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Analysis of User Requirements in the Development of Teacher Administration Applications : Case Report Vocational High School Of PGRI 1 Sukabumi

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Abstract: The online-based teacher administration system is expected to overcome problems in filling out teacher administration. At present, regulatory arrangements are still carried out physically, so educators spend most of their time working on these matters. Therefore, a superior administration system is needed. The purpose of this research is to make it easier for educators to manage administration online. In the process of making this system, researchers used the Linear Sequential Model method or commonly called the waterfall which is able to display accurate and useful information in assisting the development of this software. The results of this study are a website-based teacher administration system application that functions to make the work of educators much faster and the data stored in this application is much safer than manual administration.

Keywords: Systems, Administration, Web, Educators

1. Introduction

Business processes in the implementation of Education consist of several processes, including registration, academic processes, and others. Academic management is one of the most influential factors in the quality of learning, this is reflected in teaching and learning activities which determine the success of the learning process which leads to student competency.

The use of applications in handling business processes in an Institution can support increasing the effectiveness and efficiency of the process, as was done by the PGRI Madiun University which has implemented LMS in schools to improve the learning process during the covid pandemic (Nila Andriani & Dhaoud Daroin, 2022), then there is DAPODIK which was developed by the Bureau of Planning and Foreign Cooperation known as the PKLN Bureau in 2006 to manage teacher and student data, in 2014 the Ministry of Education and Culture has held UNBK (Computer-Based National Examination) using the CBT application, in 2017 the Ministry of

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Education and Culture has developed an e- SMP version 1.0 report cards to manage final assessments digitally, then there is EDMODO which has been successful as a social media that manages teaching and learning activities which was founded in 2008 by Nicolas Brog and Jeff O'hara (Nur, 2021), , as well as Google which has released many applications such as Google Classroom, drive, email and others that can be used as digital learning media.

Vocational High School Of PGRI 1 Sukabumi is one of the schools engaged in information and management systems. In the process of implementing academic activities, the school carries out planning, implementation, documentation and evaluation processes. In the process of managing academic activities, the teacher becomes the main actor. In practice, the teacher experienced several difficulties so that it took time to manage these academic activities. Based on this, it is interesting for researchers to solve problems that occur at Vocational High School Of PGRI 1 Sukabumi, especially related to teacher administration, to solve the problems faced by the PGRI 1 Vocational High School in Sukabumi City, researchers found that several previous studies had carried out application development through several process models such as SDLC, agile, xp, wordpress, code igniter, laravel and others to create teacher administration applications, in each model In the process, there are user requirement activities which are the starting point for the development of teacher administration applications Vocational High School Of PGRI 1 Sukabumi. Therefore, researchers are interested in conducting user requirement analysis which can be used to determine the needs of teacher administration applications.

The benefits that researchers hope for in making this administrative system for Vocational High School Of PGRI 1 Sukabumi are to create a system that can be accessed at any time, so that it can facilitate the management of agendas, attendance and student assessment, as well as fast and accurate reporting.

2. Methodology

2.1. Literature Review

2.1.1. Software engineering

From various writings, we can conclude that computer programming is: A science that discusses aspects of software, starting from the stage of capturing requirements (analysis of user needs), determining specifications of user requirements, coding design, testing to maintenance after use (Irmayani, 2014).

2.1.2. Information Systems

The system is a collection of elements on a network that work regularly, information is a result of collecting data on several processes in the system so that it can be given to the community (Dengen Heliza Rahmania Hatta, 2009). The information system is an activity that takes all aspects of obtaining, combining or storing and using information to achieve the goals of the system (Swara et al., 2016). An information system is made to meet the needs of certain uses, so each information system's working procedure is different depending on the needs and requests that must be achieved (Tejoyuwono, 2006).

2.1.3. CodeIgniter

CodeIgniter is an application framework that utilizes the concept of MVC (Model, View, Regulator). This PHP structure can be a tool for a web designer to create websites more effectively because it provides complete assets (Sulistiani & Hendra Saputra, 2020).

2.1.4. Various classifications of software development methodologies

First, according to Ian Sommerville, the process model is divided into four, namely: Prototyping (Transformative) Advancement Model, Formal Framework Improvement Model, Reuse-situated programming, and Cascade Advancement Model. Second, according to Pressman, the product improvement process model is divided into 5 strategies, namely: Linear Sequential Model or waterfall Model, Incremental Process Model, Evolutionary Process Model, RAD (Rapid Application Development) Model, and Concurrent Model (Setiya Budi et al., 2016).

2.1.5. Waterfall method

The waterfall method which is often called the waterfall strategy is often called the classic life cycle, the name of this model is actually the "Linear Sequential Model" which describes the proper and sequential way to handle programming improvements, starting with the specific needs of the client. then, at that point, proceed

through the phases of arranging, demonstrating, developing, and delivering the framework to the client, concluding with assistance for the overall programming created (Wahid, 2020).

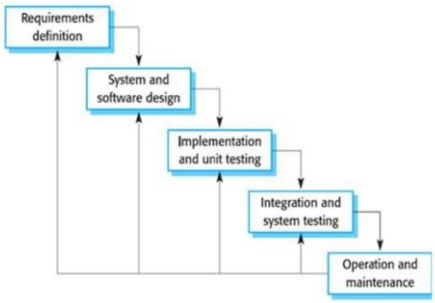

Fig. 1 - Waterfall method (Sasmito et al., 2017)

2.1.6. Unified Modeling Language

used to define requirements, analyze and design, and explain object-oriented programming architectures in the industrial sector. UML is a computer demonstrating and visual correspondence language that uses lines and text support. Therefore, UML is not limited to a single method (Rambe et al., 2020).

2.1.7. Database

database is very helpful for an organization, storage capacity and executive information are the most interesting things that can be relied upon, with the use of data sets, then at that time monitoring and obtaining information will become easier and faster (Septanto, 2021). According to (Ramadhan & Mukhaiyar, 2020) database is a system for organizing, storing and retrieving data easily. A collection of digital data sets for one or more uses forms a database. The computerized database is monitored using a database management system (DBMS), information creation and maintenance authorization, and searching and accessing others. The following are examples of available databases: Sql Server, MySQL, and Ms. Access, oracle, and PostgreSql.
Here's the database function (Sucipto, 2017):

1) Simplify data by grouping data, for example by creating different tables or fields in several tables.
2) Restricting information
3) Advance capacity
4) Be one of the other choices regarding problems in saving space in applications
5) Ways to make it easier for users to use, such as entering new data

2.1.8. MYSQL (My Structured Query Language)

MySQL is a database that originally only worked for Unix and Linux work. In the long term and the large number of enthusiasts who use this data set, MySQL provides forms that can be installed on almost all platforms, including Windows (Rini Sovia & Jimmy Febio, 2021).

2.2. Phase Of Development

2.2.1. System Design

System design is expected to provide educators with knowledge about innovation, especially in the field of information systems, a reasonable picture according to the needs of the client of the system, provide details proposed to the client by analyzing the shortcomings of previous systems and planning applications that facilitate clients (Nopriandi et al., 2018).

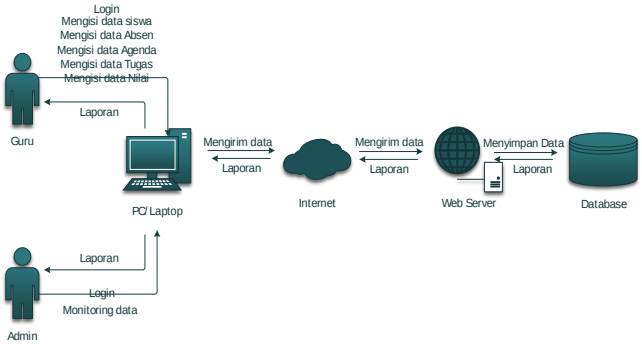

Fig. 2 - System Design

Description of the proposed system.

1) The task of the admin is to monitor the entire data, the data monitored is in the form of graphs and tables
2) Educators fill in the necessary data such as attendance, agenda and assessment
3) How a PC / Laptop works here as a means of filling in data that will be filled in educators, and sending it to a web server via internet access and stored in a database.
4) The Internet is a public computer network that is used to transfer data to be stored in the Database (Pendidikan & Konseling, 2020).
5) Web Server to transfer data that has been managed by the Admin which will be stored in the Database.
6) The database is used as a storage medium for the teacher's administrative data.

2.2.2. Use Case Diagram

Use Case: Describes the expected usability of a framework, and discusses communication between entertainers and frameworks. In the case of utilization, there is an entertainer is a description of the human substance or a framework that deals with the affairs of the framework (M Teguh Prihandoyo, 2018). The results of the evaluation of the ongoing system and some problems that have been analyzed by the author, the solution of the existing problems the author designed the appropriate Use case diagram (Setiyani, 2018). The proposed use case diagram is as follows.

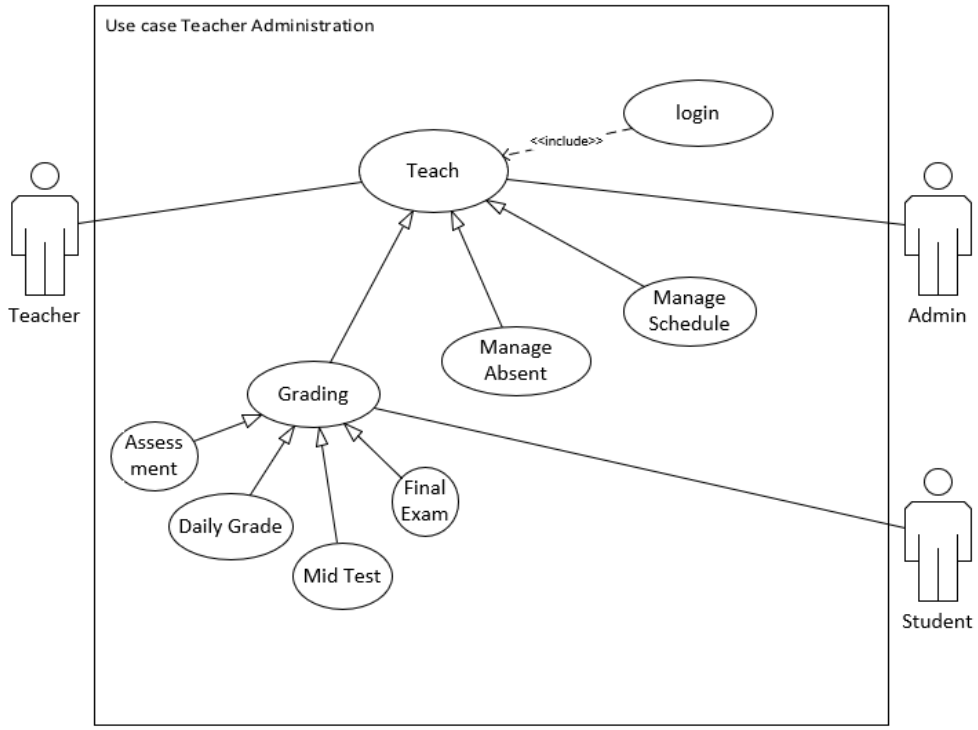

Fig. 3 – Use Case Diagram

Actor Identification

The role actors play in running the system can be seen in the table below.

Table 1- Actor Identification

No	Actor	Description
1.	Admin	The person responsible for managing the system as a whole
2.	Teacher	People who access the system and input attendance data, agendas and student assessments.

No	Actor	Description
3.	Student	View Values and fixes

2.2.3. Class Diagram

Class diagrams or class diagrams illustrate the structure of the system. That is to determine the classes that need to be created to build the system (Syarif & Nugraha, 2020). Here is the class diagram created.

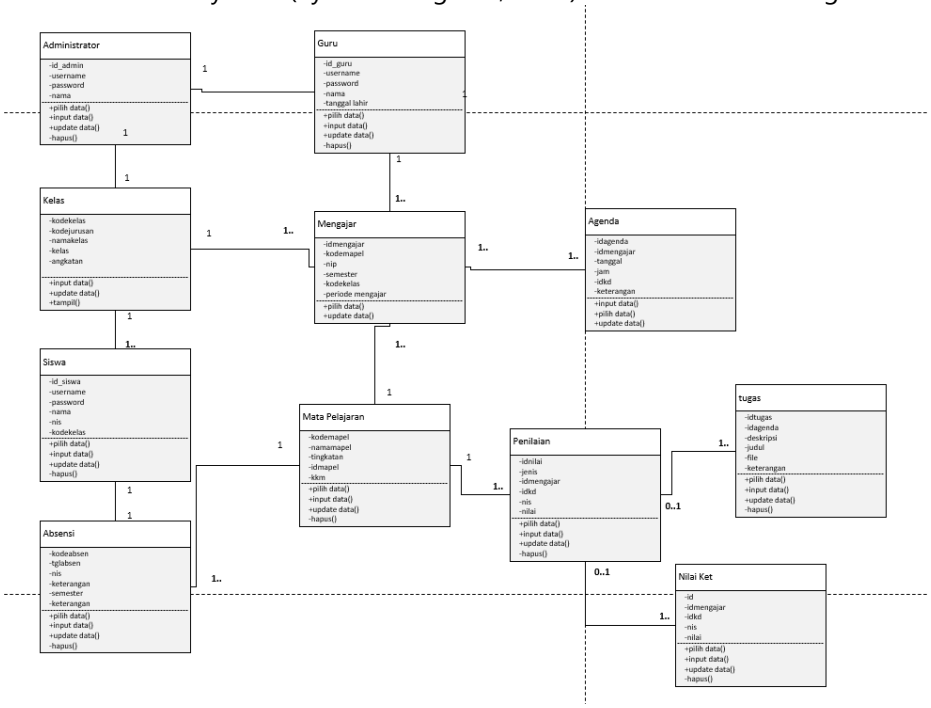

Fig. 4 – Class Diagram

Table 2- Class Diagram Identification

Class Name	Description
Administrator	This class to manage teacher, student and other.
Guru	This class to manage class diagram from teaching, schedule dan grading student
Siswa	Its fungsion for viewing their grade
Kelas	To Grouping Student
Mata pelajaran	To Grouping Lesson Of Subject
Mengajar	Action from lesson schedule
Agenda	To schedule Lesson
Absensi	Make student absent
Penilaian	Grading Student

3. Result and Discusion

3.1. Hardware Implementation

Hardware itself consists of the implementation of the computer as a system building device and the device that runs the application. The following hardware specifications are implemented during system construction:

1) Processor : 2 GHz
2) RAM : 4GB
3) HDD: 100 GB

3.2. Software Implementation

The software used in the construction of this information system is as follows

1) OS Window 10 64 bit

2) Sublime Text 3
3) XAMPP
4) Hosting

3.3. Interface Implementation

Interface implementation is applied to every application page created, be it an interface that directly crosses with the user or more commonly referred to as the frontend. backend admin section

1) Login Page
   Login Page is a Login page created based on the analysis that the author made, Implementation of the Login page interface

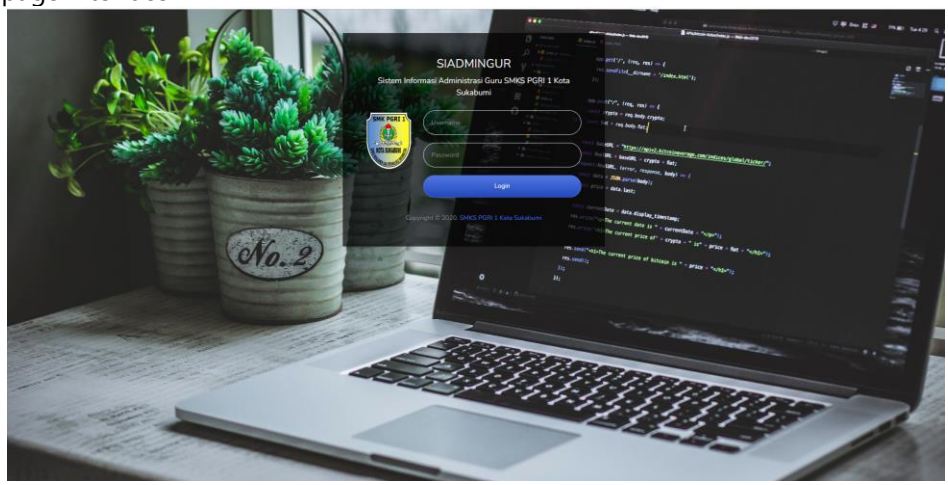

Fig. 5 – Login Page

2) Main Page
   The main admin page is the main page created based on the analysis that the author made, the implementation of the main page interface.

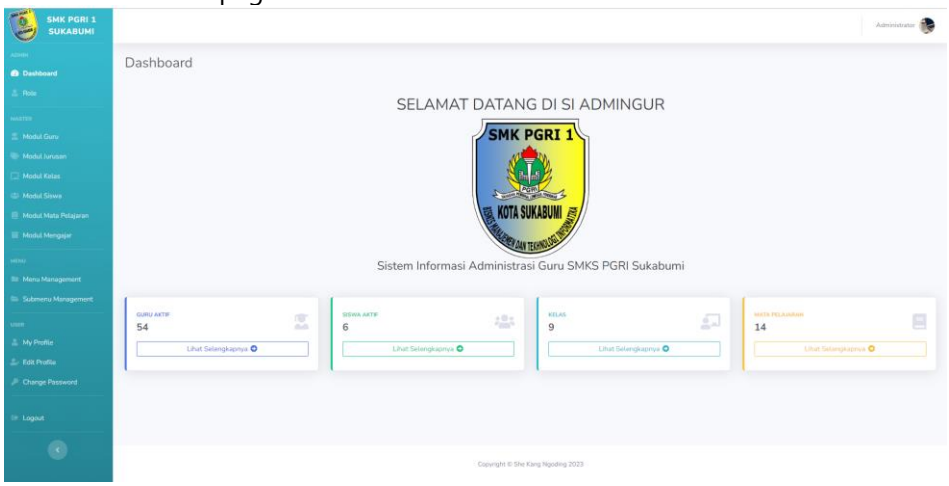

Fig. 6 – Main Page

3) Schedule Page
   Schedule page is a page to manage schedule data of teachers who are members of the class based on the analysis that the author made, Implementation of schedule page interface.

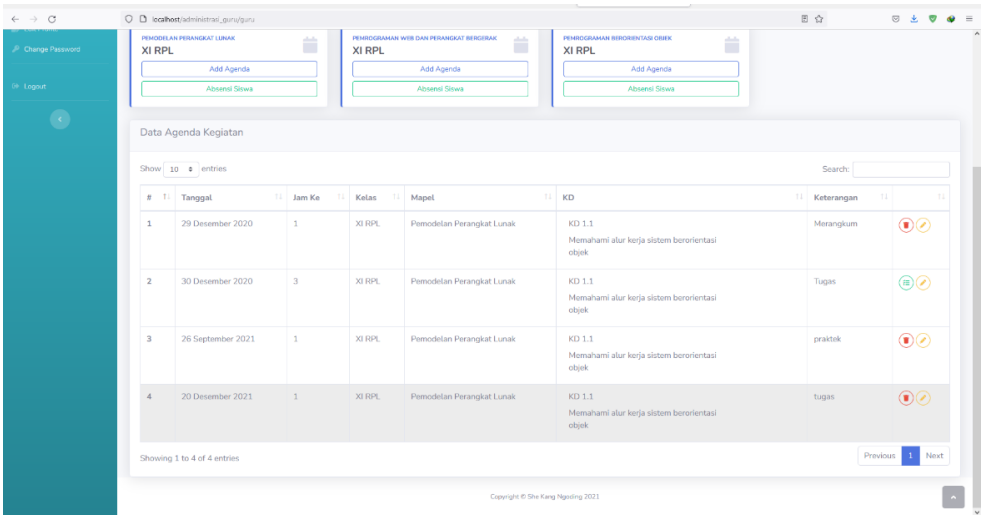

Fig. 7 – Schedule Page

4) Grading Page

The assignment grade page is a page for managing student assignment grade data that is incorporated in the class based on the analysis that the author made, Implementation of the assignment page interface

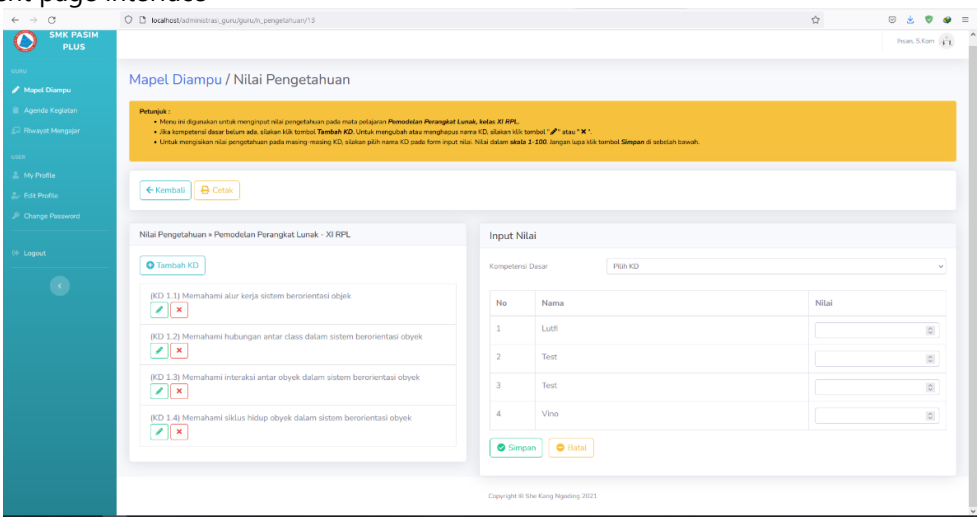

Fig. 8 – Grading Page

3.4. System Testing

This testing is done using the black-box method so that the software can be known to work or not, Black-box testing checks the functionality of the application to ensure that the application can fulfill its responsibilities (Febrian et al., 2020).

Table 3- Test Results

No	Description	Expected results	Test Results	Conclusion
1.	User Login and Registration	The system can login and create a new account	Successful Login and Register New Account	Success
2.	Add Student	The system can add new student data	Successfully Add Student Data	Success
3.	Add educator data	The system can add educator data	Successfully add educator data	Success
4.	Educators Add Student	The system must be able to add student attendance data	Successfully add student attendance	Success

	Attendance Data			
5.	Add an Educator Activity schedule	The system must be able to add data on schedule educators' daily activities	Successfully Add schedule data	Success
6.	Add student grade data	The system can conduct the student assessment process and make appropriate reports	Successfully Manage Student Assessments	Success
7	Monitoring Data Entry and Exit	Admin/Principal is able to monitor the entry and exit of data	Successfully Monitoring Data	Success

Based on the results of testing the entire system it is known that the system can run well, the application is able to provide convenience for educators so that educators can do administration more efficiently, using the waterfall method from several other studies (Farhana Nurul Amalia et al., 2022). It can very effectively and efficiently support the software development process under study.

4. Conclusion

Teacher administration management is not difficult, but the amount of work of a teacher sometimes makes it difficult for us to divide time, therefore this web-based teacher administration system was created, filling in data can be done anywhere in real-time. With this web / software administrative management becomes much easier than teachers have to fill in manually, especially if the teacher administration book is lost, of course you have to repeat filling from the beginning, by using this web / software, data will be stored safely, teachers must also have an account first to enter the available web pages, So teachers don't have to worry about missing data and scrambled data by others.

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