

# Website-based High School Management Information System

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**Abstract:** Technology development has a great benefit in improving the quality of a school, for example the utilization of technology for value management. Many schools have not benefited yet from the current technological developments. Academic data in the form of value and attendance reports are still manually managed (written), therefore the data storage and management are inefficient. The solution for the related problems is inputting an existing archive into a website-based information system that enhances the efficiency of data management, especially in managing student value information. As the result, school management information system application is created, where it has a feature that can improve school's working quality. The results can be concluded that it has been successfully applied based on the tests that have been conducted, such as testing application directly, conducting an analysis and analyzing the progress of the applied school.

**Keywords:** Technology; Values; Data; School; Efficient

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## 1. INTRODUCTION

The role change of the information technology system is initiated by the role of efficiency, effectiveness to strategic role that develop along with the technological development. The strategic planning of Information System or appropriate education information technology can support the planning and development of the education which later will give additional value in the form of competitive advantage in educational competition. The implementation of the information systems will be useful if it is done according to the vision and mission, also the aim of educational institutions [1].

The academic information system is one of the tools for the educational data management and able to provide facilities to manage various academic data, such as student data, values, teachers and so on [2]. SMA Negeri 1 Kerambitan is a public high school located in Jalan Kukuh Mandung, Kukuh, Kerambitan, Tabanan Regency, Bali. The value management system in there is still manually. The report card is still in written form and distributed to the students or student guardian every semester. Creating the existing data which is in the written form resulting in how the data is not stored well and it requires a lot of time. The utilization of information technology is expected to improve the education quality, time efficiency and school resources for both teaching and learning activities as well as in creating a report card [3]. There is a way to increase the efficiency in managing student value information which is by building a website-based information system. It is a system that uses web technology and the Internet, where it can become the media of school publications in managing the academic data for teachers and students. Web features can simplify the data management, helping to improve the quality and maximize the student value management of the SMA 1 Kerambitan. The research by Siahhaan et al. [9] Titled " Web-Based Academic Information System at SMPN 20 Bekasi (Original title: Sistem Informasi Akademik Berbasis Web pada SMPN 20 Bekasi)" has proven that the use of the web can provide the effectiveness of teachers' performance in managing the academic data and

facilitates the students to access information such as task announcements, attendance, course schedule and values.

## 2. LITERATURE REVIEW

Literature Review discusses supporting theories in conducting the research, such as value, Database, MySQL, Website Cascading Style Sheet (CSS), Cloud Computing, Report Card, Assessment, and The school Information System.

### 2.1 Value

Value in English is derived from the Latin word *valere* means useful, capable, empowered, applicable, and powerful. The values are traits or (things) that are important or useful to humanity. It is an appreciation or a quality to something fundamental in the behavior of a person, something interesting or useful or profitable, and also a belief system [4].

### 2.2 Database

Database is a collection of data that is organized and stored neatly in the computer. It can be processed or manipulated by using a software resulting as an information. A Database is a logical collection of data or data descriptions that can be shared and created to obtain the information needed by the company [5].

### 2.3 MySQL

MySQL is a first database that was supported by a programming language script for the Internet (PHP and Perl). MySQL and PHP are considered to be the ideal software pairs for creating web application. MySQL is most commonly used to create web-based applications. Generally, in developing its application, it uses the PHP script programming language.

MySQL is a database that contains one or a number of tables. The tables consist of a number of rows and each row contains one or a number of tables. Furthermore, the table consists of rows and each row contains one or more tables [6]. Some of the advantages of using MySQL are high performance which allows users to work quickly; low fees or may not include any fees; licenses are open source; it is easy to learn and use. Nowadays, many databases use SQL because it remains easy to use on similar products. MySQL is portable and can be

used in several operating systems, such as Linux and Windows. The availability of source code is same as PHP, users can also modify the MySQL source code.

## 2.4 Website

Website or web is a collection of hyperlinks that go from one address to another with the HTML language (Hypertext Markup Language). The web can accommodate and provide a wide range of information needed with extensive coverage, since the information spreads globally through the website. Each of these websites provides its own information. It also has the ability to display text, graphics, sound and video simultaneously. In addition, The Web is also possible to design a multimedia-based online information system, therefore it can be accessible to anyone who access Internet by using Web Browser [7].

## 2.5 Cascading Style Sheet (CSS)

Cascading Style Sheet (CSS) is one of the Web programming languages to organize multiple components or elements in a web. Therefore, it is more structured and even with HTML or scripts [3]. It also has been supported by many browsers, especially the new version, therefore the layout placement is more flexible. Creating HTML using tagminimal affects the file size, it can display the main content first while the image and the other can be displayed afterwards.

## 2.6 Cloud Computing

Cloud Computing is a technology in which services and data on a system or application is no longer stored in a local computer, but rather stored virtually on the internet. Therefore, it can be accessed through many platforms and also easier to be shared with fellow users

## 2.7 Report card

Report card is the report of a student's learning activities for a certain period that is implemented in the form of value from a group of subjects. It is also followed by the assessment of personality, attitude and behavior. The study period entered in the form of a semester (6 months). [10]

## 2.8 Assessment

Assessment is the process of collecting and processing information to measure the achievement of student's learning outcomes. The assessment of learning outcome by educators is the process of collecting information/evidence of the student's learning achievement competences. It can be seen from spiritual and social attitudes, knowledge competencies, and skills competencies that are systematically done during and after the learning process. It also has the function to monitor the learning progress, learning outcomes, and detect the urge for continuous improvement of student learning outcomes.

## 2.9 The school Information System

The school Information System is the collection of information that supports the process of fulfilling the needs of the information. It is responsible for providing information in a unit process which aims to improve services on School.

## 3. RESEARCH METHODS

There are four steps that are performed on the methodology of this research. The steps of the study can be seen in Figure 1.

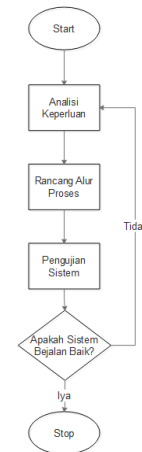


Figure 1. Research steps

The first step is analyzing the needs of the school, the teacher and the students. The analysis stage is to determine the application design in order to answer the needs of the user. The second stage is designing the process flow. Designing a process flows system is done in order to make the system to run according to defined procedures. The third stage is creating a system that suits the user needs. The fourth stage is conducting the system test. The applications that have been created are tested to know the errors and flaws that are present. If there are many errors or malfunctions in the system, then the workflow needs to be re-designed in order to fix the system malfunctions.

## 3.1 General Overview of the System

The research of the Website-based high school management system application has an overview that can be seen in Figure 2.

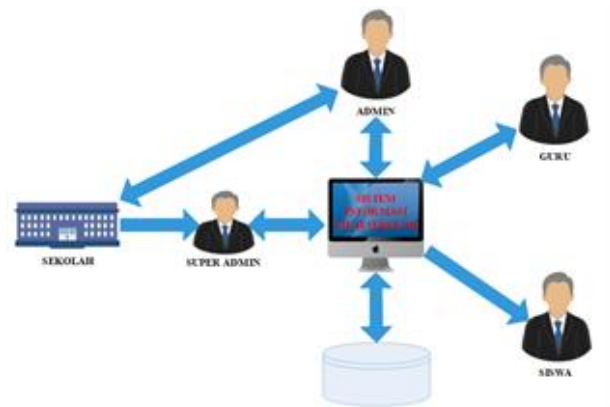


Figure 2. System Overview

This process starts from enrolling the school to the Information System (SI) and gets the authorization as an admin at each school. Then, new students that get accepted at the school are enrolled by admin, therefore they can access SIMANSE. Furthermore, they will get the display of student page that contains the profile, values and schedule.

## 3.2 Diagram Context

The diagram context aims to map the entire system in which there are three entities: Admin, teacher, and student. The diagram context of a Website-based high school management system will be described in Figure 3.

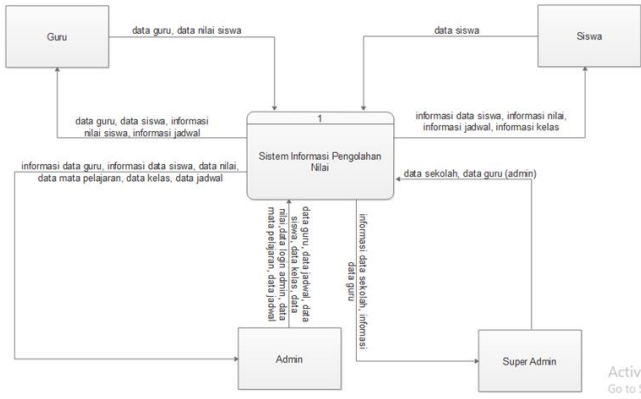


Figure 3. System Context Diagram

Figure 3 is the diagram context of the Website-based high school management system in which there are four entities: Super Admin, Admin, teacher, and student.

### 3.3 Data Flow Diagram

DFD Level 0 describes the data flow diagram that displays the entire system management process for each user. It will be described in Figure 4.

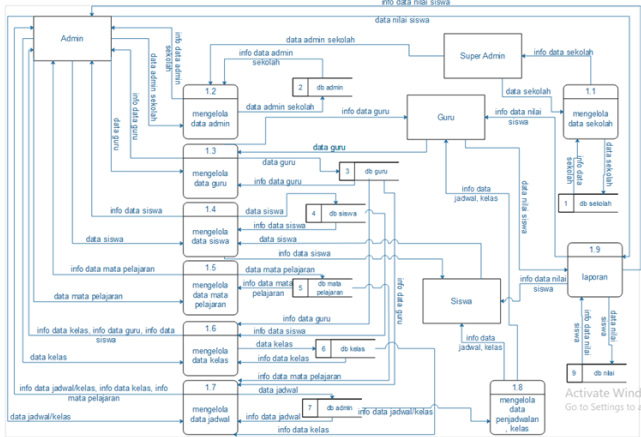


Figure 4. Data Flow Diagram

Data Flow Diagram (DFD) from a Website-based high school management information system that has been created. The DFD describes the data flow and explains the entire system management process of each user. Each flowline explains where the process takes place in managing the created system. The DFD of the system is managing the teacher data, student data, the subject data, student value data, student-class data, and print reports.

### 3.4 Entity Relationship Diagram

Entity Relationship Diagram is a design system tool that can display the overview of the inter-database relations design for the designed system.

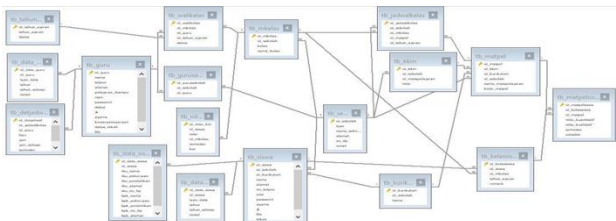


Figure 5. Entity Relationship Diagram

Figure 5 is a design of the created Web-based high school management information system. There are eighteen tables in the design of the database.

## 4. RESULT AND DISCUSSION

The results and discussion of the High school management Information system include system design results and website-based trial applications.

### 4.1 Home Display

Home display is the first place where the user will be redirected. Home displays the news from the registered school. In addition, it has a login module, download specific mobile applications and other functions.



Figure 4. Home

Figure 4. The home display has a function as the web's main display, which displays news. In order to run the module, the user must be logged in first and obtain the access rights.

### 4.2 Teacher's Dashboard

Teacher's dashboard is the initial display when the teacher has logged in. It is a place where the teachers can display student data. They also can manage the personal data, inputs student value, and print the report card if the teacher is the homeroom teacher.

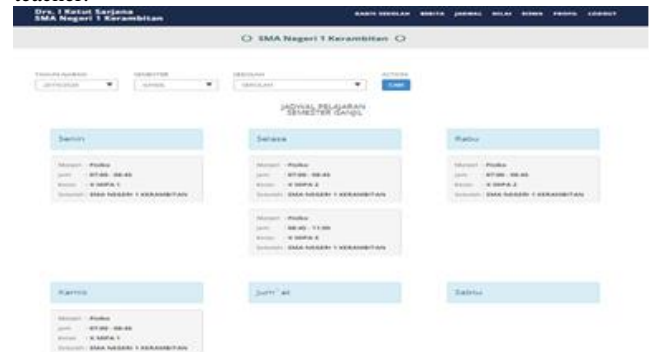


Figure 5. Teacher's Dashboard

Figure 5. Form of Dashboard when it is logged in by using teacher's access rights. It is a place where the teacher can display the teaching schedule, student value data or based on. The teacher has an access in inputting the value to their students based on the subject.

### 4.3 Student's Dashboard

Student's dashboard is the display when the student has logged in. It displays the schedule according to the class that they attend. They can manage their own personal data and there are several modules according to their functions.



Figure 6. Student's Dashboard

Figure 6. Student's Dashboard Form, where student can only see student value data, schedules, and school news. The students have their personal data that can be changed at any time if there are some changes in their data, such as address, phone number, and so on.

#### 4.4 Value Input Form

Value input form that the teacher owns is the form that is used to input the value of their students.

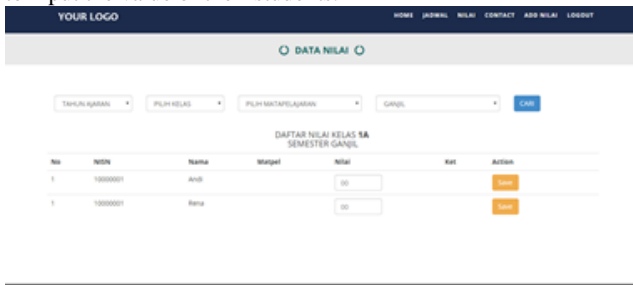


Figure 7. Value Input

Figure 7. The display when the teacher selects the value module in the previous Teacher Dashboard display. The teacher can input the value and it will come out automatically in the student's value. Also, they can see what the average value is earned by the students in that class.

#### 4.5 School Admin

School admin is held by an admin in every registered school. They assist the school in filling the data owned by the school.

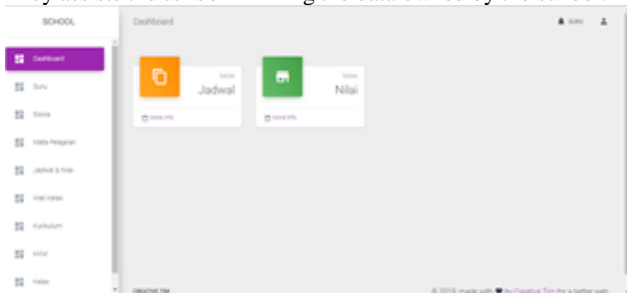


Figure 8. Home Admin

Figure 8. is a display of the school admin which consists of the teacher data, student, class, subjects, schedule and so on. It is based on what is needed in the learning and teaching process.

#### 4.6 Student Report

Student report is a feature that only owned by the homeroom teacher, which contains a summary of the student's value and attendance for the whole semester.

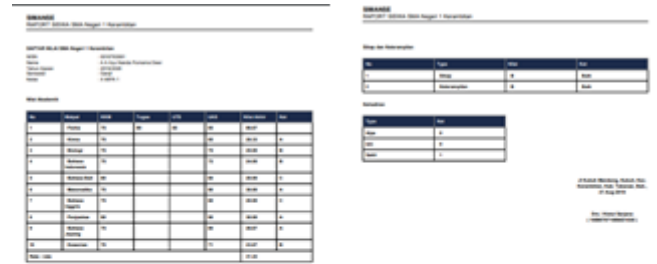


Figure 9. Student Report

Figure 9. is the display of the report of each student, where the report can be downloaded by the homeroom teacher on the Student menu.

#### 4.7 Additional Features

This application has several additional features, such as school news and student attendance that can only be accessed by school admins.



Figure 10. News

Figure 10. is the display of the news features that published by the school's admin, which contains news or announcements aimed at teachers and students in the school.

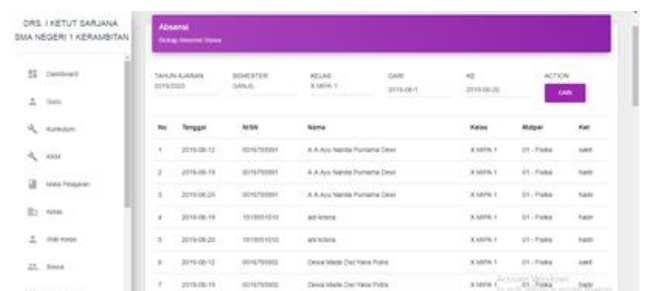


Figure 11. Student Attendance

Figure 11. is the display of the student attendance feature, where it summarizes the student attendance based on the start date until the end date of learning process. It is determined based on the required attendance data by the school admin.

#### 4.8 Super Admin Dashboard

Super Admin Dashboard has 3 modules, such as School module, teacher module, and dashboard module. The Super

Admin is the web owners who regulates the school and school admins.

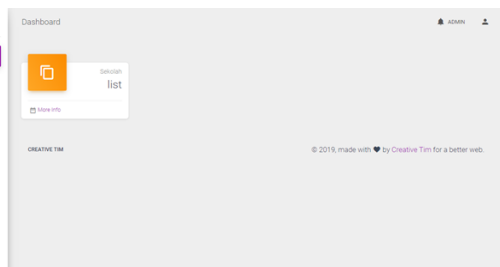


Figure 12. Super Admin Dashboard

Figure 12. is the display in the Super Admin or the web owner itself. The purpose of it is to not overwhelm the web owner when organizing school data, as in students and classes

## 5. CONCLUSION

The High School Management Information system is a web-based application that aims to increase the efficiency in managing the student value information and assist in managing school academic data. The system testing shows that it is successfully making the teacher manages the academic data easier and helps the student to access schedule and value information. Furthermore, the application can still be developed for the display and new features, such as Android implementation and the Web student Attendance feature. As the result, it will be easier to see their activeness in school.

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