



## English Edugame Application for Childhood base on Android

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### Abstract

Education games is a learning activity with the game. The goals can hone and activate the brain. Children are more able to apply arithmetic with play compared to without playing. Play and child is an inseparable unity. Play activities carried out children and children's activities always indicate play activities. In childhood the comprehension is very high, more activities a child does, the ability to remember will also be higher. There are several factors make it difficult for children to recite and remember the object, color around them, it is less interested in the media used. Childhood always follows the rhyme of its development. at an early age, language development is very important, because at this age it is a sensitive period for children. The English language is the International language. English language for children starts from introducing vocabulary that is closest to the child, the goals to make it easier for children to remember. One way to maximal comprehension by giving learning fun involves learning with the game. The research resulted in an English game application based on android. In this application, there are education and game features. The education features an exciting good and gets the sound from the lesson that is available. Game features available are guessed pictures, guess sounds, and puzzles. The purpose of English edugame application to teach children vocabulary of English and make children not bored to learn.

Keywords: English, edugame, android, application, children

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### 1. Introduction

Knowledge and technology at the present time developing very well. Technology brings people to broaden thinking, build creativity for creating new things. Technology is very important for human life. Technology is one of the supporting human progress. One technology that is currently growing very rapidly is mainly based on Android smartphones. Android widely used at this time among children, adolescents and adults.

Android is an operating system based on Linux and open source is designed for touch screens mobile devices such as smartphones and tablets that are useful as a liaison between users and hardware. Android provides a platform for developers for free or available[1].

Smartphone into smart tools that have many capabilities for two-way communication, multimedia upon ability, and education. The world of education today's increasingly sophisticated, the implementation is to create a conducive learning atmosphere,

interesting and creative. Technology advances can assist and facilitate in various ways, especially learning.

In childhood comprehension is very high, can be seen in Table 1 percentage remembering abilities of children.

Table 1. Percentage of children's ability to remember

| No | Given the ability of             | Percentage |
|----|----------------------------------|------------|
| 1  | From being seen                  | 20%        |
| 2  | From being heard                 | 30%        |
| 3  | From seen and heard              | 50%        |
| 4  | From being seen, heard, and done | 80%        |

From the table above it can be concluded that with more and more activities done by children, the ability to remember also higher. One of the lessons that can maximize comprehension that is by providing interesting learning by learning with games.

Education game is game with a medium of learning that is expected to increase quickly understanding because it's supported by interesting games and makes children active[2].

Games aimed at education can be used as one of the education's media has a pattern of learning by doing. Users are required to learn to be able to solve problems [3].

Games can help the development of the brain to improve concentration and practice to solve the problems properly and quickly, in the game has a problem that requires the user to complete quickly and precisely[4].

The first opinion about a play by Plato that children more easily understand arithmetic when taught by play. At the time Plato taught arithmetic addition, subtraction, multiplication and using apples to each child. The counting activity can be better understood when done while playing with apples[5].

Piaget said the cognitive development of kindergarten children are moving from the pre-operational phase to the concrete operational phase. Concrete thinking is based on experience and things. A good learning process in children who are in the concrete operational phase that is through objects, learning to remember the numbers and characteristics[6]. Cognitive-Development Theory of Jean Piaget, also revealed the play can integrate the function of the right and left hemispheres of the brain are balanced. Cognitive abilities can also be called the intellect or ability a child to think and observe.

The power of thought is built early because the absorption of a child's brain is very good at the age of 1-5 years. Children find it difficult to memorize objects, colors around them. One of the factors is that children are easily forgotten because of less interested and motivated children from a parent, teacher, and surrounding area.

The world of children is for playing. Children play when singing, digging into the ground, and follow something they saw. Playing like running, throwing the ball, climbing, thinking activities like a puzzle and remember songs. Child and play are inseparable, always playing activities done by children for children and activities always show play. Play and children are very closely related. The principle of learning in early childhood education is to learn while playing.

At an early age is a sensitive period for children. At an early age, language development is very important. The Indonesian language is the mother of language and the English language is the International language. English is very important in the current era of science. English should be taught early on with good comprehension for children to learn English. In Indonesia, the introduction of English for children begins with the closest vocabulary, so that children can easily remember it.

Learning English at an early age is done in stages. With the method of translating word for word. The stages of learning English for early childhood.

Listening

These initial stages starting from a short, easy words heard as "yes" or "no".

Speaking

At this stage, starting from a few words, to encourage children to speak in simple sentences such as "sit, come, kiss".

Reading

There are two methods at this stage that whole language Approach and phonic

Writing

The most difficult stages, in learning English there are many rules used[7].

At an early age is a sensitive period for language learning, children easily forget and difficult to remember caused by unattractive media factors that make children easily bored. With the development of this, edugame children can learn English

This edugame application is designed to help to increase children's English vocabulary and can make it easier for children to learn and speak English. This edugame application is designed to help to increase children's English vocabulary and can make it easier for children to learn and speak English. One way to maximize the power of capture is by giving fun learning by involving learning with games.

## 2. Research Method

Making English edugame applications using the waterfall method. This sequential or sequential software development starts with analysis, design, coding, and testing. Development with this model is the result of adaptation from hardware development because at that time there was no methodology for developing other devices[8].

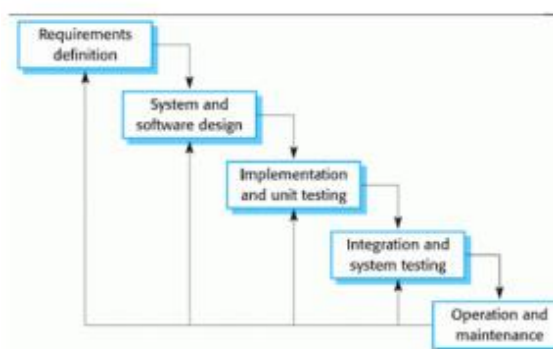


Figure 1. Waterfall method

The flow of this research starts with the analysis of system requirements and then continues with the design process with the needs of software design. This stage

produces a document called software requirements. Which will be used by programmers to do system making activities. After the application is finished, the design is continued with coding and testing. Performed by a programmer who will translate the transaction requested by the user. Continued with the testing phase, this stage is the final stage in conducting analysis, design, and coding.

### 2.1. Analysis system

System analysis is the first stage in research that has a purpose to provide understanding as a system requirement and describe the processes contained in the system that will produce output by user needs. Analysis of system requirements produces software specifications developed, this analysis will produce software interfaces and other system elements, and determine software system boundaries[9]. In the

Aspects of the factors supporting the occurrence of these problems are the media factor, technologies, methods, and human resources.

## 3. Result and Discussion

### 3.1. System Planning

The system designer is illustrating the activity or activities, devise, create detailed sketches or arrangement of several separate elements into a unified whole.

analysis of the system can find out the problems and constraints contained in English edugame applications.

### Analysis of Problem and Solution

Fishbone is a diagram that is used as a tool to help analyze and explain the steps of ideas on a problem. Fishbone theory is a technique for solving many problems in the causality method[10].

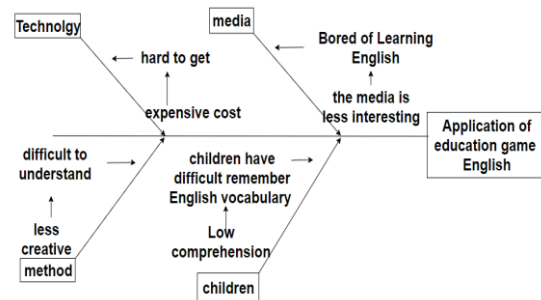


Figure 2. Fishbone diagram analysis of the problem

Use case diagrams are graphical depictions of some or all actors, use cases, and interactions between components that introduce a system that is built [11]. Use-case diagrams explain the benefits of a system when viewed according to the views of people outside the system. This diagram shows the functionality of a system or class and how the system interacts with the outside world.

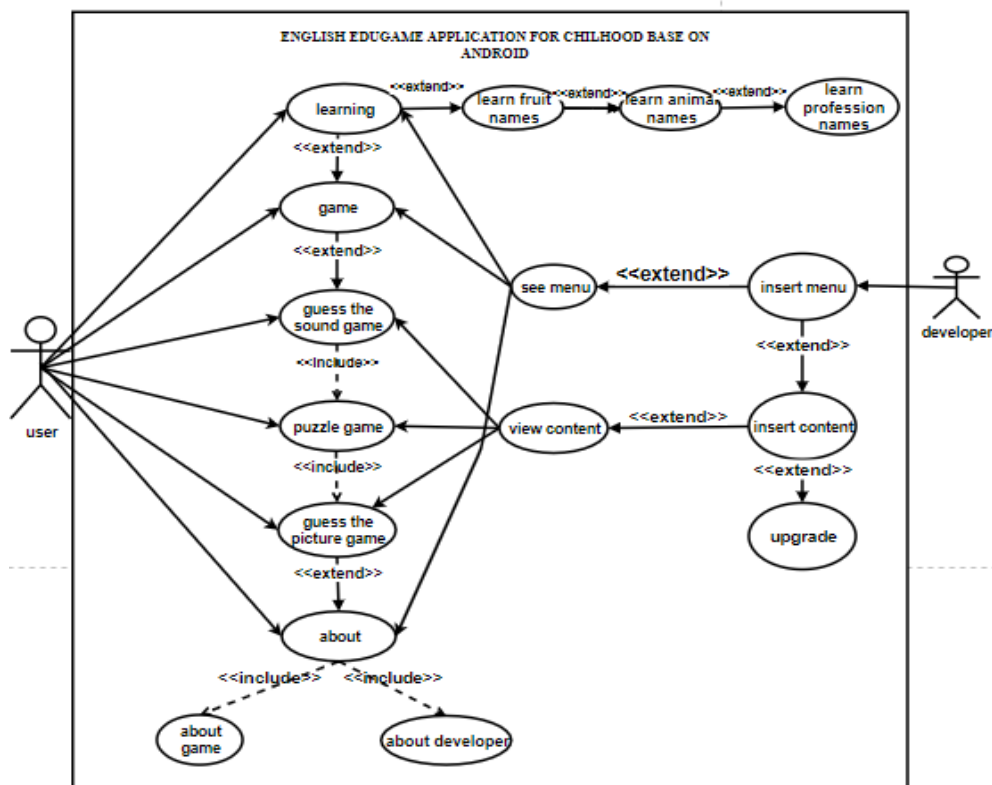


Figure 3. Use case diagram of edugame application

On application *edugame* android-based English language page begins splash screen, later continued the home page, on this page the user can see the whole of the available services applied. In figure 2, we can see there are two actors that user and designer. Designers tasked to upload the application menu. Users are actors that interact directly with the application.

The actor entered the initial view of the application is the application page splash screen, and loading will temporarily go directly to the home page there are two pages, the following are explanations of each menu function:

#### Use case education page

On the menu, these educational actors choose education which the actor will learn first after the actor click one of education, then the application will display the English language from the menu that actors choose and there is a button alphabet to choose the actors and on the button, the button will eject the volume..

#### Use case game page

In the game menu featuring a selection of games that can be selected by the actor to play, the game provided picture guessing game, puzzle and guess the sound.

### 3.2. Design Interface

Interface design is the look of the system seen by the user.

#### Page Splash screen

Splash screen page is the page to see the application logo that lasted for 6 seconds and on page splashscreen produce interesting sounds.



Figure 4. Splashscreen page.

#### Home Page

Home page displays the main menu of the application, there are 2 menus, namely education and game menu.



Figure 5. Home page.

#### Education Page

Education page is a page that displays several page view education, like education for fruit, education for animal, and education for professions.



Figure 6. Education page

#### Page of Education Fruit

Education page displaying English pieces of fruit sequence according to the alphabet. Page navigation buttons are educational pieces that can scroll to select the alphabet of maca fruit, and when clicked on the alphabet will display a variety of fruit that originated in accordance with the selected alphabet. In the page education fruit there are button home to return to the home, and a button's book to return to the book page of education.



Figure 7. Page of education fruit.

**Education of algorithm**

```

ButtonSuara.setOnClickListene...
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // TODO Auto-generate method stub
    }
}

TampilGambar.setBackgroundResource(R.drawable.buttonape);

TampilGambar.startAnimation(animScale);
suaraapel.start();
});

ButtonSuara1.setOnClickListene...
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // TODO Auto-generate method stub
    }
}

TampilGambar.setBackgroundResource(R.drawable.buttonalpukat);

TampilGambar.startAnimation(animScale);
suaraalpukat.start();
});
    
```

This is a program on the education page that display the sounds of the button chosen by user.

**Page of Education Animal**

Animal education displaying English from animals that sequence according to the alphabet. There are also animal education page navigation buttons that can scroll to select the alphabet of these kinds of animals, and when clicked on the alphabet will feature a wide variety of animals that originated by the selected alphabet. In the page education animal, there is a button's home to return to the home, and a button's book to return to the book page of education.



Figure 8. Page of animal education

**Page of Education Profession**

Page featuring English education profession of professions sequence according to the alphabet. Weather educational profession there are also navigation buttons that can scroll to select the alphabet of sorts of professions, and when clicked on the alphabet will feature a wide range of professions that originated by the selected alphabet. In the page education profession there are button's home to return

to the home, and a button's book to return to the book page of education.



Figure 9. Page of profession education

**Page of Game**

In the game, there are 3 options page interesting game related to the education provided in the educational menu, like a game of guess sound, game puzzle, and game of guess image.



Figure 10. Page of game

**Page of Guess Sound**

On the page there is a sound guessing game game featuring voice and actor chose the answer read out by the application, if the answer is correct then it will go to guess the sound afterwards, if one would not guess go to the next sound.

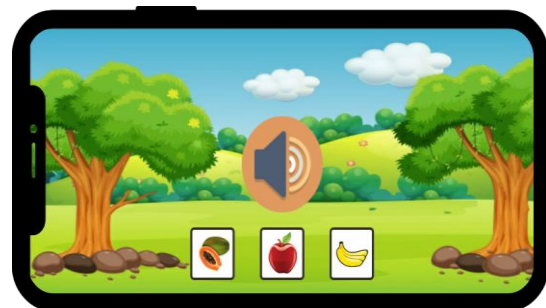


Figure 11. Page of guess sound

**Page of Puzzle**

On the page there is a picture puzzle that has been scrambled, the actor was asked to compose the picture correctly if it is properly structured puzzle game will proceed to the next puzzle. The following Puzzle 3x3, there are 8 pictures neatly stacked to form a complete picture.

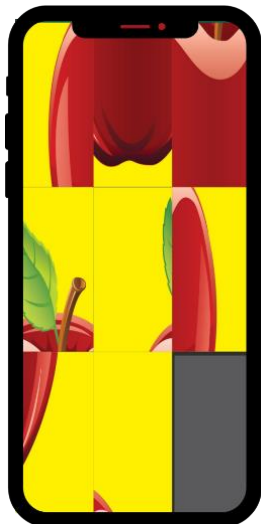


Figure 12. Page of puzzle

#### Page of Guess Image

In the picture, there are guess image game page that displays an image and the actor chose answers that are available in a choice of answers, if the answer is correct then it will go to guess the sound afterward if one would not guess go to the next sound.

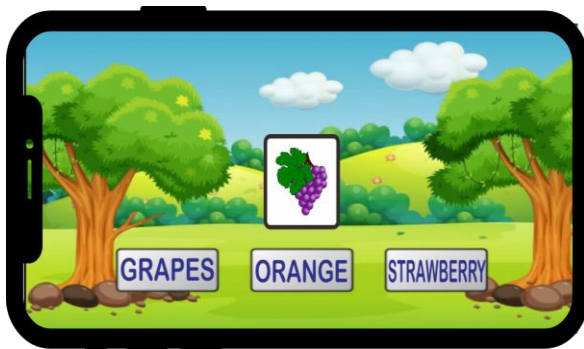


Figure 13. Page of guess image

#### Guess image of algorithm

```
newlevel();
jw1.setOnClickListener(new
View.OnClickListener(){
@Override
public void onClick(View v) {
isincorrect(j1==s);
}
});

jw2.setOnClickListener(new
View.OnClickListener() {
@Override
public void onClick(View v) {
isincorrect(j2 ==s);
}
});
```

In this algorithm shows the choice of answer to be chosen by user, if true user will go to the next level.

#### 4. Conclusion

The design of Android-based English edugame applications, users can learn while playing with media that can attract attention. This application displays English from the names of fruits, animals, and professions that are by the alphabet. Users can also learn the introduction of the alphabet through this application. English applications there are games that can sharpen the brain of a child. This application is used as a medium of learning and playing for children.

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