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Website-Based Management of School Committee Institutional Development Contributions

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Abstract—One form of community participation in providing education is the formation of a School Committee. The School Committee acts as an independent body that accommodates and places the community's initiative aspirations in forming school policies and school programs in the education unit. Likewise with the School Committee at SMP Negeri 1 Kaloran. The School Committee is given the authority to manage Institutional Development Contributions from students. Currently, the management of institutional development donations still uses manual methods which still poses several risks in managing this data. This research aims to develop a website-based school committee institutional development donation management information system using the CodeIgniter framework by applying the waterfall method in developing the system. To design the system, the UML method is used with use case diagrams and class diagrams as an illustration of system design. Meanwhile, in system testing, the black box testing method with a Likert scale is used to determine the feasibility of the implemented system. The system was successfully implemented with system test results of 90.33%. This shows that the system is feasible to implement and has met user needs.

Keywords: Codeigniter, Institutional Development, Likert Scale, Management Information Systems, School Committee

I. INTRODUCTION

One form of community participation in the implementation of education is the formation of a School Committee[1]. With the formation of a School Committee, the community will feel like they own the school. On the other hand, schools can reduce their dependence on government bureaucracy[2]. This bureaucracy can reduce various intervention actions carried out by the government against schools[3]. Too much intervention from the government will make it difficult for schools to develop and be independent so that schools tend to obey only in carrying out orders from the government[4]. The School Committee, as an institution at the school level, should maximize its duties and functions in developing effective schools. Schools can be more effective without having to intervene from the government by developing schools with a school culture, not a bureaucratic culture [5].

The School Committee acts as an independent body that accommodates and places the aspirations of community initiatives in forming school policies and school programs in educational units.[6]. However, due to a lack of understanding of the purpose of forming a School Committee, the role of the School Committee is only focused on the problems of building school buildings and education costs for students. The synergy between the School Committee and the school has resulted in the birth of a joint responsibility between the school and the community as working partners in developing education, from here the community will be able to channel various ideas and participate in advancing education in their region. This shows that the position of the community in providing education is very important, especially to improve the quality of schools, as well as making the school an effective school[7].

Likewise with the School Committee at SMP Negeri 1 Kaloran. In this case, the School Committee is given the authority to manage Institutional Development Contributions from students. However, the method used to manage it still uses conventional methods and is not connected to either a wireless connection or a local network. This method raises several quite crucial problems. This creates a sense of distrust towards fellow managers. Data inaccuracies between recorded data and data in the field have gaps. This makes it difficult for information to be conveyed quickly and in real time. Apart from that, the inaccuracy of information that occurs causes the class teacher to be less precise in providing information to students and guardians when taking student learning results.

Based on these problems and seeing the benefits obtained by using a supporting information system, this research will design a website-based school committee institutional development contribution management information system to make it easier for users, able to manage the required data into desired information, able to manage related data easily. such as searching for data, sorting data and displaying data and has a good level of security.

a Currently developing web-based information systems is easier if you use the right PHP framework [8], [9]. A framework is a collection of instructions collected in classes and functions with their respective

functions to make it easier for developers to call them without having to write the same program syntax over and over again and can save time. [10] [11].

SDLC development methods that can be used in developing systems are waterfall, prototype, RAD, iterative and spiral methods [12]. In this research, waterfall is used as a development method in designing the required information system. The advantage of using the waterfall method is that requirements must be defined in more depth before the coding process is carried out, besides that the implementation process is carried out in stages from the first stage to the last stage sequentially[8].

The CodeIgniter framework is a PHP framework that can help speed up developers in developing PHP-based web information systems [13],[14][15]. CodeIgniter uses the Models View Controller (MVC) model which is very suitable for creating dynamic websites [14]. MVC itself is a technique used to separate main components into several parts. This is done to build a pattern when developing a system [11], [16].

II. RESEARCH METHODS

The method for designing a website-based school committee institutional development donation management information system in this research uses the waterfall process model. The Waterfall model is a classic model that is systematic, sequential in building software [17]. In the waterfall method, the stages you go through must wait for the previous stage to complete and proceed sequentially [12], [18]. The phases in the waterfall process model are presented in Figure 1.

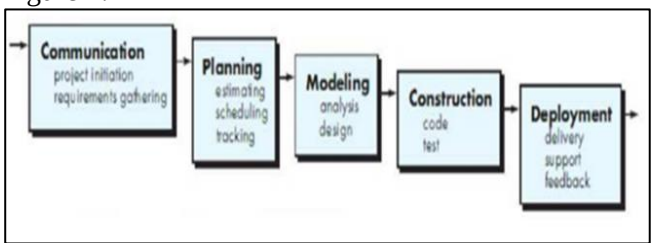

Figure 1. Waterfall Development Model

The waterfall method used in building a management information system for institutional development contributions in this research has the following stages:

1) Communication

At this Communication stage, data was collected by means of literature study, observation and interviews with users of the website-based school committee institutional development contribution management information system at SMP Negeri 1 Kaloran.

2) Planning

Furthermore, at this stage a plan for work is determined which includes the technical tasks to be carried out, risks that may occur, resources needed, results to be created and work schedule.

3) Modelling

At this stage, an analysis of system requirements is carried out regarding what data is needed to create the system. This process focuses on data structure design, software architecture, interface representation and procedural details. In this stage, it produces software design using Unified Modeling Language (UML), data analysis and database schemes as well as designing user interfaces for website-based school committee institutional development contribution management information systems.

4) Construction

At the Construction stage, the process of creating code and testing is carried out. Coding is carried out by translating the design into a language that can be recognized by a computer. At this stage, the development of the information system contributed to institutional development is in accordance with the system modeling plan and then implemented in the PHP language with the Codeigniter framework and MySQL as data management in the database. Next, system testing was carried out using the black box testing method to find out whether the institutional development contribution management information system was in accordance with user needs. Black box testing is a system testing method that focuses on the functional specifications of the software without having to pay attention to software details. Black box testing works by entering data in each form. By using this method the level of functionality of the system being developed can be determined when there is inappropriate input, as well as ensuring that all features are running properly.

5) Deployment

To ensure that the institutional development contribution management information system is ready for use, it is necessary to train users regarding the procedures and methods of operating the system. The training is also carried out as a form of support and feedback in ensuring that users' needs for the system are met.

III. RESULT AND ANALYSIS

The results of designing an archives management information system using the waterfall process model in this research are explained as follows:

3.1User Access Rights Management

User management is intended to limit user access rights according to each user's needs for the system as follows:

1) Administrator

Administrator access rights are able to manage user data, class data, student data, study group data, school year data, income data, expenditure data, view summary reports, institutional data and perform database backups.

2) The Treasurer's

The treasurer's access rights are able to manage class data, student data, study group data, school year data and income data.

3) Headmaster

The headmaster access rights are to be able to view income information, expenditure information, daily help book information and report recapitulation information.

4) Class Teacher

Class teacher access rights are able to view student information and study groups according to the class they have. Apart from that, the homeroom teacher is also presented with information on donations that have been made by students according to the study group that the homeroom teacher belongs to.

3.2Use Case Diagram

Use Case diagrams are intended for actor and use case relationships according to user access needs [19], [20]. The following is a draft use case diagram for the system used.

1) Administrator Use Case Diagram

The administrator use case diagram explains the access rights that can be exercised by users with the administrator user type. The administrator use case diagram is presented in Figure 2.

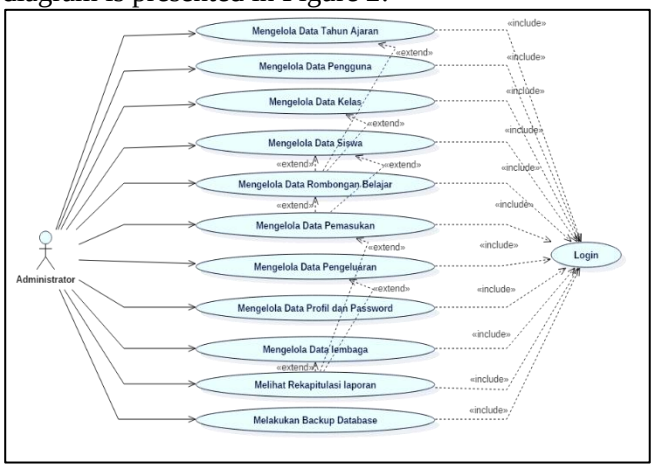

Figure 2. Administrator Use Case Diagram

2) Treasurer's Use Case Diagram

The treasurer's Use Case diagram displays cases that can be accessed by users with access rights as treasurer which are presented in Figure 3.

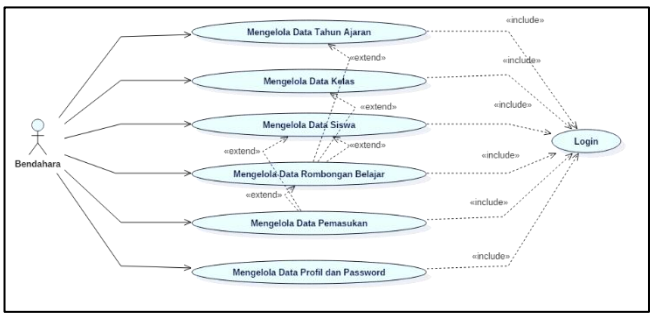

Figure 3. Treasurer's Use Case Diagram

3) Headmaster Use Case Diagram

The principal's Use Case diagram depicts cases that can be carried out by the principal based on access rights to the system. This use case diagram is presented in Figure 4.

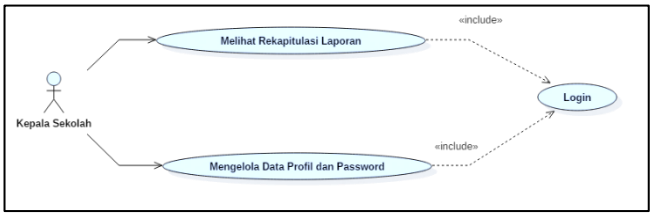

Figure 4. Headmaster Use Case Diagram

4) Teacher Class Use Case Diagram

The homeroom teacher's Use Case diagram depicts cases that can be carried out by the homeroom teacher based on access rights to the system. This use case diagram is presented in Figure 5.

Figure 5. Teacher Class Use Case Diagram

3.3 Class Diagram

A class diagram is a diagram that shows the relationship between classes of programs that have been created in relation to each other [19], [20]. The class diagram can be seen in Figure 6.

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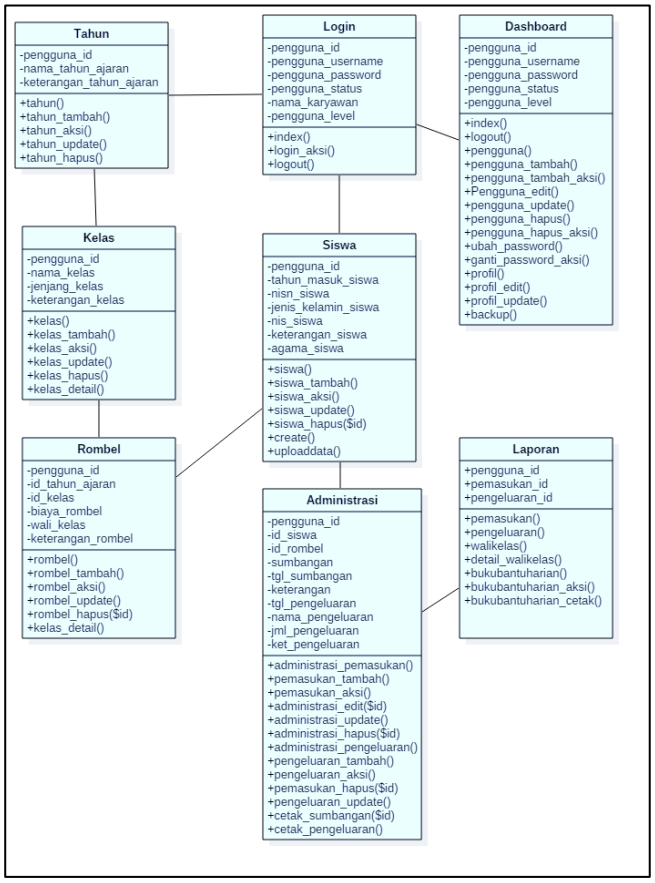

Figure 6. Class Diagram of Institutional Development Contribution Management Information System

3.4System Implementation

The implementation of a website-based school committee institutional development contribution management information system was built using the PHP and MySQL programming languages with the Codegniter framework. The system implementation carried out is as follows:

1) Login Page Implementation

The login page will be the first page accessed. This page is used for users to enter the system by inputting the username and password presented in Figure 7.

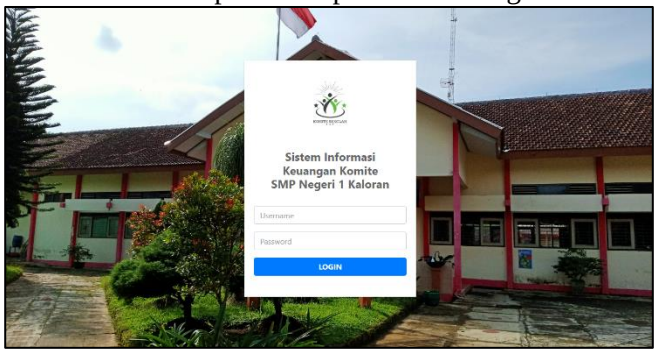

Figure 7. Login Page Implementation

2) Dashboard Page Implementation

After the login process is successful, the user will be presented on the system dashboard page. This page displays information regarding all data that has been managed according to the access rights presented in Figure 8.

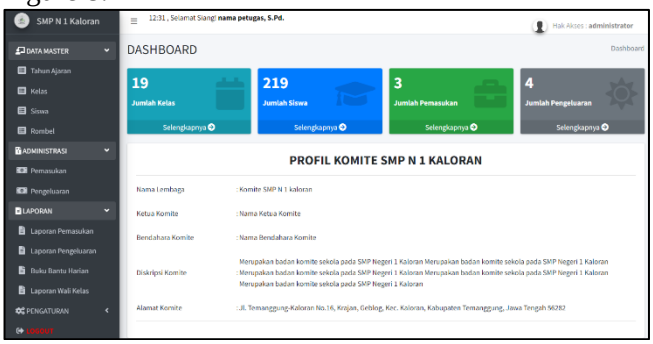

Figure 8. Dashboard Page Implementation

3) Implementation of Academic Year Pages

The school year page is used to manage school year data according to user needs. The school year management page is presented in Figure 9

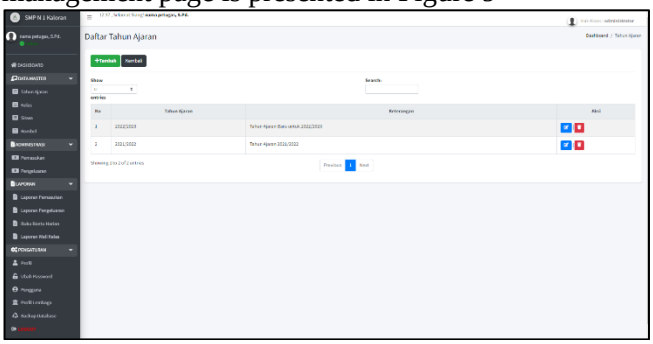

Figure 9. Implementation of Academic Year Pages

4) Class Page Implementation

The class page is used to manage class or room data owned by SMP N 1 Kaloran according to the data held. The class page is presented in Figure 10.

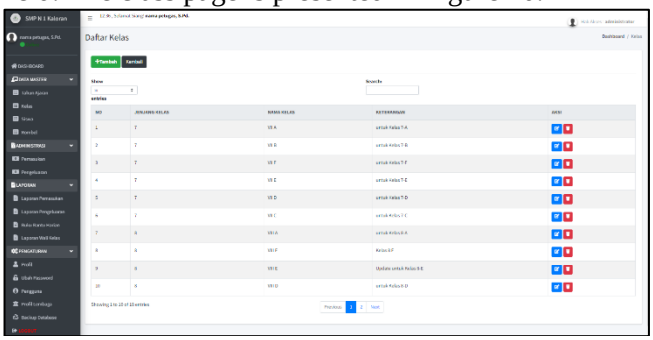

Figure 10. Class Page Implementation

5) Student Page Implementation

The student page is used to manage all student data. On this page, users can add new students, edit and update changes to data and delete student data under certain conditions. Apart from that, this page

provides a feature for importing student data via an Excel file. The page is presented in Figure 11.

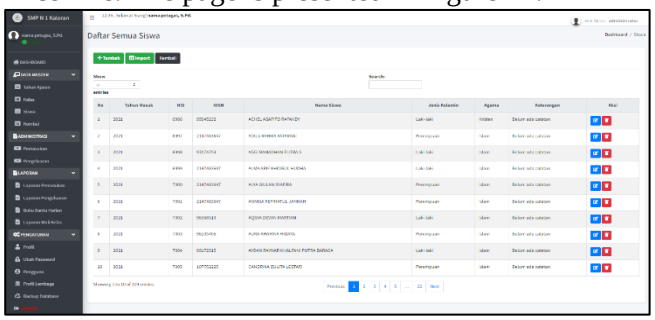

Figure 11. Student Page Implementation

6) Implementation of the Study Group Page

This page is used to manage data on study groups or classes that are running based on class needs according to the current academic year. On the study group page, a feature is also provided to determine the homeroom teacher for each existing study group. The implementation of the study group page is presented in Figure 12.

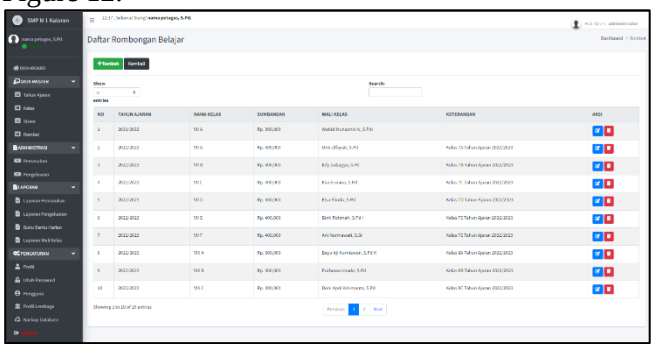

Figure 12. Implementation of the Study Group Page

7) Implementation of Entry Page

The income (administration) page is used to manage institutional development donations received from students. On this page, a feature is provided for gradual payments according to the student's abilities, up to a maximum of 4 payments. The income page also provides a receipt printing feature for each student, each transaction and a recapitulation of student donations. The institutional development contribution income page for this research is presented in Figure 13.

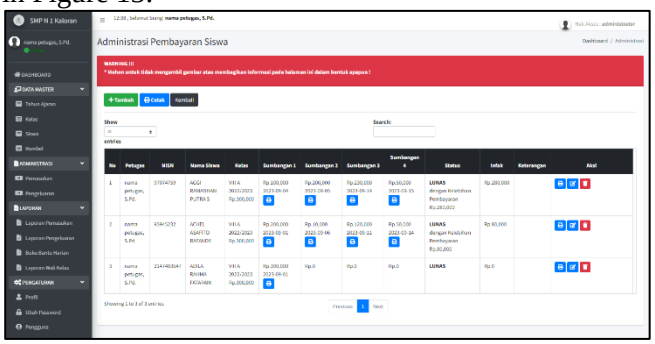

Figure 13. Implementation of Entry Page

8) Outcome Page Implementation

The expenses page is used to manage expenses made by the school committee. On this page, a feature is provided to print expense reports based on the required period. The implementation of the expense page is presented in Figure 14.

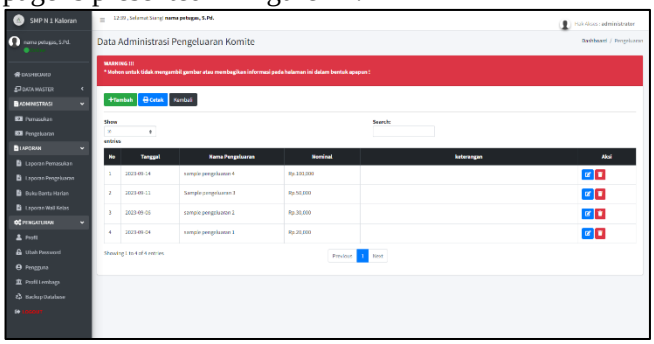

Figure 14. Outcome Page Implementation

3.5 System Testing

System testing is carried out to test that each functionality in the website-based school committee institutional development contribution management information system meets user needs [21]. Apart from that, the purpose of system testing is also to ensure that there are no bugs or errors in all the features of the system and to guarantee the quality of the applications created to match the design.[22].

Testing is carried out using the black box testing method by focusing on system functionality test data [23], [24]. The test scenarios were carried out on system features with a total of 55 test scenarios. Testing was carried out on 12 respondents according to user access rights. This was done with the aim of knowing user feedback and evaluation using a Likert Scale. The Likert scale is used to measure a person's perception, attitude or opinion towards an event based on the operational definition determined by the researcher. The formula used in calculating the Likert Scale is shown in Equation 1.

$$Skor = T \; x \; P_n \quad \text{..... (1)}$$

Wherein,

T = Total number of respondents who voted

P_n = Choice of Likert score numbers

The results of user evaluation based on Equation 1 are as follows:

- Respondents Strongly Agree = 67 x 5 = 335
- Respondents Agree = 48 x 4 = 192
- Respondents Disagree = 5 x 3 = 15
- Total Score = 335 + 192 + 15 = 542

Next, the system test feasibility percentage is carried out based on Table 1.

Table 1. System Testing Feasibility Percentage

No	Appropriateness	Percentage (%)
1	Very Worth It	80 - 100
2	Worthy	60 – 79.9
3	Decent Enough	40 – 59.9
4	Not feasible	20 – 39.9
5	Totally Not Worth It	0 – 19.9

To calculate the feasibility percentage, system testing is carried out using Equation 2.

$$Persentase\ Uji = \frac{Skor\ Total}{y}\ x\ 100\% \quad \text{.....(2)}$$

Wherein,
Total score=Total score of respondents who voted
Y =Highest Likert score x Number of respondents

Based on Equation 2, the percentage of test feasibility is obtained as follows

$$Percentage\ Test = \frac{542}{600}\ x\ 100\%$$
$$= 90.33\%$$

Based on the results of user testing and evaluation using a Likert scale, the percentage was 90.33%. In accordance with the system test feasibility percentage in Table 1, it is concluded that the website-based school committee institutional development contribution management information system is very feasible to be implemented at SMP Negeri 1 Kaloran.

IV. CONCLUSION

Conclusion of this research is that the process of designing and developing a website-based school committee institutional development donation management information system has been successfully carried out to resolve existing problems at SMP Negeri 1 Kaloran. This is proven by testing the system using the black box method that all functional features of the archive management information system can operate well with a test feasibility score of 90.33%. This means that the system is very feasible to implement. The information system can provide significant benefits, especially in increasing the efficiency of the process of receiving institutional development donations, faster access to income and expenditure data as well as recapitulation of reports and daily aid books for school committees. The research that has been carried out contributes to the development of management information systems in education which can help improve the quality of school services to students and the community.

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