DEVELOPMENT OF MULTIMEDIA APPLICATION OF STANDARD SUNDANESE SCRIPTS LEARNING MEDIA FOR CLASS X (CASE STUDY AT SMKN 1 PADAHERANG)

Nurfatah[1], Iskandar Ikbal[2]

[1,2] Informatics Engineering Program – Indonesia Computer University
Jalan Dipatiukur 112-116 Bandung 40132
E-mail : nur.fatah100@gmail.com[1], iskandar.ikbal@email.unikom.ac.id[2]

ABSTRACT

The standard Sundanese scripts are the original writings of Sundanese people whose current existence has disappeared. In order to preserve the existence of Sundanese scripts, the Dinas Pendidikan Provinsi Jawa Barat requires high school or equivalent to implement the standard Sundanese scripts material in class X. As a case study, the implementation of Sundanese scripts material in class X at SMK Negeri 1 Padaherang was considered to be less effective and efficient, where students simply understood the writing of Sundanese scripts while the difficulty in reading them. This is because 60-70% of class X students are the dominant speakers of Javanese. The purpose of the study is to overcome some of the problems that occur in teaching and learning activities of Sundanese scripts class X, especially in reading, listening and writing. This study utilizes text to speech and voice recordings that are useful for listening and reading scripts, as well as Sundanese conversion to Sundanese scripts. The existence of Sundanese scripts application can maximize Sundanese scripts material in learning that is not only followed by Sundanese students, helps students understand Sundanese scripts not only in writing as well as in reading, and increases students' attraction to Sundanese scripts. In addition, the application of Sundanese scripts becomes an alternative to be achieved in developing students' interest and attractiveness towards Sundanese scripts material.
Keyword : Learning Media, Application, Sundanese Scipts, Website, Desktop

1. INTRODUCTION

SMK Negeri 1 Padaherang is one of the state vocational high schools located almost on the border of West Java and Central Java, namely in Pangandaran District. The school has eight expertise competencies, namely Geologi Pertambangan, Teknik Komputer Jaringan, Rekayasa Perangkat Lunak, Teknik Elektronika Indutri, Teknik Pengolahan Migas Petrokimia, Teknik Kendaraan Ringan, Usaha Perjalan Wisata, and Multimedia.

Because the location of SMK Negeri 1 Padaherang, Sundanese subjects become less supportive and effective to implement, but still must be implemented. In addition, as a vocational school of course students focus more on productive or vocational subjects rather than general and regional subjects, so that they often consider these subjects to be less important, especially when they have to study local languages.

One material that is considered ineffective is Sundanese scripts. In class X in SMK Negeri 1 Padaherang, students have enough to understand writing, but it is different when reading Sundanese scripts. Comparison of students' understanding in reading and writing Sundanese scripts is quite significant, where approximately only 1 in 8 people understand enough what is written on the material, so it can be concluded that most students can only write rather than understand it. Besides being required to write, students must also be able to read and listen to Sundanese scripts. Lack of means to assist students in reading or saying Sundanese scripts is the cause.

Based on these problems, a solution is needed to answer the problems that occur in the learning of the standard Sundanese scripts in class X at SMK Negeri 1 Padaherang, where the application will be used as a solution to solve the problem. The application built utilizes the text to speech method and the voice record used for listening and reading or saying Sundanese scripts. In addition, the application also utilizes the Latin conversion method to Sundanese scripts.

Several studies on Sundanese scripts have been done before. Research conducted by Rr. Tri Isnaini R, Siska Komala Sari, and Hadi Prasetyo Utomo with the title “Aplikasi Pembelajaran Aksara Sunda untuk Sekolah Dasar Berbasis Multimedia Pada SDN Cicinde Utara 1 Banyusari Karawang”, resulting in research focusing on Sundanese scripts writing. [1] In another study conducted by Rendra M. Ridwan, Alvanoz Z. Mansoor, and Ifa S. Mustikadara entitled “Perancangan Game Puzzle Sebagai Media Pembelajaran Aksara Sunda untuk Remaja”, resulted in a simple research on the preparation of words in Sundanese scripts. [2] Research from Maryam Muharraran with the title

"Aplikasi Pembelajaran Dasar Aksara Sunda Berbasis Android" resulted in research applications that only display information and sounds from Sundanese scripts.[3]

2. CONTENTS OF RESEARCH

2.1 Theoretical Basis

In order to support the drafting of the thesis report required theoretical foundations relating to research so that the preparation of the thesis report is in line with the theoretical basis used.

2.1.1 School

School is an institution which is a place of learning and teaching process by applying the education system based on the curriculum applied by the school. Schools are also interpreted as a place for receiving and giving a learning in accordance with the level taken.[4]

2.1.2 Learning Media

Learning media is a means or facility for learning activities that have the purpose to help convey information in this case usually the material to the recipient of the information with the help of the media used. The use of media in learning is one of the steps taken to create learning situations more effective, interactive, communicative, and certainly efficient. [5]

2.1.3 Multimedia

Definition of multimedia is a media that combines two or more elements of media, including a combination of text, images, sound or audio, video, and animation. Basically, multimedia is divided into two parts, namely linear multimedia and interactive multimedia. It is said that a multimedia is part of linear multimedia if it can run without using any controller or control device that is operated by the user and runs sequentially. An example of linear multimedia is a film. The multimedia can be said to be interactive multimedia if it has a controller or control device that is operated by the user so that users are free to do anything to the multimedia according to the features provided. Interactive multimedia applications are now often found in everyday life Examples of interactive multimedia applications that are often found are educational games, learning media and so on.[6]

2.1.3 Sundanese Scripts

Sundanese scripts are ancient script writing and are one of the cultural characteristics of Sundanese people. Sundanese scripts have 32 characters divided into 7 vowels or in other words called "Swara Scripts", and 25 consonants or often referred to as "Ngalagena Scripts". Swara scripts can be seen in Figure 1.

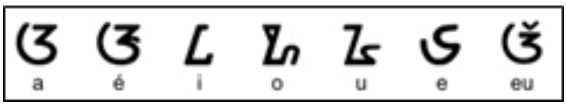


Figure 1. Swara Scripts

The Ngalagena scripts is a consonant of Sundanese scripts, where this script also acts as a syllable of the Sundanese script. Ngalagena can be applied at the beginning, middle, or end so that it will form a new word. The Ngalagena scripts are usually given "rarangken" or vocalization because the Sundanese scripts is a basic character with the pronunciation of the vowel "A" before the occurrence of changes or vocalizations.[7] The Ngalagena scripts can be seen in Figure 2.

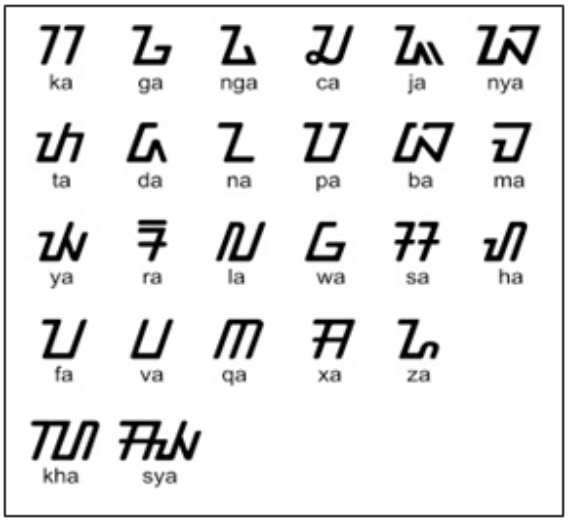


Figure 2. Ngalagena Scripts

2.1.4 Sistem

The system is a network or work procedure that is interconnected. In addition to relating to each other, it is defined as a system if the network is carrying out activities to achieve the objectives to be achieved.[8]

2.1.5 Text to Speech

Text to Speech is a facility that is useful for converting a text into a voice that is provided automatically. Text to speech can allow a computer device to communicate or interact with humans not only using writing but verbally.[9]

2.1.6 Object Oriented Programming

Object-oriented programming is different from structured programming that focuses more on functions and data separately, object-oriented programming does not see functions and data into two separate things, but functions and data are seen as a unit called active objects. Object-oriented programming sees the program as a set of objects that work together to solve problems.[10]

2.1.7 Desktop Application

The desktop application is an application that can run alone or independently without using a browser or internet connection on an autonomous computer. Desktop-based applications must be installed first into the computer so that they can be used directly when the program code is compiled.[11]

2.1.8 Website

The website is a page containing information that can be seen if your computer is connected to the internet. With the website, everyone in the world can get and manage information with various sources available on the internet. The website itself currently can load various kinds of media, ranging from text, images, sounds, even videos. The website is written or dynamically converted to HyperText Markup Language (HTML) and accessed through a software program commonly called a web browser.[12]

2.1.9 UML Diagram

Unified Modeling Language (UML) is a standard for designing models of a system that will be built or developed. UML is usually more used to design object-oriented programming models such as C ++, Java, C #, and so on. In addition, UML can also be used for procedural modeling applications such as VB or C. Some UML diagrams are Use Case Diagrams, Activity Diagrams, Sequence Diagrams, Class Diagrams, and Collaboration Diagrams, and so on. [13]

2.1.10 Likert Scale

Likert scale is a scale used to measure individual behavior by responding to or giving 5 choice points to each question item, that is strongly agreed, agree, agree or neutral enough, disagree, and strongly disagree. Likert scale is a very easy calculation scale to use. On a Likert scale, each of the 5 choices has each score in each question, which is a score of 5 to strongly agree, 4 to agree, 3 to agree or neutral enough, 2 disagree, and 1 for choice strongly disagree.[14]

2.2 Research Methodology

The research methodology used is applied research methods sourced from the waterfall model.

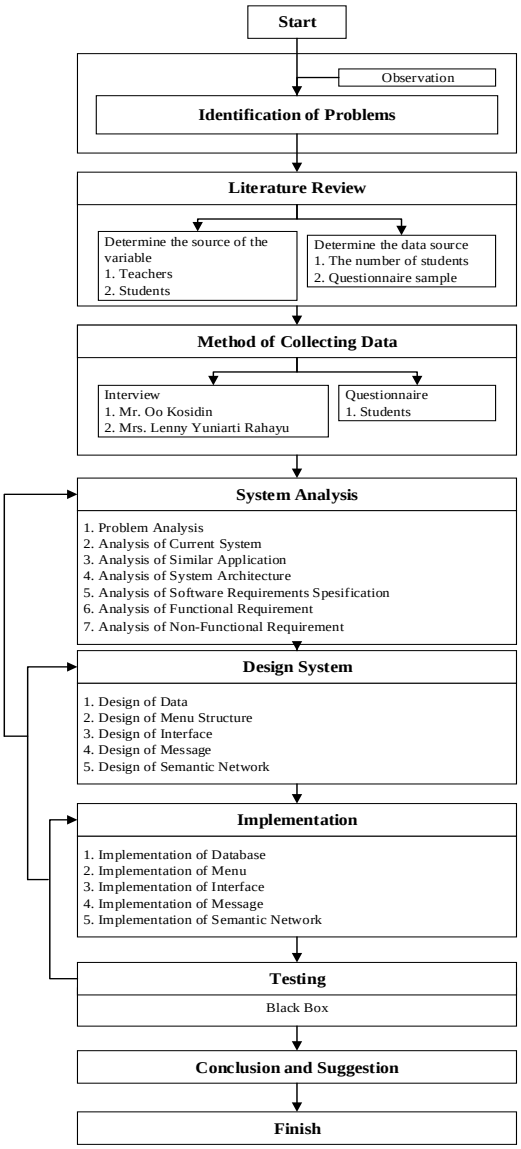


Figure 3. Research Methods

The following is an explanation of Figure 3.

1. Identification of Problems

The initial stage of the research is to identify problems that occur at the research site. Identification of the problem is carried out after making prior observations of the place of research, namely at the SMK Negeri 1 Padaherang. Identifying problems is done by studying, researching and examining research sites to find obstacles or problems that occur.

2. Literature Review

Literature study is carried out by hypothesizing existing problems.

a. Determine the source of the varibale

Determining the source of the variable means to determine who will be used as the resource person to obtain information for the research. Determining the source of important variables because it will determine the beginning of the research to be carried out, namely from determining the problem to determining the solution.

b. Determine the Data Source

Determining the data source means determining what data will be used for research purposes.

3. Method of Collecting Data

Data collection methods used in this study are as follows:

a. Interview

The interview was conducted with Mrs Lenni Yuniarti Rahayu as a Sundanese language teacher in class X at SMK Negeri 1 Padaherang and several parties by giving questions related to the research.

b. Questionnaire

Questionnaires were carried out by distributing sheets of paper containing problems experienced by class X students in learning Sundanese scripts. The questionnaire dissemination process is assisted by teachers who teach class X along with the delivery of material in the classroom. The author disseminates the questionnaire to class X students by asking the students whether they have filled out questionnaires distributed by the teacher in class or not. The number of questionnaires was 62 students.

4. System Analysis

System analysis is the stage that is carried out with regard to the analysis of the system that is running and the system to be built. System analysis includes problem analysis, current system analysis, analysis of similar applications, system architecture analysis, software requirements specification analysis, functional requirements analysis, and non-functional requirements analysis.

5. System Design

System design is a stage that involves the design to be built on the system. System design stages include data design, interface design, message design, and semantic network design.

6. Implementation

System implementation is a stage from the application of system designs that have been done previously into programming languages.

7. Testing

The system testing stage is a stage that aims to find out the success of the system that has been built and find out if there is an error in the system.

8. Conclusion and Suggestion

Stages of conclusions and suggestions are the final stages of research. It is expected that the results of the research can overcome the problems so that the data are drawn conclusions and suggestions for future research.

2.3 Result and Discussion

2.3.1 Problem Analysis

SMK Negeri 1 Padaherang is a school located almost on the border of West Java and Central Java. In SMK Negeri 1 Padaherang itself, especially class X, the percentage of Javanese speakers is around 60% to 70%, inversely proportional to Sundanese speakers who are only 30% to 40%. The use of the website as a Sundanese scripts learning media implemented in the school's general lab is not optimal, because the website used so far has only focused on writing letters. Besides being required to be able to write, students must also be able to read and listen to Sundanese scripts.

Comparison of students' understanding in reading and writing Sundanese scripts is quite significant, where approximately only 1 in 8 people understand enough what is written on the material, so it can be concluded that most students can only write rather than understand it. Lack of means to assist students in reading or saying Sundanese script is the cause. The use of one reference book used by the teacher to provide Sundanese scripts material makes students only learn the material of Sundanese scripts from what is explained by the teacher. In addition, the reason for the students 'difficulties when understanding Sundanese scripts is due to the lack of a more interactive means of learning Sundanese scripts, as well as the lack of use of Sundanese scripts to be one of the causes of students' lack of interest in Sundanese scripts.

2.3.2 Analysis of Current System

The procedure for delivering Sundanese scripts material by Mrs Lenny at SMK Negeri 1 Padaherang is to explain directly face to face in class, but sometimes it is also done in the school general lab. The procedure for teaching Sundanese scripts can be seen in Figure 4.

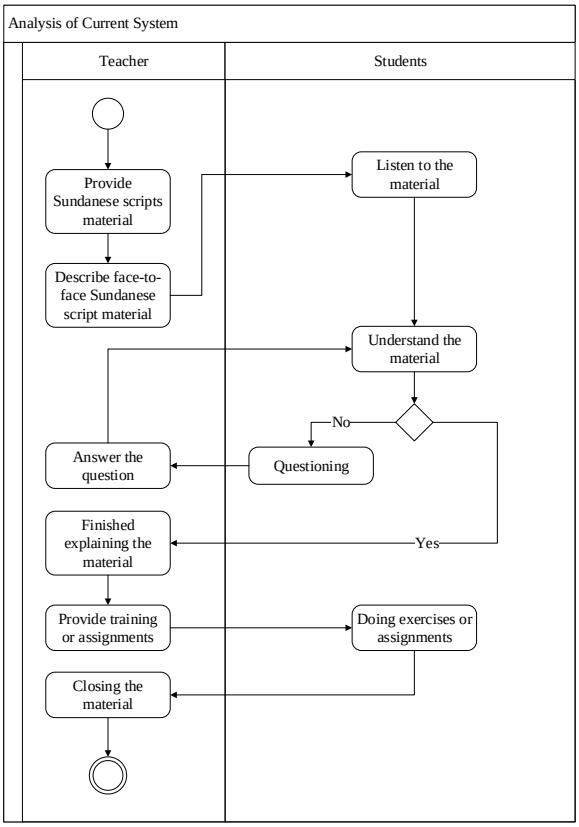


Figure 4. Analysis of Current System

2.3.3 System Architecture

System architecture defines the flow of the system to be built. This system architecture describes how reciprocity or communication paths occur in the system. System architecture can be seen in Figure 5.

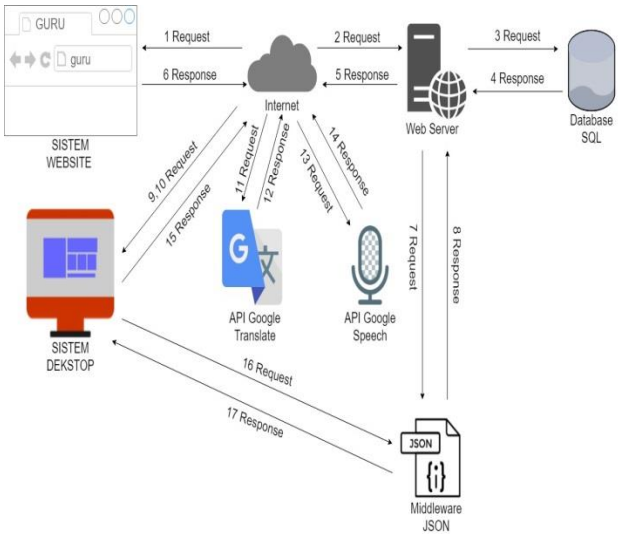


Figure 5. System Architecture

The following is an explanation in Figure 5.

1. The website system used by the teacher uses the internet to request data to the web server.
2. The internet then forwards the request from the website that the teacher uses to the web server.
3. The web server receives a request from the website system, then the web server requests data from the database according to the website system request.
4. The database receives the request and responds to the web server according to the website system request.
5. The Web Server sends data according to the website system request via the internet.
6. The internet continues the response from the web server to the website system.
7. The web server requests and forwards data to the middleware JSON in json format.
8. Middlewar JSON receives data requests from the web server so that data is formed in json format.
9. The desktop system used by students to use the internet to request data to the Google Translate API from Latin text that will be converted into Sundanese characters, and processed also in audio form.
10. The desktop system used by students utilizes the internet to request data to the Google Speech API in audio format.
11. The internet then forwards requests from the desktop system that students use to the Google Translate API.
12. The Google Translate API accepts requests from the desktop system and responds to the conversion of Latin data into Sundanese scripts.
13. The internet then forwards requests from the desktop system that students use to the Google Speech API.
14. The Google Speech API accepts requests from desktop systems and responds to data into audio formats.
15. The internet forwards responses from the Google Translate API and the Google Speech API to desktop systems.
16. The desktop system requests data from the database through Middleware JSON.
17. Middleware JSON receives requests and responds to data requests from desktop systems.

2.3.4 *Use Case Diagram*

Use case diagrams are one diagram of UML tools. Use case diagrams are basically used to describe the relationship of an external entity or often called an actor with a system built.

An actor in a use case diagram can be a human or other related system. The use case diagram can be seen in Figure 6.

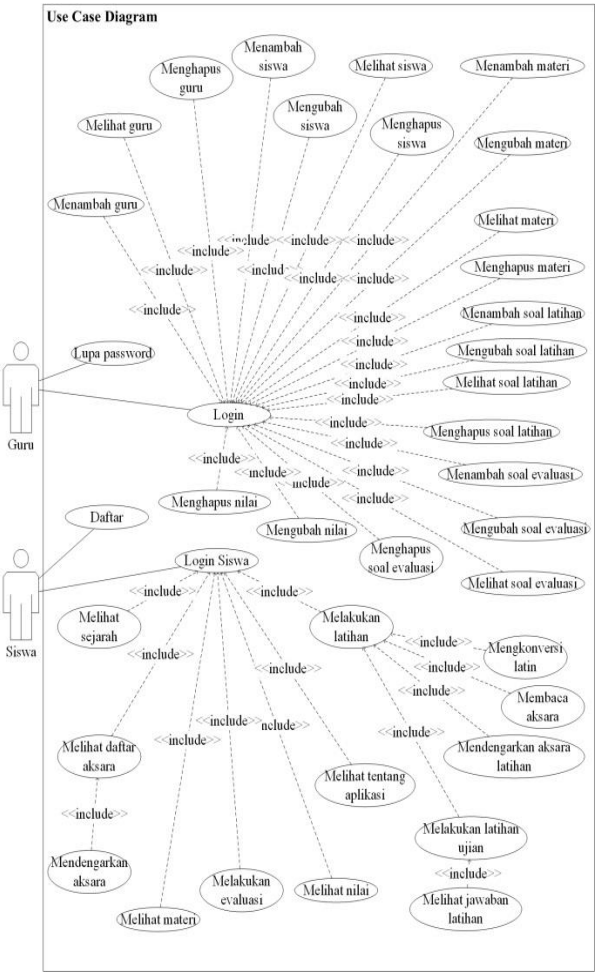


Figure 6. *Use Case Diagram*

2.3.5 Table Relationship Scheme

Table relation scheme is a relationship of several tables in the system to be built, in which it has attributes in one table with other tables that are interconnected. The relation scheme of the script application can be seen in Figure 7.

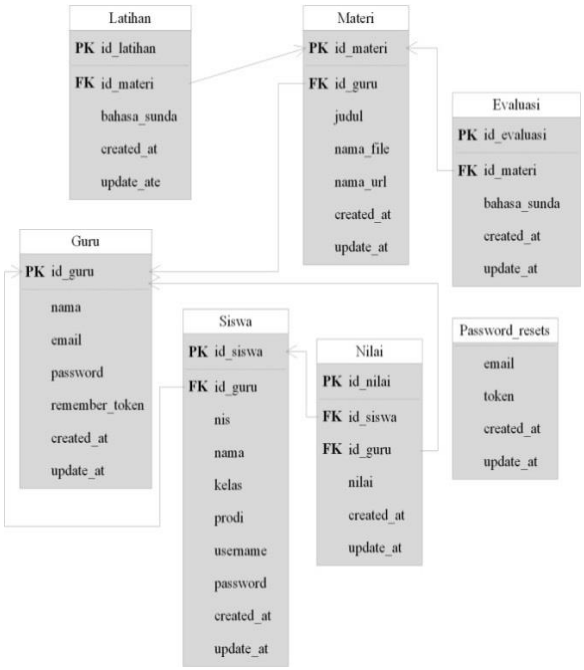


Figure 7. Relation Scheme

2.3.6 Interface Implementation

Interface implementation is the presentation of the system's appearance as a result of the design that was made beforehand. Interface implementation is divided into two types based on the platform, namely the implementation of a web-based system interface and the implementation of desktop-based systems.

Following is the implementation of several views of the application.

1. Display of Website Dashboard

Display of the website dashboard can be seen in Figure 8.



Figure 8. Website Dashboard

2. Display of Student Management

Display of student management can be seen in Figure 9.

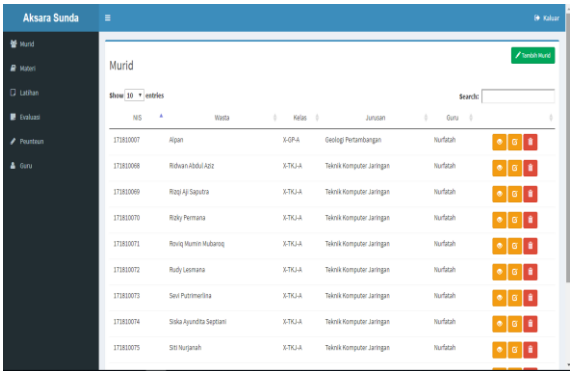


Figure 9. Display of Student Management

3. Display of Register for Students

Display of register for students can be seen in Figure 10.

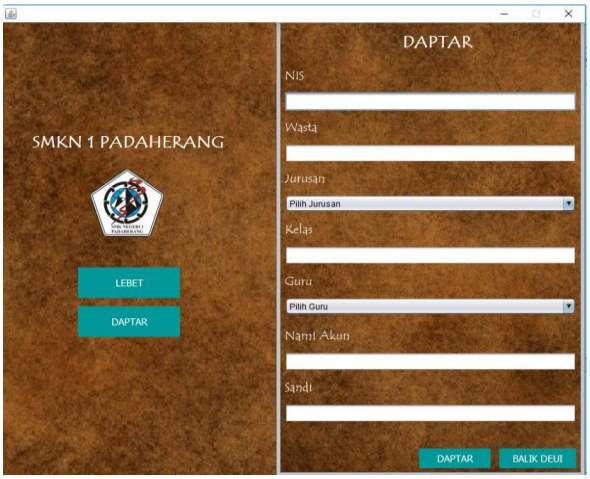


Figure 10. Display of Register for Students

4. Display of Main Menu Desktop

Display of the main menu of the desktop application can be seen in Figure 11.



Figure 11. Display of Main Menu Desktop

6. Display of Evaluation Menu

Display of the evalution menu can be seen in Figure 12.

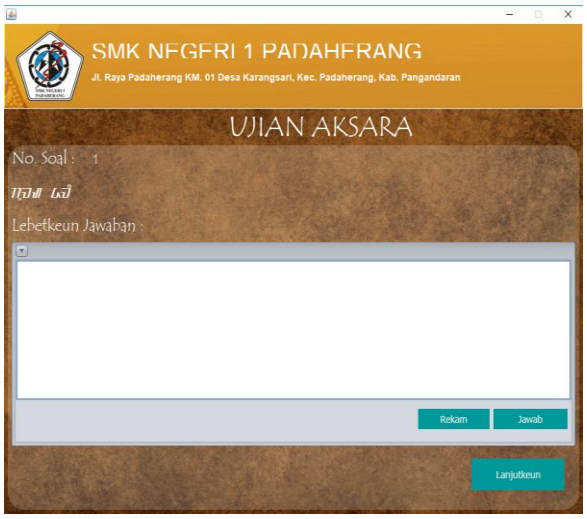


Figure 12. Display of Evaluation Menu

2.3.7 Beta Testing

Beta testing means testing the system based on the user's system point of view, whether the system is feasible and agreed to use or vice versa. In order to determine the system that is feasible or not feasible to use, it is done by conducting questions that are outlined in the questionnaire and distributed to students as the main users of the system. The questions raised can be seen in Table 1.

Table 1. Question on the Questionnaire

No.	Question
1	Do you agree that the application built is suitable to be applied to Sundanese script material in Sundanese subjects?
2	Do you agree that the application built is in accordance with the needs needed to reduce your difficulties in learning Sundanese scripts?
3	Do you agree that the application that is built has learning facilities for evaluation purposes whether done directly in the application or without an application?
4	Do you agree that the application built makes you more interested in Sundanese script material than before?
5	Do you agree that the Sundanese scripts application is easy to use by you?

To determine whether or not the system agrees to be applied to Sundanese script material is used to calculate the Likert scale. The Likert scale assessment category can be seen in Table 2.

Table 2. Category Score of Likert Scale

Item	Positive Score	Negative Score
Strongly Agree	5	1
Agree	4	2
Neutral	3	3
Disagree	2	4
Strongly Disagree	1	5

The final determination of whether the built system is approved or not determined from the percentage value in accordance with Table 3.

Table 3. Persentage Value of Likert Scale

Item	Persentage Value
Strongly Agree	80-100%
Agree	60-79.99%
Neutral	40-59.99%
Disagree	20-39.99%
Strongly Disagree	0-19.99%

Following are the results of questionnaire question 1 which represents the calculation of the 5 questionnaire questions. The number of voters for each item in question number 1 questionnaire can be seen in Table 4.

Table 4. Results Questionnaire of Question No.1

No.	Item	Respondents	Score
1	Strongly Agree	30	150
2	Agree	30	120
3	Neutral	5	15
4	Disagree	1	2
5	Strongly Disagree	0	0
Total		66	287

Calculation of Likert scale :

Highest score = Score x Total Respondents
= 5 x 66
= 330

Persentage Value = $\frac{\text{Total score}}{\text{Highest score}}$ x 100% (1)
= $\frac{287}{330}$ x 100%
= 86.97%

The percentage value for 5 questions can be seen in Table 5.

Table 5. Calculation Results of Likert Scale

No.	Question	Persentage Value	Description
1	Question number 1	86.97%	Strongly Agree
2	Question number 2	79.69%	Agree
3	Question number 3	84.24%	Strongly Agree
4	Question number 4	83.33%	Strongly Agree
5	Question number 5	85.45%	Strongly Agree

3. CLOSING

3.1 Conclusion

Based on the description that has been discussed in the previous chapters and the process of building

and testing the system, it can be obtained the following conclusions:

1. The system built can maximize the material of Sundanese script in learning that is not only followed by students from Sundanese circles.
2. The system built can help students understand Sundanese scripts not only in writing but also in reading and listening to Sundanese scripts.
3. The system built can help grow students' interest in Sundanese scripts by using applications that are more interactive in learning than using paper media only.

3.2 Suggetion

The system that is developed is of course there are still some shortcomings so that improvements are needed in the future, so suggestions are needed that will build the system. The suggestions for developing the system in the future so that it is better are as follows:

1. The display of the built system needs to be repaired so that it is more interactive.
2. In developing the system in the future, the features of writing Sundanese scripts should be like drawing on “Paint”, not conversions written from the keyboard.

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