developing Model

1. Concept

   The concept stage is the stage in determining objectives, including user identification, type of application, application objectives, and general specifications. The basic rules for design are also determined at the concept stage, such as the size of the application, target, and so on.

2. Design
   The design phase is carried out by several activities, such as making specifications regarding program architecture, interface, and material requirements for the program. In the design stage storyboards are usually used to describe the description of each scene, by including all multimedia objects into another scene.
3. Material Collecting
   Collecting materials in accordance with the needs of multimedia products to be worked out, such as images, text, audio, video, and so on, is collected. These materials can be obtained from sources such as the internet, libraries, materials that already exist from others.
4. Assembly
   Assembly is the stage of making all multimedia objects. Making an application is based on detailed specifications that come from the design stage.
5. Testing
   Testing is carried out after the assembly stage. Testing is done by running the application and seeing whether there is an error or not. The function of the testing phase is to see the results of making the application as expected or not.
6. Distribution
   The application is stored in a media to be distributed to the user. At the distribution stage an evaluation is also conducted as input so that the system can be developed for the better.

3. Design of Finding Object Game

3.1. The Game Target

Users of the application built are elementary students. The general specifications of users are understanding and understanding the operation of the computer. In user analysis this also includes analyzing several parameters for prospective application users, including:

1. User Knowledge and Experience
   Knowledge and experience are the important factors that can be used as a reference for users in the use of applications built. The following is a classification of user knowledge and experience from application users as can be seen in Table 1.

Table 1. User Classification of Knowledge and Experience

Educational Level	**Reading Level**	**Task Experience**
The game that was built was intended specifically for children in elementary level.	The game built is intended for users who can read already.	The game that is built is intended for users who have or have been used to using computers.
System Experience	**Application Experience**	**Native Language**
The game built is intended for users who are experienced in operating a computer system.	The game built is intended for users who have experience in using the application.	The game built is intended for users who comprehend Indonesian and English.

2. User Physical Characteristic

   A person's physical state may affect the use of this application. There are several things that must be considered for the physical characteristics of users who will use this application, namely as shown in Table 2.

Table 2. User Physical Characteristic

Age	6-12 years old
Gender	There is no gender limit
Handedness	Right and left
Color Blind	Users who cannot distinguish colors (color blind) are able to use this application, but users will find difficulties to distinguish between hidden objects and other objects

3.2. Designing Use Case Diagram and Activity Diagram

Use case diagram is a diagram used to briefly describe who uses the system and what can be done. The use case diagram does not explain in detail about the use case, but only gives a brief description of the relationship between the use case and the actor. Activity Diagram is a diagram that describes workflow (workflow) or activity of a system.

1. Use Case Diagram

   Use Case Diagram on education game "Find the Object" has one actor dan seven use case as shown in Figure 2.

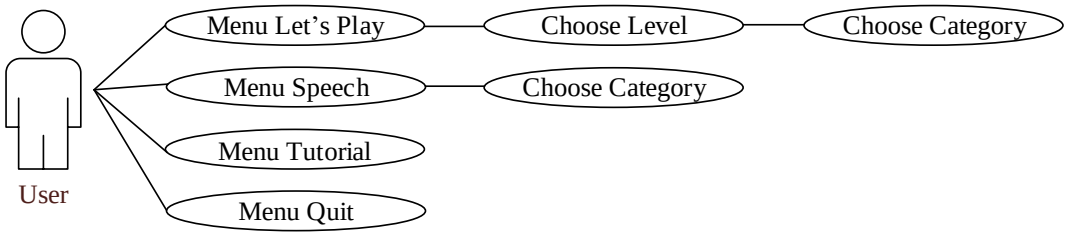

Figure 2. Use Case Diagram

2. Activity Diagram

   Activity Diagram illustrates the various flow of activities in the software (software) that are being designed, how each path starts, the decision that may occur, and how the flow ends. The following is an activity diagram found in the application.

3. Activity Diagram of Let's Play Menu

   Activity Diagram of Let's Play Menu on education game "Find the Object" can be seen in Figure 3.

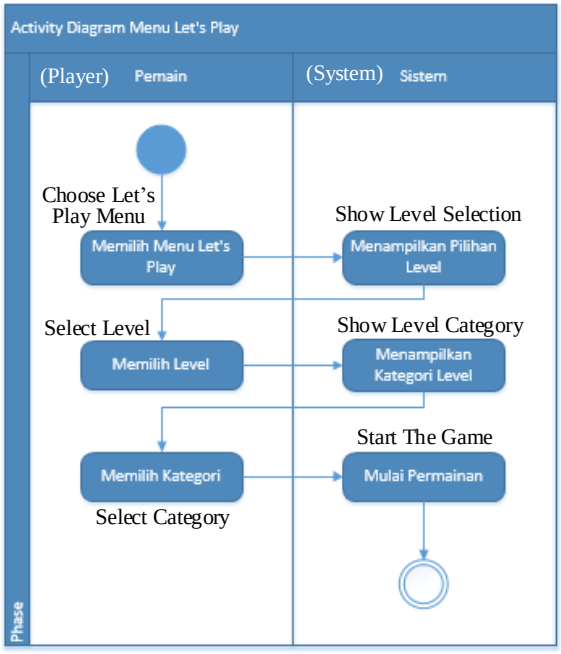

Figure 3. Activity Diagram of Let's Play Menu

Information:

a. Players choose the let 's play menu to start the game
b. The system displays a choice of levels, *i.e.* easy, medium and hard
c. Players choose a level
d. The system displays categories in the game
e. The player chooses which category to play
f. After the player selects a category, the system will display the game from that category

4. Activity Diagram of Sound Menu
   Activity Diagram of Sound Menu on education game "Find the Object" can be seen in Figure 4.

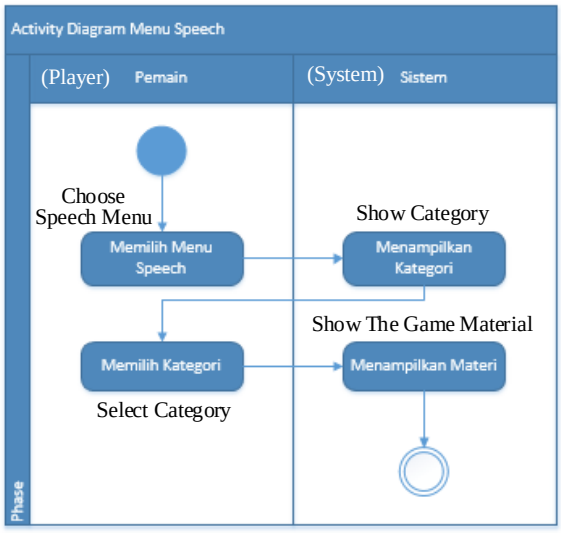

Figure 4. Activity Diagram of Sound Menu

Information:

a. Players choose the Sound menu to study the material for each category
b. The system displays categories
c. Players choose categories
d. The system displays material selected by the player

5. Activity Diagram of Tutorial Menu
   Activity Diagram of Tutorial Menu on education game “Find the Object” can be seen in Figure 5.

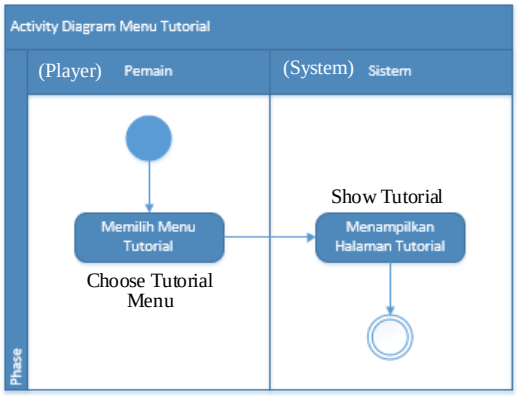

Figure 5. Activity Diagram of Tutorial Menu

Information:

a. Players choose the tutorial menu to find out how to play in the educational game "Find the Object"
b. The system displays tutorial menu

6. Activity Diagram of Quit Menu
   Activity Diagram of Quit Menu on education game “Find the Object” can be seen in Figure 6.

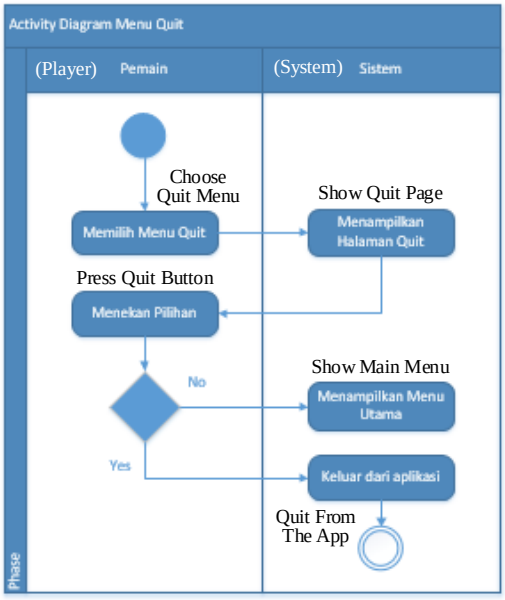

Figure 6 Activity Diagram of Quit Menu

Information:

a. Players choose quit menu to end the game
b. The system displays exit menu page

Player selects Yes or No button, if you select “Yes”, the player exits the application, if you select “No” then the system displays the main menu.

The test method for the user that I use to measure the level of children's knowledge about English vocabulary is the pre-test and post-test testing methods for total of 40 children, which 20 children from class II.A elementary level and 20 other children from class II.B elementary level will be processed using the Paired-Samples T-Test method using the SPSS tool (Statistical Product and Service Solutions). The concept of Paired-Samples T-Test itself is a concept of comparison of two samples to know differences.

In pre-test, the researcher shared a sheet of questions with prospective users to find out the level of knowledge about English vocabulary before trying the application. After all the questions are answered by the prospective user with approximately 10 minutes, the author calculates the value obtained by the prospective user in the pre-test session. This value will be compared with the value in the post-test session. After the pre-test session was completed, the author asked prospective users to play the educational game application "Find the Object".

After users play the game, then the researcher gave the question sheet back to the user. The post-test questions are the same as the pre-test questions, but the sequence is randomized. After the user has finished working on all the questions, the researcher calculates the score obtained by the user. Furthermore, the researcher compares the score obtained by the user in the pre-test and post-test sessions. If the score increases, the educational game application "Find the Object" has succeeded in increasing user knowledge about English vocabulary.

4. Experimental Results

The graph of the increase in the results of the average pre-test and post-test scores for Class II.A elementary level can be seen in Figure 7.

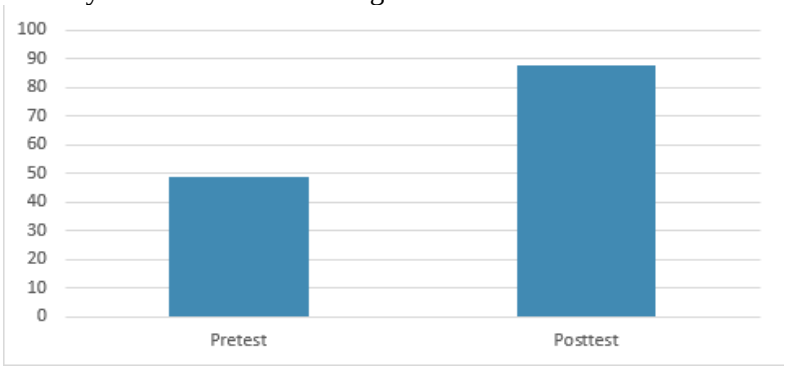

Figure 7. The Graphic of pre-test and post-test result for Class II.A Elementary Level

From Table 4.1 below this can be seen also, from the tests carried out on grade II.A elementary level, the average post-test score is higher than the pre-test score. This proves that the knowledge of grade II.B elementary level about English vocabulary also increases after using the educational game application "Find the Object".

No.	Name	Class	Pre-test Score	Post-test Score
1	Participant 1	II	55	87.5
2	Participant 2	II	45	82.5
3	Participant 3	II	40	77.5
4	Participant 4	II	52.5	92.5
5	Participant 5	II	57.5	80
6	Participant 6	II	45	85
7	Participant 7	II	55	87.5
8	Participant 8	II	47.5	80
9	Participant 9	II	45	87.5
10	Participant 10	II	42.5	75
11	Participant 11	II	60	100
12	Participant 12	II	57.5	90
13	Participant 13	II	50	92.5
14	Participant 14	II	50	100
15	Participant 15	II	35	77.5
16	Participant 16	II	47.5	95
17	Participant 17	II	42.5	87.5
18	Participant 18	II	60	100
19	Participant 19	II	40	85
20	Participant 20	II	45	92.5
Average			48.625	87.75

(a)

No.	Name	Class	Pre-test Score	Post-test Score
1	Participant 1	II	57.5	90
2	Participant 2	II	52.5	85
3	Participant 3	II	60	90
4	Participant 4	II	62.5	85
5	Participant 5	II	55	90
6	Participant 6	II	40	77.5
7	Participant 7	II	47.5	80
8	Participant 8	II	60	85
9	Participant 9	II	50	100
10	Participant 10	II	37.5	80
11	Participant 11	II	65	90
12	Participant 12	II	55	72.5
13	Participant 13	II	30	72.5
14	Participant 14	II	45	85
15	Participant 15	II	52.5	100
16	Participant 16	II	42.5	87.5
17	Participant 17	II	60	100
18	Participant 18	II	47.5	85
19	Participant 19	II	52.5	95
20	Participant 20	II	60	92.5
Average			51.625	87.125

(b)

Table 3. Pre-test and post-test for (a) Class II.A and (b) Class II.B

The graphic of the increase in the results of the average pre-test and post-test scores for class II.B elementary level can be seen in Figure 8.

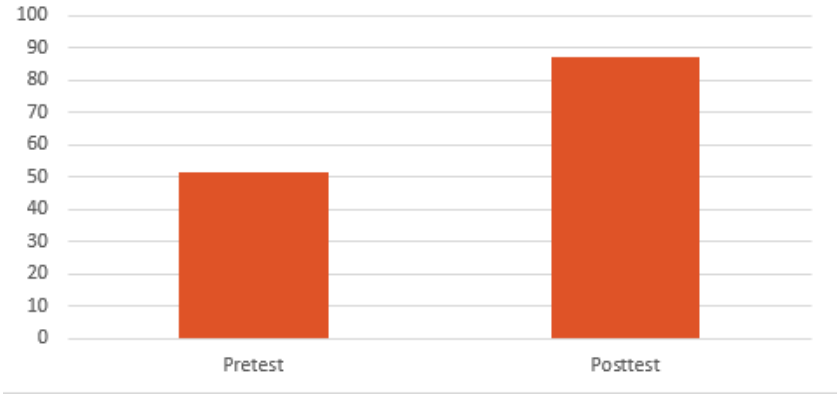

Figure 8. Pre-test dan post-test graphic score of II.B

In addition to using tables and graphics, the author also performs data processing using the T-Test Paired-Samples method using the SPSS tool. Paired-Samples Test The T-Test is used as a comparative test of two paired variables / samples. Paired samples were the same subject but experienced different treatments. After the author has processed the pre-test and post-test value data through the Paired-Samples T-Test method using SPSS.

4. Conclusion

The results of data processing on the value of the pre-test and post-test using the Paired-Samples T-Test method show the Sig. (2-tailed) or the probability that appears is 0.00 (<0.05) indicating that there is a significant difference between the results of the pre-test and post-test scores for grade II - III elementary school students. The average pre-test score of class II.A students is 48,625 and the average post-test score is 87.75, which means an increase of 39,125 points. Then the average pre-test score of class II.B students is 51,625 and the average post-test score is 87,125, which means an increase of 35.5 points. From the results of the post-test it can be concluded that the educational game application "Find the Object" which is built is suitable for students of class II.A and II.B Elementary Level and this able to improve elementary school students' understanding of English vocabulary.

Based on the questions contained in the post-test sheet, out of a total of 40 respondents 87% prefered ”Yes” or were interested in the Find the Object game, while 13% prefered ”No”. From the results of the questionnaire, this can be concluded that most students in grade II.A and II.B elementary level are more interested when learning English vocabulary by using the educational game application "Find the Object".

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