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Website-Based Design of Academic Information System at Rama Chindo PAUD

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Abstract

In line with the rapid development of technology and information, the demand for quick, accurate, and efficient information systems is growing, especially in the field of education. PAUD Rama Cindo in Prabumulih currently relies on conventional methods for managing academic data, such as grades, attendance, and student progress reports, which are recorded manually in large books and stored in physical files. This situation leads to various challenges, such as difficulties in accessing data, the potential for document loss, and inefficient information dissemination. This study aims to design and develop a website-based academic information system for PAUD Rama Cindo to enhance efficiency in managing academic data and delivering information to teachers, students, and parents. The developed system will enable digital data management, making academic information easily accessible, quick, and accurate. With this system, it is expected that academic data management can be done in an integrated and more efficient manner, while also introducing PAUD Rama Cindo to a wider community through digital media. The research methods include data collection, system design, and testing of the developed academic information system application. This study provides practical contributions to PAUD Rama Cindo in improving the quality of academic services through the application of information technology, while also offering an academic reference for the development of similar information systems in early childhood education.

Keywords: *Academic Information System; Website; Academic Data Management; Information Technology; Early Childhood Education.*

1. Introduction

Along with the development of science and technology in various fields such as education, it has led to an increase in the need for fast, precise, and accurate information. This is accompanied by progress in the field of technology and information that is increasingly sophisticated, so it cannot be denied that the role of computerization is very much needed, to develop and improve the quality of information systems, namely as a tool for managing data and then presenting it in the form of information easily, quickly, and accurately[1]. An Academic Information System (AIS) is a system that provides services, specifically academic data information designed to align with existing business processes to improve the performance and quality of academic services. Therefore, system developers should understand the factors that influence user behavior in utilizing IT. This is the case at one school in Prabumulih, Rama Cindo Early Childhood Education (PAUD), where academic information systems such as student data, teacher data, subject data, and grades are maintained conventionally. Data is processed using a paper-based ledger. This increases the risk of file loss, as files are stored in a single bookcase, making it difficult to retrieve data when needed. Therefore, the author wants to create an academic information system at Rama Cindo PAUD using a website. And with the existence of this school website, it will be easier to inform the public about this school. With this, students and all components in it are facilitated in their various activities. So the title taken by the author is "Design and Construction of an Academic Information System at Rama Cindo PAUD Based on a Website".

2. Theoritical Review

2.1. Understanding Design and Construction

According to [2], "Design is the activity of translating analysis results into a software package, then creating the system or improving an existing system." According to Putri, as quoted by [3], "Design is the process required to create or create a new system to facilitate researchers in addressing problems encountered in the research object." According to Ravi Rahmatul Fajri, as quoted by [4] , "Design is a form of product created from research results to facilitate researchers in addressing problems encountered in the research object."

2.2. Understanding Academic Information Systems

According to [5], "An academic information system is an application designed to meet the administrative data processing needs of schools, with the aim of better managing academic data. It typically involves storing student data, class assignments, class schedules, assessments, summarizing learning outcomes, progress reports, and providing information from teachers to students. Therefore, by utilizing such an application, it is hoped that all academic activities can be well-managed to maximize academic services within the school environment." According to Siti Aida Kurnianingsih and [6] , "An academic information system is an information system designed to handle the processing and presentation of academic data more easily. It is used by all elements of the school, including the principal, teachers, staff, students, and guardians."

2.3. Understanding Websites

A website is a collection of pages used to display information, including text, still or moving images, animations, sound, and/or a combination of these, both static and dynamic, forming a series of interrelated structures, each connected by a network of pages [7]. [8] state, "A website is a collection of web pages linked to other related files. From the above definition, it can be concluded that a website is a collection of pages on an internet domain created for a specific purpose and interconnected to access data in a relational database." A website consists of various elements such as text, images, videos, or other interactive content.

2.4. Understanding PHP

According to [9], "PHP is a server-side language and is most widely used for web development." According to [10], "PHP is a server-side programming language."

2.5. Understanding MySQL

According to [11], MySQL is a SQL database management system (DBMS) software, often called a Database Management System (DBMS). From the definition above, it can be concluded that MySQL is software for managing and accessing databases commonly used on web servers.

2.6. Understanding XAMPP

According to [12] , "XAMPP is software that provides several services." XAMPP is Apache web server software that includes a MySQL database server and PHP programming support. [13]. From the definition above, it can be concluded that XAMPP is web-based software or program that supports various operating systems.

3. Research Metods

The research method used in this study is descriptive qualitative research. Descriptive research is a type of research that presents a complete picture of the social setting and clarifies a social phenomenon. This is done by describing a number of variables related to the problem being studied [14]. Qualitative research is an approach to conducting research that focuses on natural phenomena or symptoms. Qualitative research is fundamental and naturalistic in nature, and cannot be conducted in a laboratory but rather in the field. Therefore, this type of research is often referred to as inquiry naturalism or field study.

3.1. Data Types

1. Primary Data Sources
   Primary data is the primary source of information collected directly by researchers during the research process. This data is obtained from original sources, namely respondents or informants related to the research variables. Primary data can be in the form of observations, interviews, or data collection through questionnaires [15]. Primary data for this research is obtained directly from the source. Researchers use various methods to collect primary data, including interviews, observations, documentation, and references.
2. Secondary Data Sources
   According to [16], secondary data is a source of research data obtained indirectly through intermediary media. This means that this data is not collected directly by the researcher but rather from pre-existing sources, such as documents, literature, or data collected by other parties. Secondary data can be obtained from various sources, including documents, government publications, industry analyses by the media, websites, and the internet. In this study, the researcher collected secondary data through a literature review.

3.2. Method of Collecting Data

1. Interviews are a common method for collecting primary data, where researchers ask respondents direct questions and record their answers.
2. Observation is also an effective method, where researchers directly observe specific activities or events related to the research variables.
3. Documentation is the process of recording and storing information obtained from interviews and observations. This includes interview transcriptions, field notes from observations, and data analysis. Good documentation is essential to ensure data can be accessed and analyzed effectively.

4. References: To support, strengthen, or prove these statements and arguments, the author uses data collection techniques from journals, e-books, books, and others.

4. Proposed Use Case Diagram

This use case demonstrates the design of a new web-based system that provides more structured roles and activities between administrators and other users. The diagram illustrates how users will interact with new, more integrated features, such as managing student, teacher, grade, and school information, that will be developed within the new academic information system.

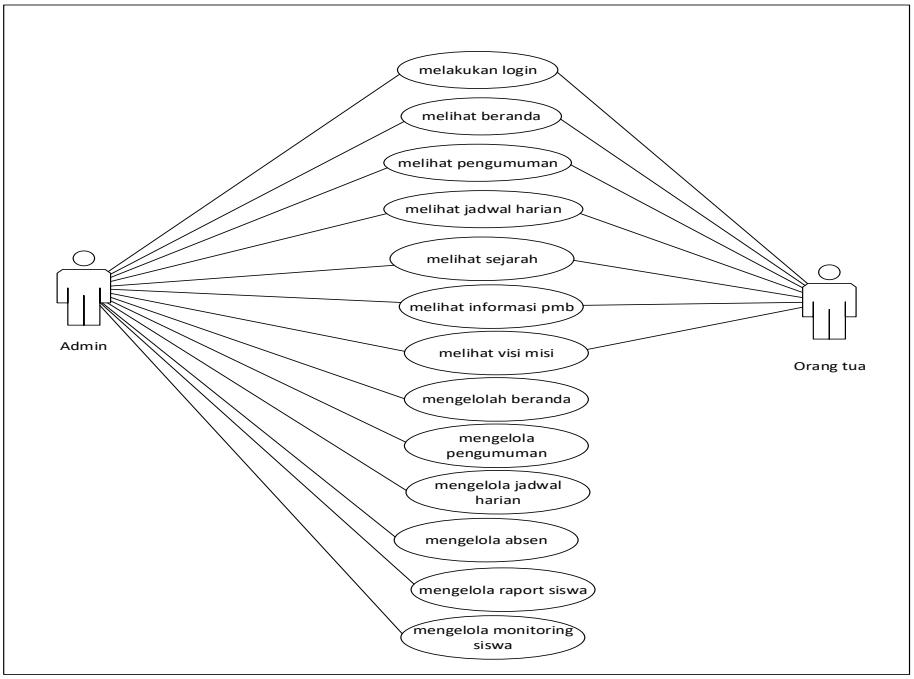

Fig. 1 : Proposed Use Case Diagram

This diagram shows a well-structured system, where the administrator acts as the active user managing all data, while parents are passive users who can view and monitor important information related to their children. This use case supports the goal of developing a web-based system to make communication between schools and parents more effective and data management more modern.

5. System Implementation and Testing

5.1. Interface Implementation

Interface implementation is the process by which a class writes the concrete code or content of the methods defined in an interface. An interface itself is a contract or blueprint that only declares a collection of methods without providing their content or implementation. By implementing an interface, a class is required to provide a concrete implementation of all methods contained in that interface. Interface implementation also separates function definitions from how those functions work, making code more modular and easier to develop. Thus, interface implementation is crucial in software development because it provides a clear and flexible structure for code management and improves program quality and maintainability.

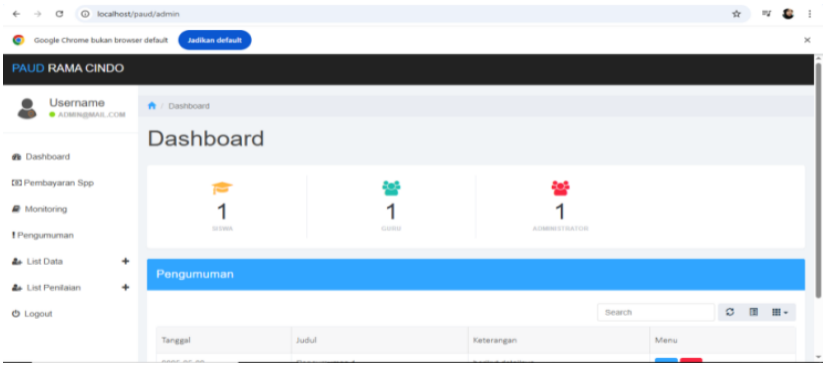

Fig. 2 : Implementation of the Admin Dashboard Interface

The admin dashboard page of the RAMA CINDO PAUD information system is the main control center for administrators after successfully logging in. The system interface displays a user-friendly design with navigation on the left side of the screen, consisting of main menus

such as Dashboard, Tuition Payment, Monitoring, Announcements, Data List, Assessment List, and Logout. At the top of the dashboard, the system presents a summary of important statistics, namely the number of students, teachers, and administrators, each displayed with a different icon and color to distinguish their roles.

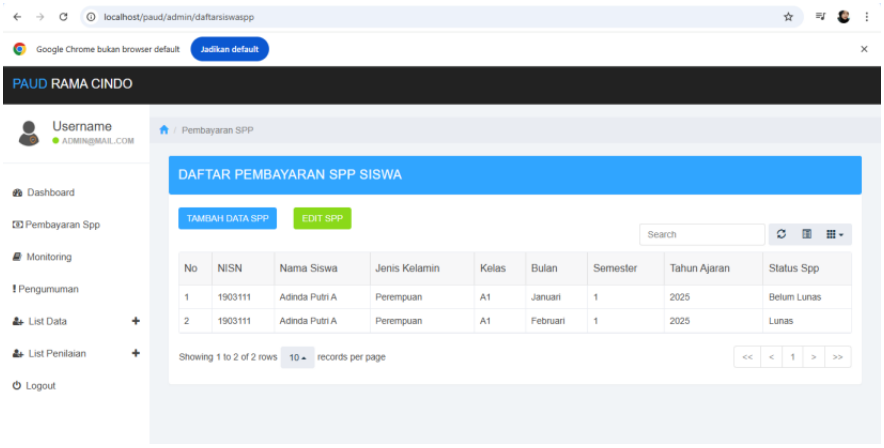

Fig. 3 : Implementation of the SPP payment data interface

This page displays a list of student tuition payments in tabular form, which contains important information such as NISN, Student Name, Gender, Class, Month, Semester, Academic Year, and Tuition Status.

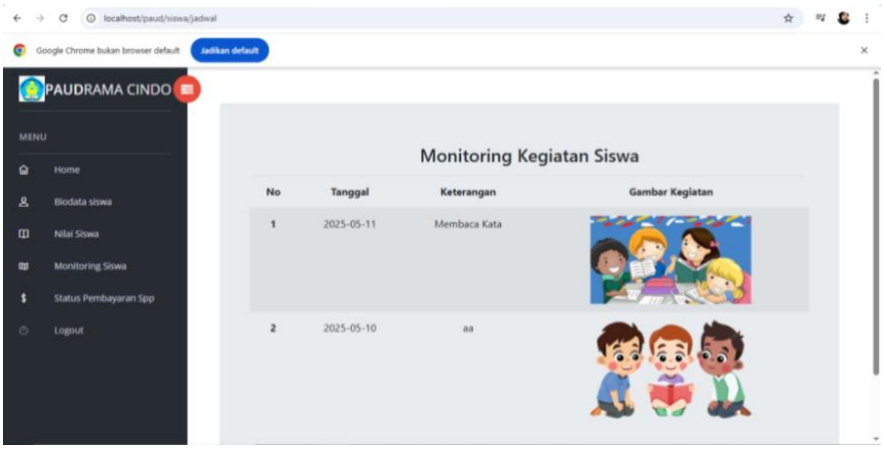

Fig. 4 : Implementation of student activity monitoring interface

The image shows the Student Activity Monitoring page of the PAU DRAMA CINDO information system. This page displays a structured list of student activities, containing information such as the activity date, descriptions of the activities carried out, and supporting images that represent the activity. The use of attractive activity images makes this page more informative and easy to understand, especially for parents who want to know their children's activities at school. The design is kept as simple as possible with the aim of effectively conveying information, thus supporting the transparency of the student learning process digitally.

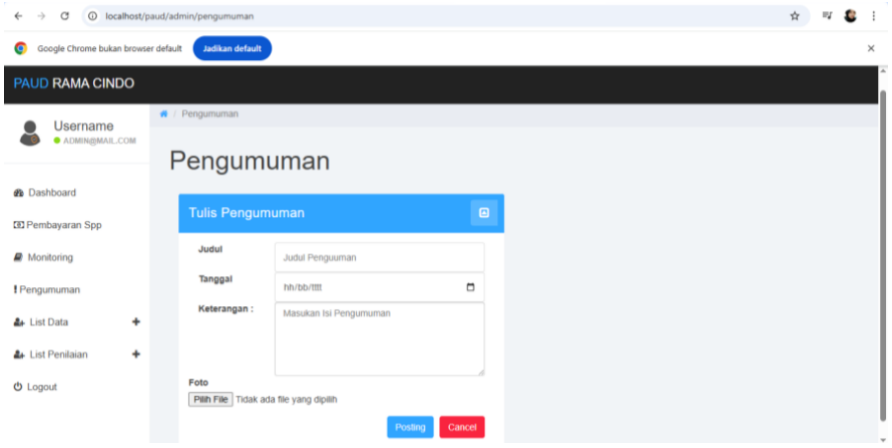

Fig. 5 : Implementation of the announcement input interface

This image displays the announcement form page in the RAMA CINDO PAUD management application. Each announcement is presented in a table consisting of columns for the date, title, description, and an action menu that allows the administrator to edit or delete the announcement.

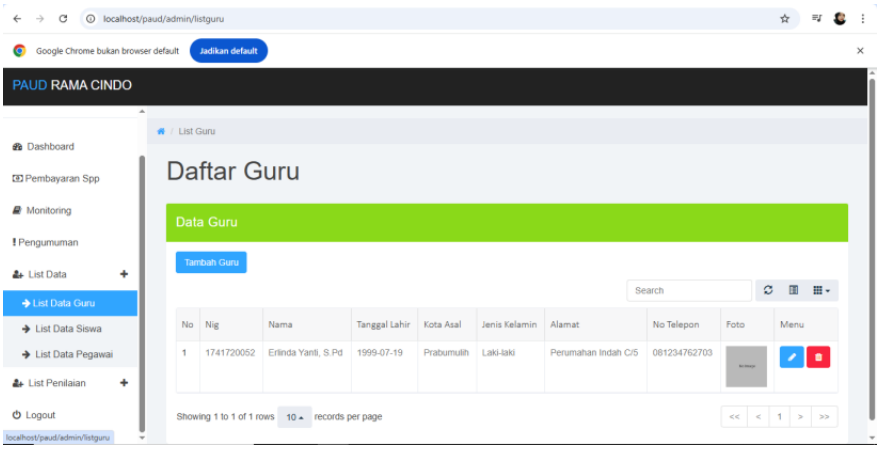

Fig. 6 : Implementation of the teacher list interface

This image displays the "Teacher List" page of the RAMA CINDO Early Childhood Education (PAUD) management application. This page is located in the Teacher Data List menu and is used to manage teacher data. The table on this page displays information such as NO, NIG, Name, Date of Birth, City of Origin, Gender, Address, Telephone Number, Photo.

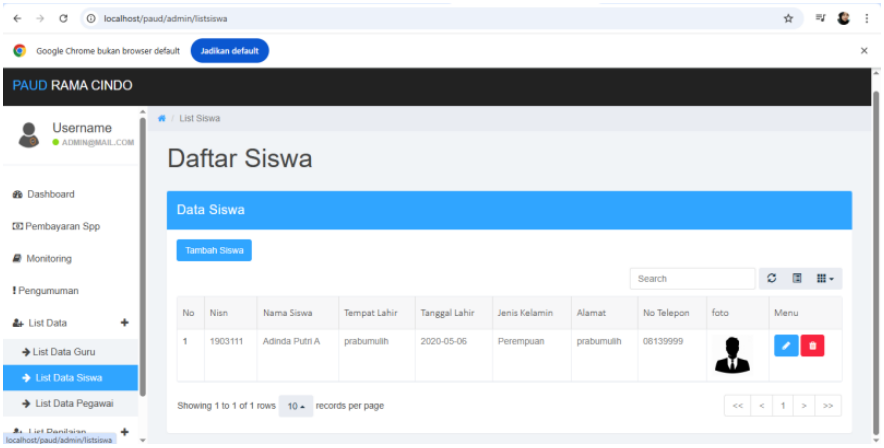

Fig. 7 : Implementation of the student list interface

This image shows the Student Data page of the RAMA CINDO PAUD information system. This page is located in the Student Data List menu and displays a list of registered students.

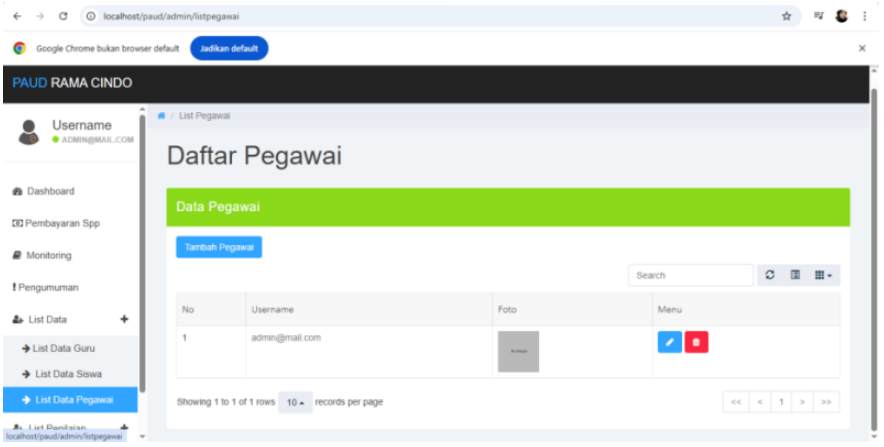

Fig. 8 : Implementation of employee list interface

This image displays the Employee Data page of the RAMA CINDO PAUD information system running on localhost. This page is part of the "Data List" module, specifically under the "Employee Data List" submenu.

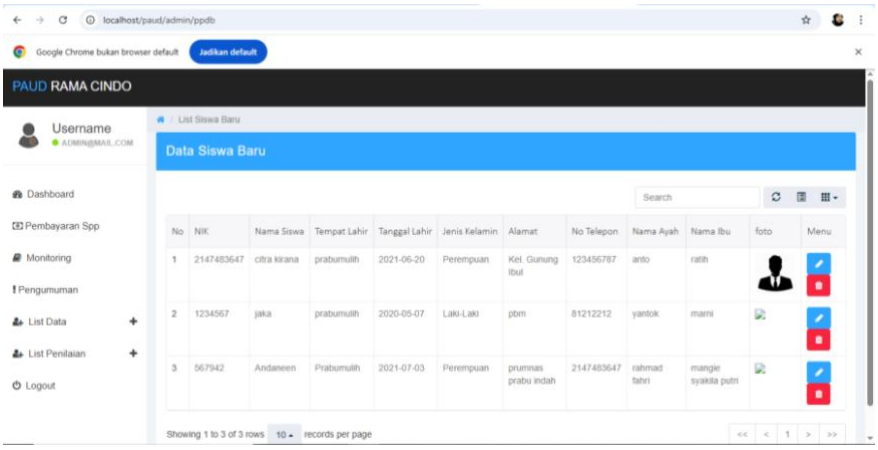

Fig. 9 : Implementation of the PPDB list interface

The image shows the PPDB (New Student Admissions) page in the RAMA CINDO PAUD information system, located below the data list section. This page is used to display and manage new student data.

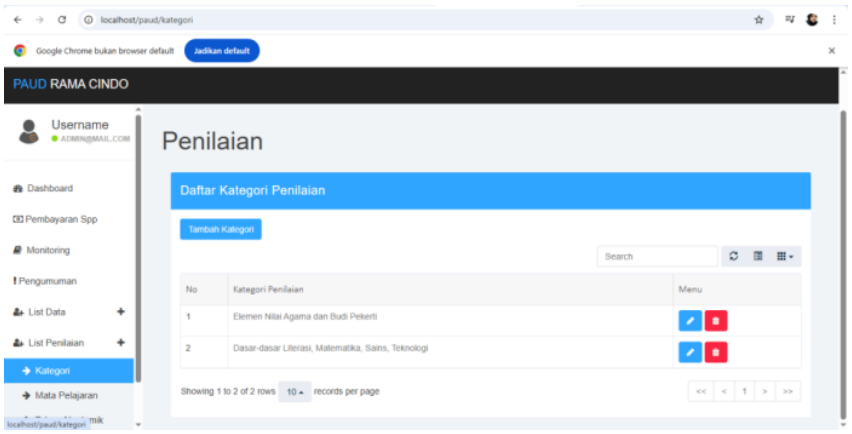

Fig. 10 : Implementation of the assessment input interface

This image shows the "Assessment" page of the RAMA CINDO PAUD system, specifically the Assessment Category List section. This page manages the assessment categories used in the student evaluation process.

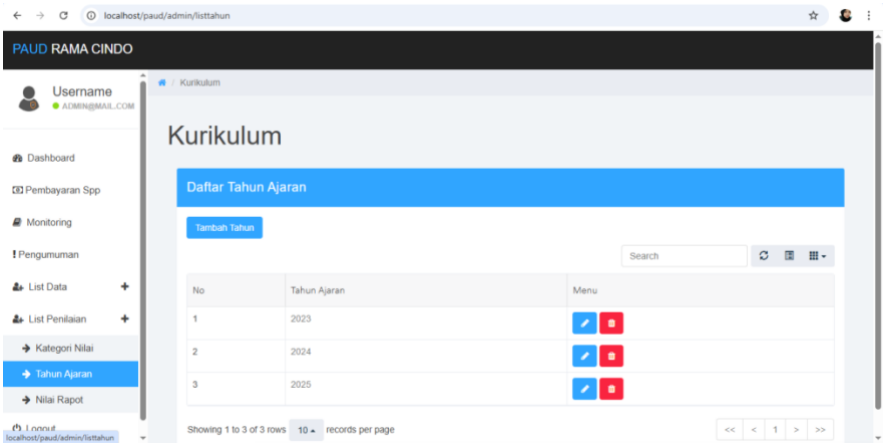

Fig. 11 : Implementation of the academic year data interface

The image shows the "School Year" page in the RAMA CINDO PAUD information system, located under the Curriculum section. This page is specifically used to manage the list of School Years used in the system. The table below displays a list of available school years, each accompanied by a course number and a column. A search feature is also available on the right, allowing users to quickly find out about a specific school year.

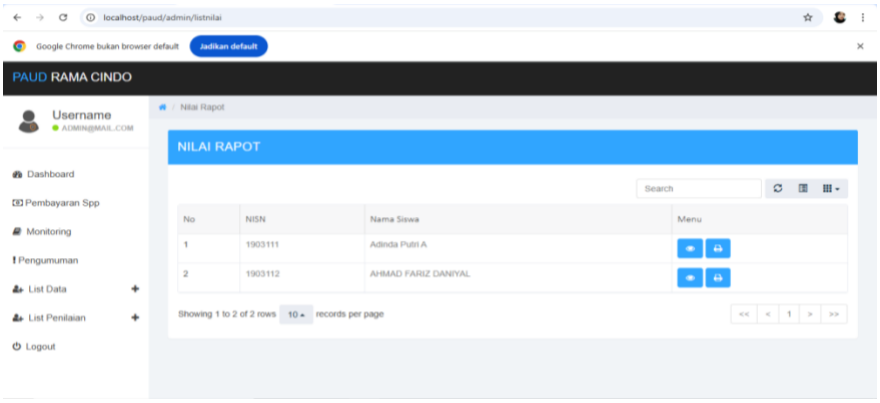

Fig. 12 : Implementation of report card value interface

This image shows the "Report Score" page of the RAMA CINDO PAUID system, specifically the Assessment List section. This page functions to display student score data results.

Fig. 13 : Implementation of student dashboard interface

The interface in the image represents the dashboard of the PAUD RAMA CINDO administration information system. At the top is the main navigation menu, indicating that the user is currently on the "Dashboard" page. On the left side panel, there is a vertical navigation menu consisting of several main features: Dashboard, Tuition Payment, Monitoring, Announcements, Data List, Assessment List, and Logout.

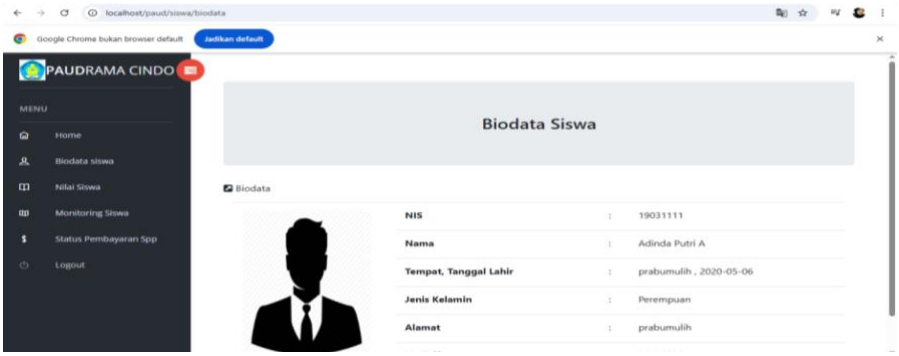

Fig. 14 : Implementation of student biodata interface

The image shows the Student Biodata page of the RAMA CINDO PAUD information system. This page displays a student's personal information. The information presented includes name, student ID number, place and date of birth, gender, address, and telephone number. On the left side of the page is a navigation panel containing menus such as Home, Student Biodata, Student Grades, Student Monitoring, Tuition Payment Status, and Logout. This display is designed to provide quick and clear access to student personal information, as well as facilitate digital data verification by both students and the school.

Fig. 15 : Implementation of student grade interface

This image shows the student grades page of the PAUID RAMA CINDO system. This page functions to manage students' academics and activities.

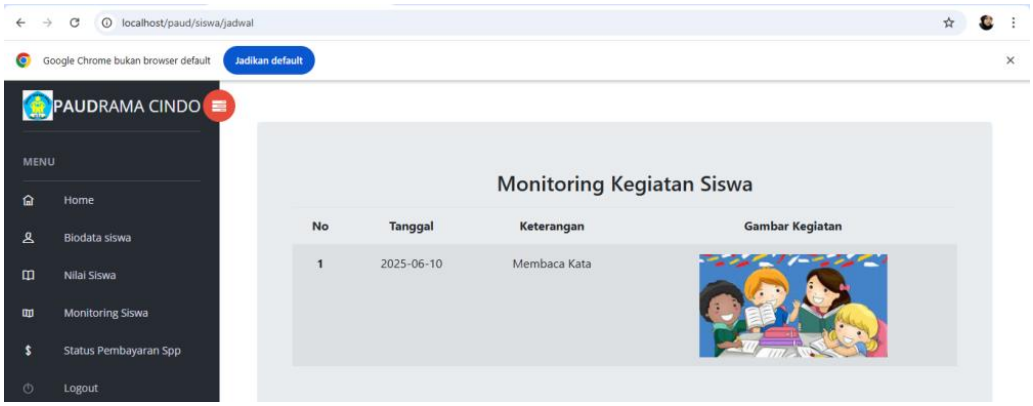

Fig. 16 : Implementation of student monitoring interface

The image shows the student monitoring page designed to communicate and manage academic data and student attendance at PAUD RAMA CINDO.

Fig. 17 : Implementation of the SPP payment status interface

The image shows the "SPP Payment" page interface of the PAUD RAMA CINDO information system. This page displays a list of student SPP payments in tabular form, which contains important information such as NISN, Student Name, Gender, Class, Month, Semester, Academic Year, and SPP Status. At the top of the table there are two main action buttons: "ADD SPP DATA" in blue to add new payment data, and "EDIT SPP" in green to change existing data. Users can also search through the search field, refresh data with the refresh icon, and change the table view using the view icon on the right.

5.2. System Testing

Based on the results of black box testing of all interfaces and key functionalities of the RAMA CINDO PAUD Information System, it can be concluded that the system is operating well and meets the designed functional specifications. Of the 28 test scenarios conducted, all yielded valid results, meaning all features are accessible and functioning as intended. The system successfully handled various types of input, both valid and invalid, correctly displayed data from the database, and responded appropriately to user actions such as logging in, adding data, editing, deleting, and navigating between pages. The tested interfaces covered both the student and admin sides, encompassing important features such as student biodata, tuition payments, activity monitoring, announcements, teacher/student/employee data

management, assessment categories, and the academic year. Based on these test results, it can be concluded that the system is suitable for use and ready for implementation in the RAMA CINDO PAUD operational environment.

6. Conclusion

1. Data Management Difficulties
   Rama Cindo Early Childhood Education (PAUD) faces challenges in managing academic data, including student development assessments, attendance records, and reporting. The use of manual methods that still rely on physical books and written documents hinders efficient data management.
2. Weaknesses of Manual Methods
   Data input errors: Manual recording is prone to errors, which can impact data accuracy. The information tracking process, searching for and processing information, is slow due to the reliance on physical documents. The risk of damage or loss of documents, as unstructured document handling and storage increases the risk of damage or loss of important data.
3. Limited Accessibility
   Limited information accessibility makes it difficult for teachers, parents, and administrators to obtain data quickly and accurately. This hinders effective communication between schools and parents, which is crucial for supporting student development.
4. Technology Used
   The developed system utilizes modern technology such as: PHP, MySQL, XAMPP, Visual Studio Code, Waterfall, and design tools (case diagrams, activity diagrams, and class diagrams).
5. Development Focus
   System development focuses not only on administrative functionality but also includes digital marketing aspects. This aims to increase the visibility and appeal of Rama Cindo Early Childhood Education (PAUD) among parents and the community.
6. Feedback Strategy
   Implementing a feedback strategy to assist in monitoring system performance across a wide range of stakeholders, such as teachers and guardians, is crucial. This will identify future improvements in performance, allowing the system to be continuously adapted to user needs.

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