# Design and Development of Lampung Script Educational Game

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*Abstract: Some students think that Lampung script learning is boring because the method of delivery is still using book media so that children have difficulty understanding and memorizing it, current technological developments are increasingly interesting to be further developed, because all of them switch to using information technology, one of which is information technology. namely Gadgets, children prefer to spend time using Gadgets every day just to play games and not to study. Because according to what they know, learning is only based on book media, so a Design and Build system for learning Android -based Educational Game learning applications in the application has many options for recognizing the Lampung script, writing , and playing the Lampung script. This makes it easier for teachers and students to learn at school and at home. So that it attracts children's learning interest using Gadget.*

*Keywords: Design and Build, Android App, Lampung Script.*

## 1. INTRODUCTION

### 1.1 Background of the problem

Indonesia is a country that has cultural diversity, one form of its diversity is to have a different regional language in each region, one of which is the Lampung area which has regional languages and scripts. The Lampung script or Had Lampung or known as KaGaNga which consists of 20 main letters and is read from left to right. According to the Lampung Provincial Regulation no. 2 (2008) and no. 13 (2014), explained that various ways can be done to preserve the Lampung language and script, one of which is by introducing and teaching the Lampung language and script [1].

According to research conducted by Ferly Ardhy and Hendra Sahrobi (2021). The design of an Android-based Lampung script educational *game* learning application helps students and the younger generation of Lampung society in recognizing characters easily [2]. Research conducted by Yuli Hartanto and Tri Widodo (2021), the delivery of material using book

media is very boring for children, so *games*The Lampung script is very helpful in delivering material [3]. Research conducted by Gusti Ngurah Aditya krisnawan (2015) application *games* Android-based education can be used to help children learn and improve the memory of children who are still very sensitive to what they see [4]. Research conducted by Adi Jaya Kurnia and Catur Hermawan (2019). Educational *games are* games that contain educational elements that are used in learning [5].

Based on the above research that learning with book media is less attractive to children today in the era of all android-based information technology, researchers will build a design for an android-based educational *game* application for the introduction of Lampung script to create a new and interesting learning method and not make users easily bored in learning. Learning so that students can be more enthusiastic in learning at school and at home. From the four studies that have been carried out, it can be concluded that the research that has been carried out aims to build an educational *game* application for the introduction of Lampung script based on Android and mobile. Therefore, the researcher wants to make an Android-based educational *game* application design that is different from previous researchers, namely by using the method SDLC (*System Development Life Cycle)* with the aim of motivating children's interest-elementary school children to learn and recognize and memorize the Lampung script .

The expected results from the design of this Android-based educational *game application are to* help teachers and students in a more fun and less boring learning method. as well as make it easier for teachers and students because they can learn the Lampung script at home using this application so they can learn and memorize wherever and whenever they are because they don't have to bother carrying books .

## 1.2 Formulation of the problem
Based on the problem above, it can be the formulation per problem is:

1. How to design an android based Lampung script recognition educational *game application* at SDN 9 Kedondong ?
2. How to Implementing an Android -based Lampung literacy- introduction educational *game* application?

## 1.3 Research Objectives and Benefits
The aims and benefits of the research are as follows :

1. Increase the learning interest of elementary school children in learning and recognizing the Lampung script
2. Make it easier for teachers in the Lampung script learning system.
3. Making the system more modern and easy to use wherever and whenever we are.

## 2. LITERATURE REVIEW

## 2.1 Previous Research

Table 1. Previous Research

| No | Title | Discussion | Results |
|---|---|---|---|
| 1 | Game application using unity3d android based (Didik Kurniawan, Rian Oseady Prahastito, Astria Hijria) | Designing a script education game application with the system development method using eXtreme Programing (XP), The design uses the UML model in the form of Use Case Diagrams, Activity Diagrams and Flow Diagrams and the programming languages are Java and C #. | Game application as a means of entertainment to get to know the culture and script of Lampung. |
| 2 | Application design for Android-Based Lampung Script Pattern Recognition Using the Perceptron Method (Muhammad Al Chalid, Ratih Adinda Destari, Edy Victor Haryanto) | Designing a Lampung script pattern recognition application with Fishbone Diagram as a system development method and using the perceptron method. | An application to help identify the Lampung script alphabet pattern. |
| 3 | The design of the Lampung script learning educational game application "ajo dan atu - learn the Lampung script", with multi-ending system using android based ren'py engine (Gigih Forda Nama, Flesi Arnoldi) | Development of a literacy learning educational game Lampung by using the extreme programming method and with tools using the Ren'Py engine, a multi-ending system, and a programming language using Python. | An application for Lampung script learning media that can make users interested in trying to find the ending of the game because they want to keep repeating the game. |
| 4 | Development of learning tools using Adobe Flash CS6 for the introduction of Lampung script in multimedia-based elementary schools (Yulina and Khusnul Khotimah) | Development of multimedia-based Lampung script recognition learning media using Adobe Flash CS6 software and testing the feasibility of multimedia products. | A learning media to support Lampung Script Recognition. |
| 5 | Game design for the assessment of Lampung script for elementary | Game application for the Lampung script with the design model using object oriented programming | An educational game application for the Lampu-ng script that is |

| | level based on Android (Hengki Saputra) | (OPP), the programming language using C#, the software used is the Unity software, and the database is Firebase. | equipped with learning, writing, drawing, and playing features for elementary school. |
|---|---|---|---|

From the five statements of the researchers, it can be concluded that the difference between each research is the method of developing the system or application used, the software and programming language used in designing an educational game application for the introduction of the Lampung script and the purpose or result of an application designed by researchers. The advantage of designing an educational game application that the researcher designed is to use the SLDC (*System Development Life Cycle) development method* whose application has a very simple menu display so that the average user from among children has no difficulty in using the application.

### 2.1 Application Design
According to Maulana, G, Seftiani (2018). Design is to create an application or system on an agency or certain object that did not previously exist. Design is an activity to create an application from the results of the analysis are poured into the software [6]. According to Taufiq (2018), design is one of the processes of designing or developing an existing system, as is well known, some have developed using SLDC [7] .
From the two statements of experts, it can be concluded that the design is a planning or design of a new system that will be created and poured into the form of a system or application.

### 2.2  Educational Games
According to Zulkarnais et al. (2018). Educational *games* are games that have been created specifically to teach students *(users)* in certain learning, concept development and understanding and guide them in practicing their abilities and motivate them to play them [8]. According to Suryono (2016) and Palendra, Rizkiono (2019) educational *games* are games designed for learning purposes that can provide insight [9].
From the two opinions of experts, it can be concluded that educational *games* are games made for learning or understanding and to add insight.

### 2.3  Lampung script
According to Ningsih&Saniati (2018). Lampung script or Had Lampung is a writing style that has a relationship with the Pallawa script from South India which has three kinds of elements, namely the main letter (*kelabai surat*), subletters or sound marks (*benah surat*) and punctuation marks [10]. According to Isworo ( 2019) the Lampung script comes from Sanskrit and Palawa letters. At first in Lampung there was the Tulang Bawang kingdom which adhered to Buddhist beliefs [11].
From the two statements above, it can be concluded that the Lampung script is a form of writing that has three elements originating from India.

### 2.4  Android

According to Listiono et al (2021), Android is an operating system for Linux - based mobile devices that contains an operating system as well as framework for developing applications easily and quickly. The four main components of an android application:

a.  *Activity* for application interface display
b.  *Service* to run application processes behind the scenes
c.  *Broadcast* to interact between *devices*
d.  *Content Provider* for data management and *database* [12].

According to the APJII survey (2016) Android is an operating system that can be used by everyone on their open devices [13].

From the two expert opinions, it can be concluded that Android is an operating system for Linux -based mobile devices that can be used by everyone, including the operating system on their devices.

### 2.5    SDN 9 Kedondong

Based on the profile of SDN 9 Kedondong, an elementary school (SD) located in the village of Sinar Harapan, Kedondong district, Pesawaran regency, Lampung which is located at latitude : -5.4946 and longitude: 105.017. under the auspices of the Ministry of Education and Culture. SDN9 Kedondong already has B accreditation, based on Certificate 123/BAP-SM/12-LPG/2016. At SDN 9 Kedondong there are 10 education staff or teachers consisting of 6 civil servants and 4 people with the status of honorary teachers and 117 students. SDN 9 Kedondong also provides electricity facilities from PLN as well as internet access with *providers smart fren* to help teaching and learning activities [14].

## 3.   RESEARCH METHODS

### 3.1. Data collection method

The methods used in data collection are:

1.  Observation
    Researchers made observations at SDN 9 Kedondong and made observations to see the Lampung script learning system which was still manual using books as a study guide.
2.  Interview
    The researcher conducted an interview process, namely conducting a question and answer process to one of the Lampung language teachers to ask what obstacles were encountered in the current learning of the Lampung script.
3.  Library Study
    Researchers use literature books or other reference materials from the internet which are then recorded or quoted opinions from experts in the book, to strengthen the theoretical basis in their research.

### 3.2. Design Method

Educational game applications uses the SDLC (System Development Life Cycle) method. That is the pattern in developing a software system that contains the stages or steps of the planning, analysis, design, implementation, testing and maintenance. Figure 1 shows system development life cycle.
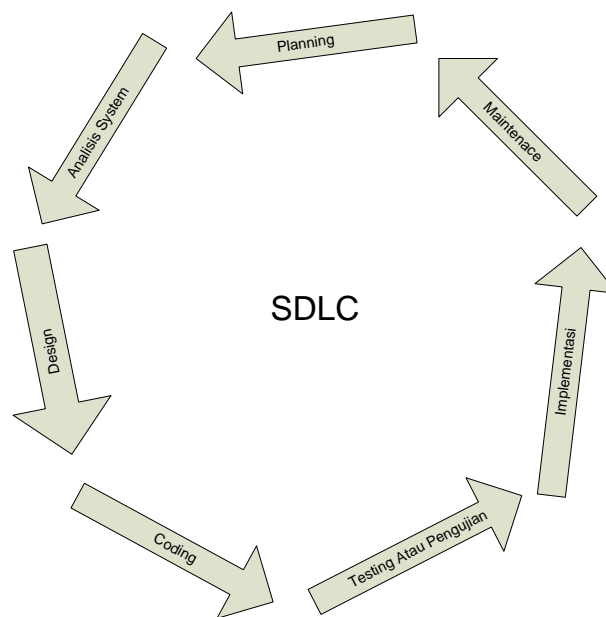


Figure 1. SDLC (System Development Life Cycle)

Description as follows:

a. Planning
   This stage is carried out for planning as a system creation Designing an Android Based Lampung Script Recognition Educational Game Application at SDN 9 Kedondong.
b. System analysis
   This stage is looking for needs in the system creation process Lampung Script Educational Game Application design to understand and implement an easy-to-use application design system.
c. Design
   At this stage or flow, it is for the design of building an educational game application.
d. Coding
   At this stage the researcher implements the design arrangement that is designed into the creation of an Educational Game Application Design system.
e. Testing

Stages testing is to test the feasibility of the Educational Game application so that there are no errors when it is used and is it as expected then the results must be in accordance with the needs.

f. Implementation
This stage is to provide direction to the user/ teacher how to implement or how to play the Lampung Script Recognition Educational game application that has been made.

g. Maintenance
This last stage is monitoring the operation or improvement of the application to anticipate that there will be no disturbances or errors and others.

## 4. DISCUSSION

### 4.1. Design
The design stage of the android-based Lampung script-based educational game application design is as follows:

### 1. Context Diagram
Context diagram is a diagram illustrating the scope of the system, which consists of a process and is the highest level that describes all inputs to the system. Figure 2 shows context diagram.
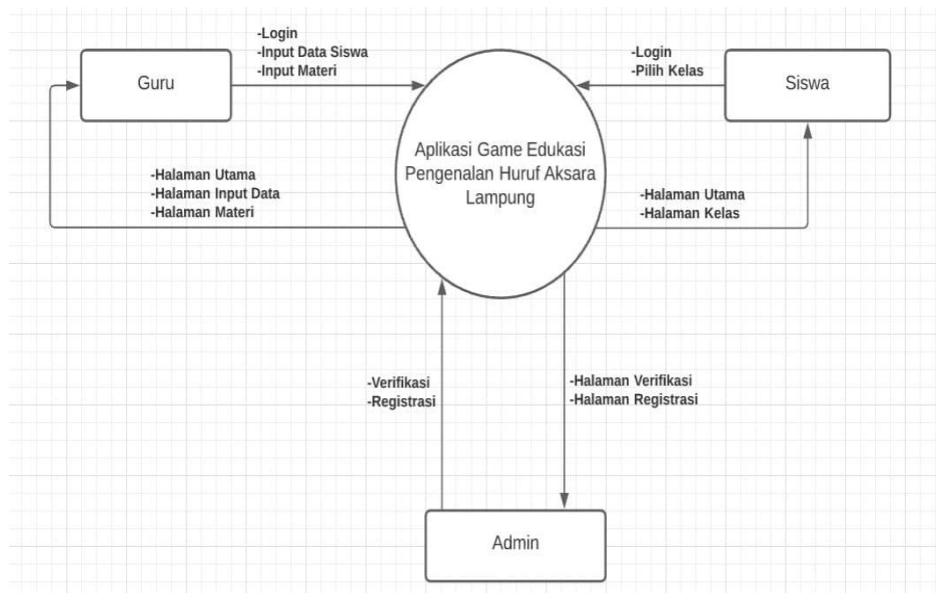


Figure 2. Context Diagram

### 2. Data Flow Diagram (DFD) level 0
Data flow diagram (DFD) level 0 is a description of the diagram the existing context, there is a process of activity. Figure 3 shows data flow diagram level 0.
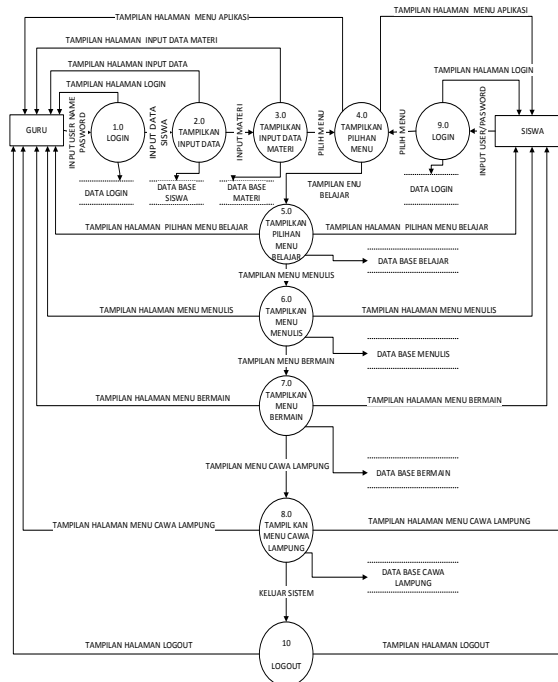
Figure 3. Data flow Diagram level 0

### 3. Data flow diagram (DFD) level 1

That is a diagram that describes a more complex data flow in each process that forms a data store and data flow in part or in full in detail. Figure 4 shows data flow diagram level 1.
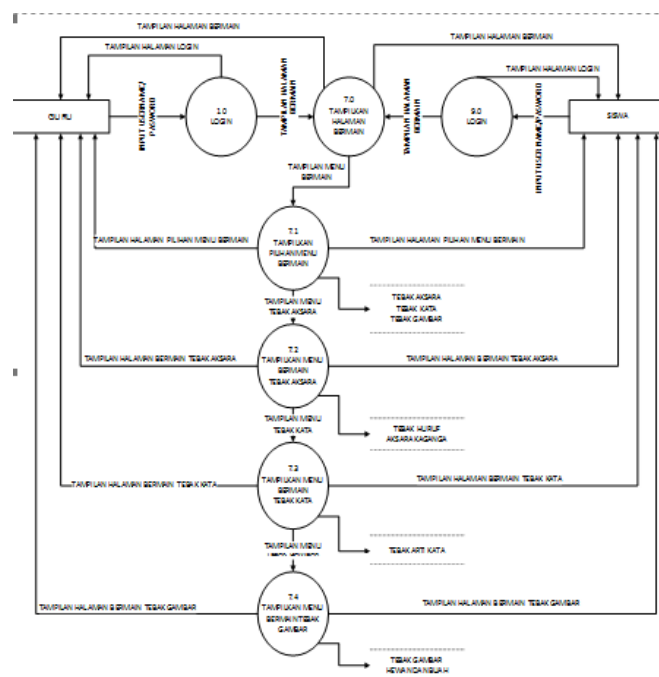


Figure 4. Data flow diagram level 1

**System analysis**
Based on the method used in research is the SDLC method, the stages of hardware analysis needed in designing the Android - Based Educational Game Application Design, as follow:

a. Hardware
   1) Laptop
   2) RAM memory
   3) Hard Disk
   4) Keyboard
   5) Mouse
   6) Touch Screen Smartphone
   7) LAN Card
   8) DVD

b. Software
   1) Windows 7,8 , 10
   2) MS Office 2010
   3) Database
   4) Photoshop
   5) Visio
   6) Xampp
   7) Mobile Web
   8) Character Letter Data

## 4.2    Implementation

1.    Display     the     Login     page,     before     logging     in, please register first so that you can enter your username and password in the application. Figure 5 shows login page.

Figure 5. Login Page

3   The main page is to select the game menu, in this view the user can select the desired game menu which is displayed as figure 6 shown below.



Figure 6. Main page

4   The selected page, for example, wants to know the Lampung language and its meaning by writing what user want in Indonesian and then pressing the click button, the answer will appear next to the language used as shown in figure 7.

Figure 7. Selected display

## 5.  CONCLUSION

The design of the Android based Lampung script recognition game application design system using the *SDLC (System Development Life Cycle) method*, at SDN 9 Kedondong in order to make it easier for teachers to teach the introduction of Lampung script to children to make it more interesting and add interest in learning in Lampung script recognition. This application uses a very simple menu display so that the majority of children use it will not find it difficult because they only need to login and then select the desired Game Menu and children can play it immediately. For further research, hopefully it can be even better to design and develop an Android-based educational game application.

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