

## DEVELOPMENT OF EDUCATIONAL GAME APPLICATIONS AS EARLY CHILDREN'S LEARNING MEDIA

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### Abstract

The development of technology information could increase performance and enable various activities could be held with fast, precise, and accurate so that finally will increase productivity. Technology is one style of life moment this. With android, humans can too get entertainment without going to something place, that is, one of them through the games in the application android. Besides that, there are many game features that are not only as entertainment play however already lots of games for honing power thinking and logic that can introduce material for more interesting for accepted and understood especially by children who are still in age early, they are in a period of most rapid growth and development good physique nor mentally. because of that, the author create educational games based on the system Android operation with the hope that the children could direct use the application game. With getting knowledge more a lot and, changing patterns learn not to be too bored and bored. Educational games this is application learning for a child at an age early starting from around ages 3 to 6 years containing Theory learning about introduction animals, letters, numbers, colors, and fruits. With apply results of educational games this, hope could help children in learning and can increase patterns think creative as well as add more knowledge.

**Keywords:** Educational Game, Android, Waterfall

### INTRODUCTION

Technology information experience very rapid development, era globalization moment this has give many benefit in make it easy activity human, one for example is for make it easy in communication distance away and get all yield information. Currently who does n't can follow development technology, then could confirmed be a stutterer technology. According to (henri kasyfi, 2017) survey data conducted by the Association The Indonesian Internet Service Provider (APJII) shows: amount There are 143.26 million internet users in Indonesia user of the total population Indonesia's population is 262 million people. This thing in line with development knowledge purposeful knowledge for updates and progress all - digital technology. Progress in the field smartphone technology, and telecommunications supporter development android application. With human android no again experience difficulty in get information anything, for showing activity life everyday, will but information made must filtered for get accurate and relevant information. Internet users in android application that was working as tool exchange information by electronics Becomes tool for educational game app and apps entertainment other, besides that according to research conducted by (W. Eka Jayanti et al

, 2018) said , " technology " is one pretty side close with development child moment this , then should can utilized with maximum for development positive " [1] . Among Public moment this many who like the game Mobile Legend or pubg especially for circles teenager. Application this is application moba game play that can played by users on the same cellphone like The legendary game is Dota. Not only that current app loved by the public moment this namely Tik-Tok. Application this is network social short video sharing possible user could make singing videos, and also dance.

Progress technology information and telecommunications so fast, so allow applied ways new more efficient for education. Originally education in Indonesia uses system stare face, but in the future system education no again by stare advance but future education will character flexible, open, and able accessible to anyone who needs it without look factor type, age, and experience education before. Education that will coming viewed by network possible information interact and collaborate instead of building school. According to research (Sada, 2015), The essence of score actually cling to self educator as executor of education , while education is a process of transformation and internalization knowledge Islamic knowledge and values to participants educate through growth and development potency nature for reach balance and perfection life in all its aspects[2] . The trend of the world of education in Indonesia in the future is development education open with learning mode distance distance (Distance Learning), convenience for organize education open and distance far need entered as the main strategy, sharing resources together between institution education/training in a network, as well as libraries & instruments education others (teachers, laboratories) change function Becomes source information than just rack book.

Researchers from the University of Science and Technology Electronics China breast Australia Macquarie University recently find correlation Among play video games genre action and increase in brain volume. Researchers focuses on the insular cortex, the from cortex folded cerebral deep inside brain and has long been subject from a number of study until moment this. Estimated that part big processing linguistics occurs in the brain region this, while the other processes related with taste and smell, love love and empathy, and experience interpersonal is also managed in the brain that. There is also research published in Addiction Biology doing Magnetic Resonance Imaging (MRI) scan of 78 teenagers men aged 10-19 years diagnosed experience internet gaming disorder, and 73 participants other without condition the disturbance. In research that, the researchers compare connection between 25 different areas from brain game addict with the control. As a result, the researchers find existence enhancement coordination Among part prefrontal cortex dorsolateral and temporoparietal junctions in the brain, which are thought to be limit control impulse someone. Condition this usually found in patients with schizophrenia, Down syndrome, and autism, and people with control bad impulses.

Many people have addicted for play games online. This thing cause emergence problem that is sick eyes, head Becomes dizzy, and complaint from parents because her son who has addicted until forget will his job as student. This is what causes a lot of game developers criticized by players who knows that deficiency in game or disease caused by frequent play games. Then from that recommended for game developers to make period time in the game that will made that. Games to be played only can played at a certain time. For example, online games only can open at 12.00-17.00. This thing mean for avoid disease caused because addicted play online games especially on health eye. because a lot community that has addicted play games online then recommended for parents or friends who are surrounding for remind. There are several method for prevent addicted play online games that is make tight gaming schedule. How to overcome highly effective online game addiction is make timetable strict gameplay. With so, they so can share time Among play games and work obligation they as student. Besides, do n't make game play

schedule as display only, but must consistent in obey it. Socialize with friends and family can too reduce addiction. Playing games is really fun, moreover if conducted together friends. However remember, socialize with relatives and family in life real is the same importance. Socialize and have fun joke together friends and family is method resolve powerful online game addiction. For temporary time, you can free self from addicted to online games for interact with people in life real. Explore talent in the real world can too be one how not to addicted in play games online. For avoid addicted to online games, they must start style life new for explore talent in the real world. For example, like cook and mix food. try for look for know recipe from the virtual world, then try cook it at home together family, while hone ability and explore talent. This thing conducted for look for habit or style life new favorite so that then release self from the shackles of online games the benefits of games as a medium of play at a time still studying in Indonesia not yet Becomes something common thing.

Assuming the game is still only as a medium of entertainment compared as a learning medium. Development child age early at the time this really fast. This thing caused the more increase standard learning in children age early and lack time they for play. Even though at the age they moment this is needed balance activity Among learn and play, so that development motor child age early Becomes maximum. Age researchers early mean inside report this is child ages 4-6 years. The importance of learning media based on technology where moment this technology is very advanced and developed the more make it easy in activity study teach, so study no again boring spectre, where with use learning media based on technology, study could conducted anywhere and learn Becomes more fun. Besides, remembering technology is one pretty side close with development child moment this, then should be used with maximum for development the positive. one utilization technology in learning is with take advantage of android. Utilization of android as a learning medium is very effective and efficient, where learning could conducted while play games that make child age early Becomes more interested for study because android can used as a playing medium while study. for children age early 4-6 years old, studying is something activities that are needed for development brain and mind they develop with good. Besides that, with study could make they know about circumstances and things what only there is around them. But there is a number of problem where with age those who still early, needed method learn different with child child age school medium base, where with age them, things that can they think is play. with so method Ordinary study just not enough effective to pattern study child age early. And whether android educational games as learning media for child age early could declared effective and proven increase creativity as well as development brain. In research this aim for children age early need pattern or method interesting study where with utilise existing technology moment this could make they think that study is fun activities karen they could play at a time study.

## RESEARCH METHODS

### Research Stage

Below this is plot described research in form Flowchart diagrams:

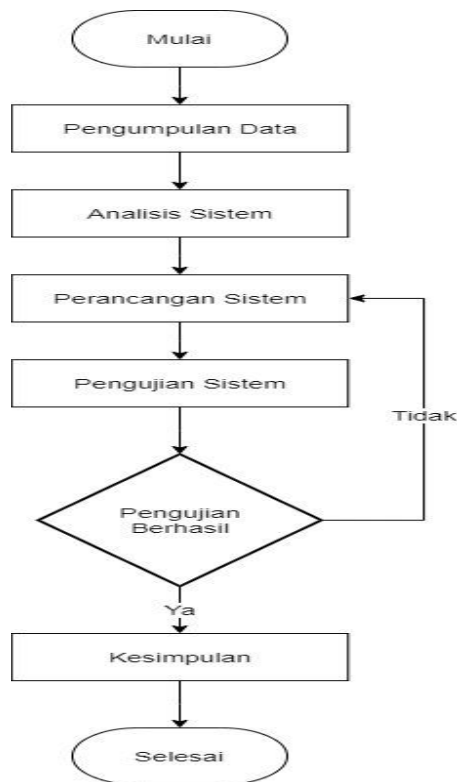


Figure 1. Flowchart Stages Study

### Procedure study

Following is explanation about research Flowchart:

- a. Data Collection  
In stage data collection, writer use method Observation, secondary data sources, primary data sources, and literature studies.
- b. Analysis System  
Method used in build this education game system use language Java programming with take advantage of the Android SDK as Gradle for compli Becomes Application.
- c. design System  
In stage this the plan that will used on the system sales for Lovita Stores using, Waterfall, DFD (Data Flow Diagrams), and User Interface (UI) Design.
- d. Test System  
On planning application sales softlane on this Lovita store, testing system use Blackbox Testing method that aims for knowing error occurs or wrong function on feature in application. Test with using Blackbox testing is done with method check every tool from application with treatment right and wrong for test functionality from application by the researcher.
- e. Conclusion  
After all Step already conducted next that is make a conclusion about results from study this.

### Data Collection Method

#### Observation

According to (Morissan,2017:143) Observations or observation is activity daily man with use five senses as tool help main. In other words, observation is ability somebody for use his observations through results work five senses. In terms of this five senses used for

catch observed symptoms. What was caught earlier, recorded and next notes the analyzed [3] .

According to (Sugiyono, 2018) Observations as technique data collection has specific features when compared with Another technique, namely interviews and questionnaires. If interviews and questionnaires always communicate with people then observation no limited to people, but also objects other realms [3]. According to Sugiyono (2015: 204) observation is activity loading study to something object (Sahidin, 2015) Observation is deliberate and conducted studies by systematic, planned, directed, at a destination with observe direct object the data. (Ikhwan, Badruzaman, Khoir, & Muslihudin, 2018) In terms of this researcher collect data and make notes about things that are obtained for writer thesis this. There is an observation study could knowing activity educational game learning.

### **Sumer Data Primer**

According to (Silalahi 2015: 433) said primary data is data obtained directly by data collection from object his research. So primary data is data collected [5] . According to pasolong (2017)," the primary data is something object or original document data obtained by directly by data collection from object his research. So primary data is data collected , data is processed by the issuing organization or using (pasolong, 1967).

According to (Wardiyanta in Sugiarto 2017:87), primary data is information obtained from primary sources are information from sources".(Bening Azhilmi, 2015). by above understanding could concluded that the primary data is proof writing obtained in the field carried out by directly by the author, primary data is the data obtained by directly by data collection from object his research.

### **Systes Development Life Cycle (SDLC)**

Study this is type study qualitative is related research with ideas, perceptions, opinions, beliefs of people who will researched and all that no could be measured with numbers. (Muhamad Muslihudin, Fauzi, 2021) The theory used in study no forced to for get picture completely about something things according to view humans who have researched dlam collect data with method conduct surveys and interact direct with the source. (Muhammad Muslihudin, 2016) The methodology used in development system is method development device soft use SDLC (Systes Development Life Cycle) method with method Waterfalls.

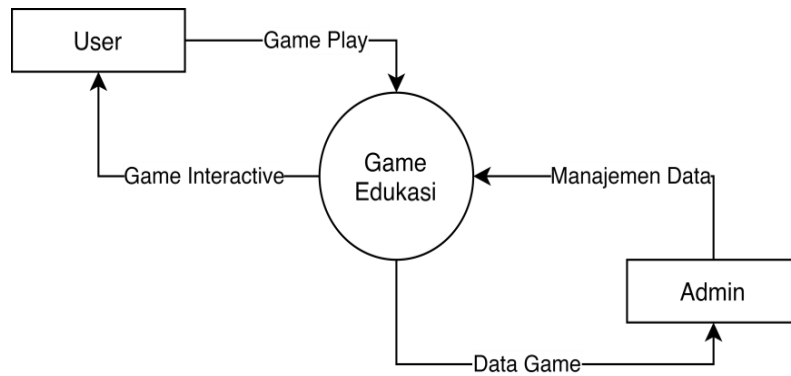
## **DISCUSSION**

### **Design Stage**

System design is stages in the form of drawing, planning and manufacture with unite a number of element separated into the one unified whole for clarify form a system. Following stages the design contained in the Educational Game Application Android - based as a Learning Media for Children at the age of early.

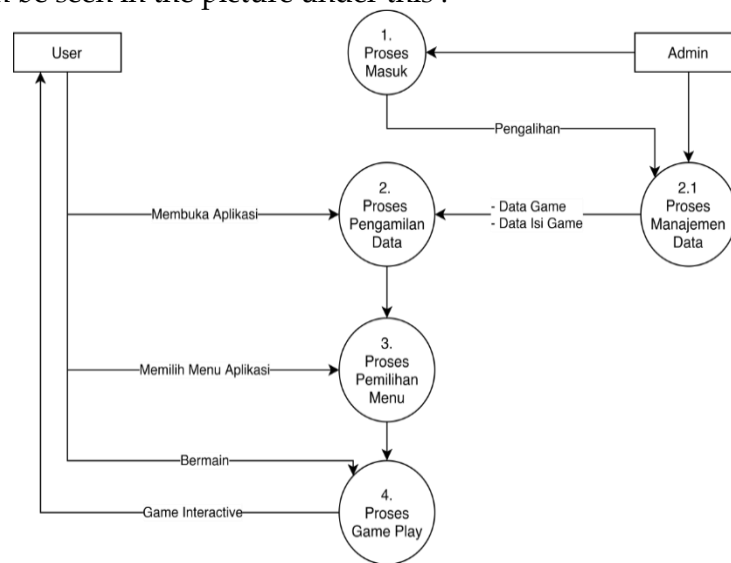
### **Context Diagram (Context Diagram)**

Context diagram is level highest in the diagram data flow and only load one process, show system by whole.

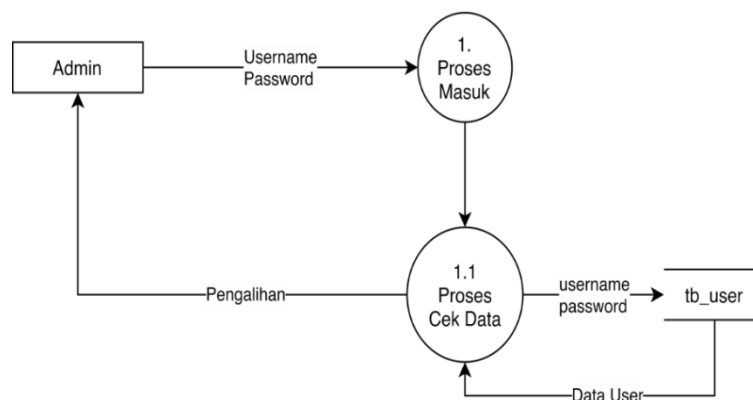


**Data Flow Diagrams (DFD)**

Data Flow Diagram Level 1 describes the process more clear and detailed from the context diagram that can be seen in the picture under this :

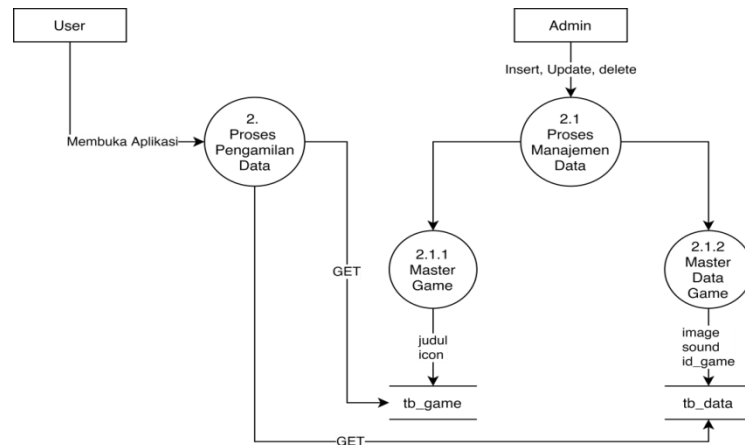


Data Flow Diagram Level 1 Process 1 describes more processes detail from process 1 which can be seen in the picture lower this :



**Data Flow Diagram Level 1 Process 2**

Data Flow Diagram Level 1 Process 2 is solving from the DFD process level 1 process 2 and process 3. Data Diagram Level 1 process 2 contained in educational game applications that can be used seen in the picture lower this :



### Entity Relationship Diagram (ERD)

Entity Relationship Diagram (ERD) is a model for explain connection between data in the database based on objects data base that has connection between relation, can be seen in the picture following:

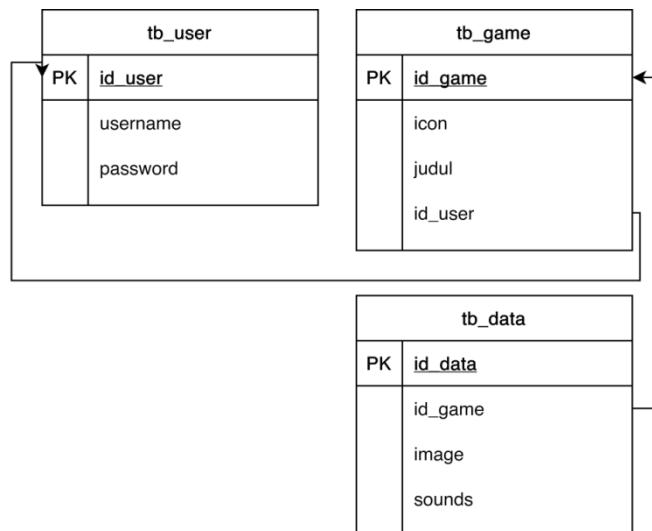


Figure 4.7 Entity Relationship Diagram (ERD)

### Game Data Page Results Display

Game Data Page is page showing \_ all game data.

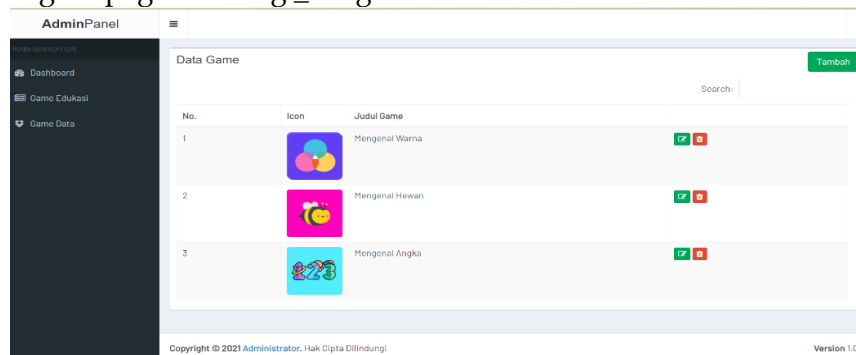


Figure 2. Game Data Page

## Appearance Educational Game Apps Home Implementation

Game menu display Home page is page first to be shown to users.

### Menu Implementation in Educational Games

game menu page is The menu options for educational games available in the application are as follows: this is educational menu display :

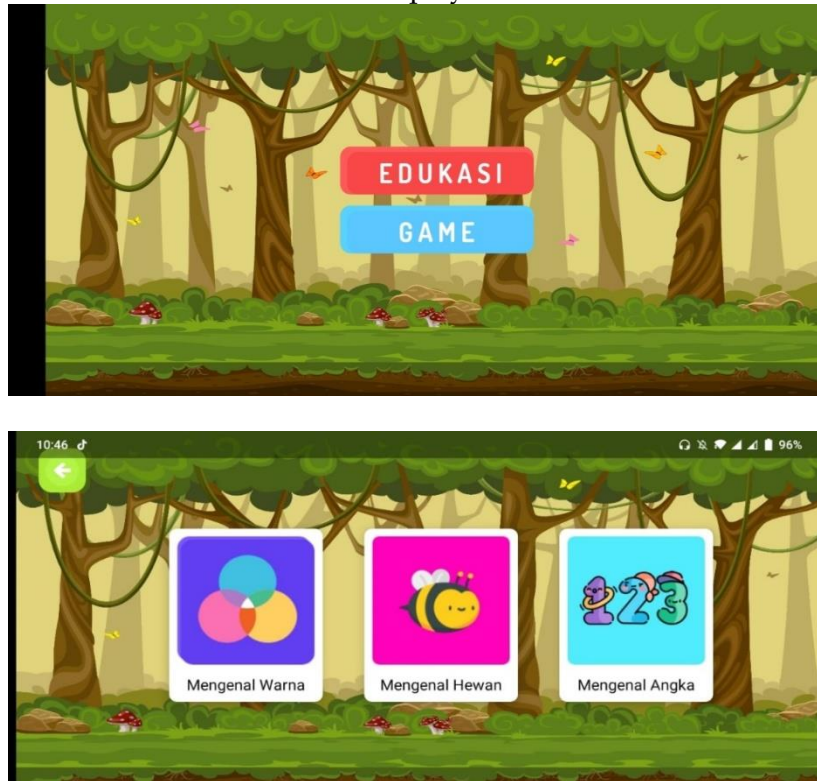


Figure 3. Implementation of the Education Menu

### Game Play Implementation Color Recognition

Game Play page is an Interactive User Interface between user and gamep introduction color.

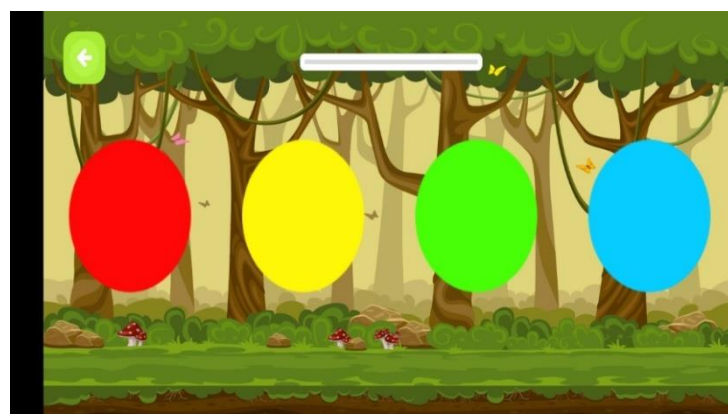


Figure 4. Implementation Color Recognition

### Implementation of Game Play Introduction Animal

Game Play page is an Interactive User Interface between user and game introduction animal.



Figure 5. Implementation of Game Play Introduction Animal

### Number Recognition Game Play Implementation

Game Play page is an Interactive User Interface between user and game introduction number



Figure 6. Implementation Number Recognition

### Implementation of the Menu in the Game

The game menu page is the choices of the menus in the games available in the application are as follows: this is menu display

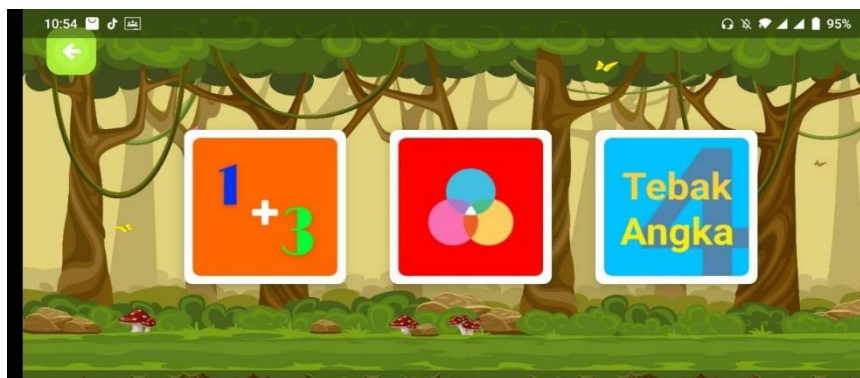


Figure 7. Implementation Game Menu

### Implementation of Game Play Addition

Game Play page is an Interactive User Interface between the user and the summation game.

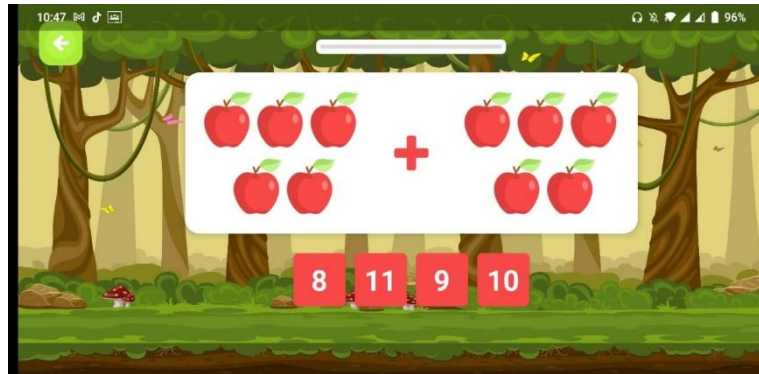


Figure 8. Implementation of Game Play Addition

### Game Play Implementation Guess the Color

Game Play page is an Interacative User Interface between the user and the guessing game color.

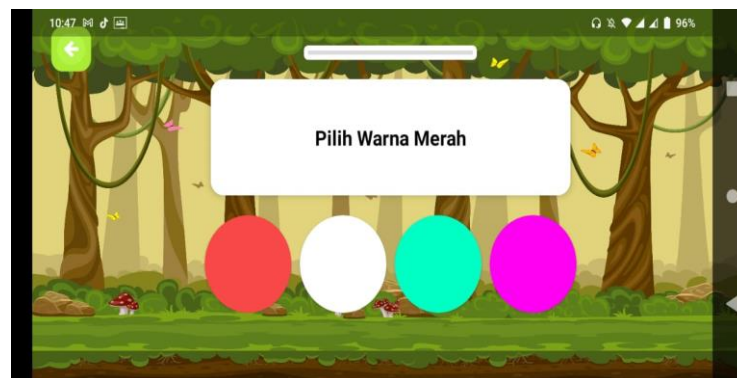


Figure 9. Implementation Guess the Color

### Implementation of Guess the Number Game Play

Game Play page is User Interface and guessing game color .



Figure 10. Implementation of Game Play Guess the Number

### CONCLUSION

Based on conclusions and discussions on educational game applications based on android as a learning media child at age early, then could concluded that building educational games this could found a means Application of educational games android based which can built with use a number of device i.e., Software, Android Studio, Android SDK, Android Emulator, Java Programming, Xampp as well as MySQL. Educational game learning this can too maximizing power catch child for help child study with method see and do, like introduction color, introduction animals and introduction numbers. Android educational games as learning media for child at age early this could declared effective and proven increase creativity as well as development brain, proven could help growth,

development child, improve reasoning, help power imagination child as well as development creativity in children .

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