

Research and Develop of Student Information System for Kindergarten in Klojen Malang

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Research and Develop of Student Information System For Kindergarten In Klojen Malang

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Abstract - In the world of education, use of information technology can be use Academic Information Systems, e-Learning System, Web-based Education at High School level, School of Information Systems for middle school and Student Information System for pre-primary school level or elementary school. Use of Student Information Systems, at the level of ECD (Early Childhood Education) needs to be put into use in order to improve services to stakeholders.

The process of recording and administration of the kindergarten ABA 17 has been recorded using Microsoft Office. For kindergarten ABA 5 are still using document on paper-based records made hard to organized, mean while there's a limited number of employees for Administration. This can cause a decrease in the value of the trust the parents of students who will have massive effects associated stakeholder satisfaction in this case the parents to the school administrative services.

The resulting output of this research is a software based of web for Student Information System. This information system will be used to improve academic services to students including the parents. Improved academic services to students be the main goal of this Student Information System, also used to improve the competitiveness of schools while number of students increasing from year to year.

I. INTRODUCTION

The development and advancement of information technology goes very fast. Along with the development of information technology and the delivery of data storage is getting cheaper and better quality for used as individuals or institutions and for thats reason governments also involved to make efforts to take advantage of those technology.

The development of information and communication technology today has implications in education worlds. In the world of education, the advantage of information technology can be used as Academic Information Systems, e-Learning System, Web-based Education at High School level, and Student Information System.

Kindergarten ABA 17 so far has been trying to build a student information system, but because of the lack of knowledge about information systems. Revenues from donations from students parent is not enough to support school operations, even more to bulid a student information system, it is in conflict with the commitment of schools that want to provide good service for students and parents. Similar

conditions also experienced in Kindergarten ABA 5 only in this kindergarten still trying to improve school quality and service so that school accreditation can raise from grade B into A, one of their evort to raise that grade is by make improvemant of student administration.

II. SYSTEM DEVELOPMENT LIFE CYCLE

A. Waterfall

Waterfall approach was first SDLC Model to be used widely in Software Engineering to ensure success of the project. In "The Waterfall" approach, the whole process of software development is divided into separate phases [1]. In Waterfall model, typically, the outcome of one phase acts as the input for the next phase sequentially.

To develop this Academic Information System is using waterfall method which consists of 5 stages, that's 5 stage:

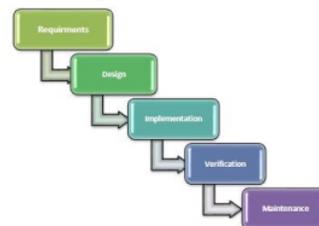


Figure 1. Waterfall Method

1. Requirement Gathering and analysis: All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification doc.
2. System Design: The requirement specifications from first phase are studied in this phase and system design is prepared. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture.

3. Implementation: With inputs from system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.
4. Integration and testing: All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.
5. Deployment of system: Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.
6. Maintenance: There are some issues which come in the client environment. To fix those issues patches are released. Also to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

B. PHP

PHP is a programming language for building dynamic, interactive Web sites. As a general rule, PHP programs run on a Web server, and serve Web pages to visitors on request. One of the key features of PHP is that you can embed PHP code within HTML Web pages, making it very easy for you to create dynamic content quickly [2]. This programming language is used to build this student information system.

PHP is used to build this system cause this programming language can make a server-side scripting language, which means that PHP scripts, or programs, usually run on a Web server. PHP is also can be used as an interpreted language — a PHP script is processed by the PHP engine each time it's run so it can be easily modified and maintained.

This process below can describe how PHP works:

1. A visitor requests a Web page by clicking a link, or typing the page's URL into the browser's address bar. The visitor might also send data to the Web server at the same time, either using a form embedded in a Web page, or via AJAX (Asynchronous JavaScript And XML).
2. The Web server recognizes that the requested URL is a PHP script, and instructs the PHP engine to process and run the script.
3. The script runs, and when it's finished it usually sends an HTML page to the Web browser, which the visitor then sees on their screen.

C. SQL

SQL is the de facto standard language used to manipulate and retrieve data from these relational

databases. SQL enables a programmer or database administrator to do the following [3]:

1. Modify a database's structure
2. Change system security settings
3. Add user permissions on databases or tables
4. Query a database for information
5. Update the contents of a database

This language will combine with PHP to process data that already stored at database. When user need information from web, this language will process it by communicating with database. Administrator who already store information on the database can be accessed by user of student information system.

To use this language there's a tool that can be used one of them is MYSQL. MYSQL is database engine that's usually used by PHP Programmer, combination of this two tools can make a good student information system.

D. DFD

Data flow diagrams (DFDs) reveal relationships among and between the various components in a program or system. DFDs are an important technique for modeling a system's high-level detail by showing how input data is transformed to output results through a sequence of functional transformations. DFDs consist of four major components: entities, processes, data stores, and data flows [4].

This method is used to design of system, it will describe how data flows through systems (and how that data is transformed in the process). Systems analysts prefer working with DFDs, particularly when they require a clear understanding of the boundary between existing systems and postulated systems. DFDs represent the following:

1. External devices sending and receiving data
2. Processes that change that data
3. Data flows themselves
4. Data storage locations

III. ANALYSIS AND REQUIREMENT

A. Problem Analysis

Identifying the problem is the first step in doing the systems analysis phase. In reality that kindergarten ABA 17 and ABA 5 is still do their services manually but there's some work aided by computers. This are some of their's service that's still manually used :

1. The process that's Teachers do to make the report cards very inconvenient because the process still manually.
2. Registration of personal data , teachers, and employees who are still manually so that if someone wants to find data takes a long time and less tidy.
3. Recording the average growth of students toddler needs specific data to enhance the ability of students in accordance with their potential.

The role of teachers in kindergartens generally can not be separated from the role of administrative support school operations. The availability of student

data to support administration work in those kindergarten.

As a top manager, the principal need of tools that can support and increase administrative performance. The existing data still can not be processed in such a way to generate useful information for decision-making, making it difficult for schools to design needs of students in each school year.

B. Design

At this stage begin to be made DFD to describe the activity data flowing from one entity to another. The goal of this process is to obtain a detailed overview of the functions - anything that will function in the school information system.

At this stage is also illustrated in detail the stakeholders involved in the process of managing data in the system simultaneously process input and output data of each - each stakeholder.

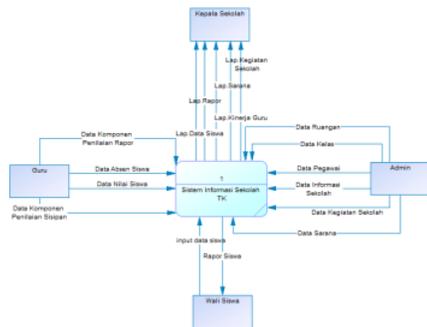


Figure 2. Data Flow Diagram

In the design process also covers the process for the design of the ERD (Entity Relationship Diagram) is a model of the design data to give an overall picture of the database framework which will consist of tables - tables that are interrelated. So that in the process of database development for this system would be easier to determine the relationship between one table with the other.

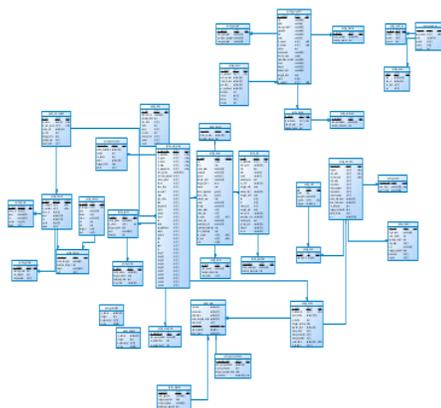


Figure 3. Entity Relationship Diagram

C. Functional Requirement

In the Student Information System there are several levels of access to access these applications include employees, parents and administrators. Facilities owned by the level of access each of which can be explained as follows:

- ✓ Teachers have access to incorporate measurement data and assessment and observation of students' abilities. These data will be input for depictions of child development and the students' report cards online.
- ✓ Employees have access to the facilities of input data for teachers, employees and students.
- ✓ Parents have access to online report cards and see their children's growth charts.
- ✓ The admin has the highest access level because it can control and be responsible for all the facilities and features in this student information system.

Student Information System software Kindergarten has features (facilities) as follows:

- ✓ Data recording of students, teachers and employees.
- ✓ Processing of student data in the form of temporary value and its products at the end of the year report cards while the original form of report cards (the actual report cards includes).
- ✓ Monitoring and controlling the development and growth of students

IV. IMPLEMENTATION

A. Prototyping

After the design phase of the database already implemented the next stage of this developing activity is the implementation phase into the program, described in the previous stage that application has developed with some framework to facilitate the development process. Implementasi application "Web-Based Student Information System" will include doing a data input from students who are still active and also alumni of the school. Proototype of these applications can be seen in Figure 4.



Figure 4. The Prototype Application

After the application prototype phase to the stakeholders consulted in this case the principal, to see whether the functional requirements of the application has met the expectations of the school. after the

number of times do brainstorming with school principals gained some input for the improvement of the application so that the application changes as in Figure 5.



Figure 5. Application after some repair

The academic information system for kindergarten also include admin page which can be primarily used by the user with the right level: superadmin, administrators, teachers and principals.

- ✓ User SuperAdmin: have every right to access the menu in the admin page.
- ✓ admin user: has access to administrative processes, among others, the input of employee data, school information and components in the report.
- ✓ User Teacher: have of action to absent students, fill out daily activities and fill out report cards of students in accordance with the class they teach.
- ✓ User Principal: has access to monitor student progress reports, report cards on the performance of teachers and all students in the school.



Figure 6. Administrator Menu

B. Testing

This stage before the Student Information System used generally first conducted testing processes both internally and externally involving the schools with a limited number. This process will be able to obtain input from the user of what is contained errors and improvement of program features.

Theres some point that tested :

1. Testing is the process of executing a program with the intent of finding errors.
2. The successful testing is a test that has a high probability to find and reveal all the errors that have not been discovered or previously suspected.

IV. CONCLUSION

In the test phase is student information system for kindergarten ABA and ABA 5 17 Malang changes for improvement, the school provide input include:

1. Menu for the students placed on the main page of the information system.
2. The component values can be changed according to the current curriculum.

The changes are based on feedback from school to accommodate the needs of schools in general. So that the pilot phase is a lot of improvement silakukan by the development team.

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