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Implementation of Extreme Programming in the Asoka Makassar Integrated Early Childhood Education E-Book Activities

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Abstract

Early childhood education is a critical phase that requires the attention of parents and the continued responsibility of teachers within early childhood education institutions (PAUD). One of the primary philosophies in early childhood education includes shaping, honing, loving, and fostering. Fostering refers to efforts aimed at developing a child's personality and identity, ensuring they possess essential qualities such as integrity, faith, and piety. This research aims to monitor children's activities at PAUD Asoka Makassar through the development of an electronic activity book, commonly known as an e-book of activities. The system manages school activities and monitors student progress, implemented using the Extreme Programming (XP) methodology and Visual Studio Code as the code editor. The implementation of this system facilitates the monitoring of children's activities by both schools and parents, thereby enhancing the overall quality of education at the institution. This research contributes to the knowledge base by demonstrating the practical application of XP in educational settings, providing insights for future studies on digital monitoring systems in early childhood education.

Keywords: Implementation of PAUD e-book activities; Extreme programming method (XP), Visual studio code; E-book.

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Introduction

Education is an important part of life, as described in Law No. 20 of 2003 concerning the national education system, one of the functions of education is to develop capabilities and shape the nation's character, in the intellectual life of the nation (Dewi & Primayana, 2019); (Rusilowati & Wahyudi, 2020). To improve the quality of education, a documentation and information management system that has more standards than before is a system that can monitor children's activities at school (Nzyuko, 2019). This system is needed in preschool educational institutions, including PAUD(Buranova, 2020).

PAUD Terpadu Asoka Makassar is a preschool educational institution which is located at Jl. Perintis Kemerdekaan Km 18. PAI, Biringkanaya Sub-district, Makassar City. In Asoka Makassar Integrated PAUD, monitoring of child development and activities can only be seen when receiving information from the student's homeroom teacher, parents face-to-face to PAUD Asoka Makassar, and in reports distributed every 6 months, Academic data management which on average is still selling, still inputting data in excel or in word on the available PC.

From the explanation of the existing problems, researchers found a solution, it is necessary to design a system that will monitor children's activities while in PAUD. This system is in the form of an electronic book of activities or commonly called e-book activities, in this e-book of activities it is in the form of managing school academic activities. The menus that will be included include student activities, classes, school payments, and monitoring. This system is a development of the monitoring system. By implementing this system, it is easier for schools and parents to monitor children's activities, and improve the quality of schools. In designing this system, extreme programming is applied as a method.

Extreme programming is a model that is included in the most commonly used agile software development approach and has become a well-known software approach method (Kunwar, 2018); (Iskandar et al., 2019). Extreme programming

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(XP) is an approach to software development methods that tries to simplify the various stages in the software development process so that it is more adaptive and flexible (Haris et al., 2021). XP is not only focused on coding but covers all areas of software development. The advantages of this extreme programming method are the short time to make the application, and the improved quality for the customer(Sohaib et al., 2019);(Mirza & Datta, 2019).

Method

From the results of the research at the Asoka Makassar Integrated PAUD, it was found that a system was running, namely, monitoring child development and activities could only be seen when receiving information from the student's homeroom, parents face-to-face to PAUD Asoka Makassar, and in reports distributed every 6 months. Management of academic data, which is still on average, is still inputting data in Excel or in Word on the available PC.

Method of collecting data

Data collection methods are techniques or methods used by researchers to collect data (Puspitarini & Hanif, 2019). a) interviews: data collection methods carried out by means of direct interviews at the Asoka Paud Terpadu Makassar, conducting questions and answers related to school payments and activities of PAUD students, and the whole class at the school. b) Observation: The observation method is done by watching and listening to events or actions related to school payments, student activities, and the whole class at the Asoka Integrated Early Childhood Education in Makassar. The results of the observations can be in the form of notes, data, and files related to the administration of school payments. c) Literature Study: Studying theories related to the research to be carried out. In the form of matters relating to school payments, PAUD student activities, and the whole class.

Analysis Method

The analysis includes a way of looking at the overall relationship of the problem to predict the systematic objectives of an ineffective system (Giray, 2021). System analysis is a description of complete information into component parts to describe the problems, obstacles, that occur and the needs that will be applied so that improvements can be proposed. Analysis is the initial stage where the data collection process, problem identification, needs analysis and system feasibility analysis are carried out. This stage aims to determine the solutions that can be obtained from these activities.

System Weakness Analysis

The ongoing system weakness analysis is defined as the decomposition of a complete system into components with a view to identifying and evaluating problems that occur. This weakness analysis stage is very important to examine errors if there are errors (Upadhyay & Sampalli, 2020). Before designing a new system, a description is needed that contains information or information related to the system that is currently running at the Asoka Integrated PAUD Makassar. This is useful to make it easier to analyze and design a new system. In designing a system, it is necessary to analyze the weaknesses of the system to find out the problems and weaknesses in the old system. The methods applied to analyze system weaknesses include the PIECES method (performance, information, economics, control, efficiency, service). The PIECES method is an analytical method as a basis for obtaining more spatial issues.

Below is a table of the implementation of the PIECES method.

Table 1. Application of the PIECES method.

No	Analysis	Running System	Proposal System
1	Performance	In the academic management of data and information related to the monitoring of the Asoka Integrated PAUD Makassar, it has not been efficient.	The proposed system is in the form of an application that can be accessed online
2	Information	This inefficient way of working usually causes a lot of errors, such as being tired for too long in front of the computer, and typing errors when entering data in the academic section. Information related to the development of students can only be obtained by parents during the distribution of reports and through WhatsApp only.	A system that provides complete and accurate information and reports and good reports will have a great effect on a school, by logging in to the application.
3	Economic	Requires a lot of costs, such as paper expenditures for recapitulation of payments, data reports, and other costs.	Save on printing costs and make it easier to obtain information.

No	Analysis	Running System	Proposal System
4	Control	There are no restrictions on access and academic activities.	Each user who accesses must first enter a username and password for system security.
5	Efficiency	Submission of information related to child monitoring and academic activities is still inefficient because parents have to hold face-to-face meetings with early childhood education or get information via WhatsApp.	Time and cost more efficient.
6	Service	With child monitoring activities and academic activities, parents directly face to face, it is necessary to present information quickly and can be accessed through the website as the user.	Faster and more integrated service.

The study carried out direct observations of the payment administration system and paid attention to the existing report data on the Makassar Asoka Early Childhood Education system, which was carried out on a semi-computer basis. In building a system, the things needed to achieve the objectives of this research are:

Hardware Requirements

The hardware or hardware needed in designing the E-Book Activities information system at Paud Asoka Makassar can be seen, namely: a) Computer Processor Intel® Core i3 2.40 GHz, b) Logitech Keyboard, c) Mouse, d) External Harddrive SEAGATE FreeAgent Desk 1 TB, e) HDMI cable uk 20m, f) Power cable uk 20m, g) Power cable outlet @50.000, h) GSM/CDMA modem, and printer as print media for reports.

Software Requirements

The software needed in making the E-Book Activities information system at Paud Asoka Makassar is the Windows 10 operating system, and Microsoft Office support applications for making reports, Adobe Acrobat for viewing pdf files, Mozilla Firefox and Google Chrome as internet applications, Sublime 3 used for coding, MySQL is used for designing databases, XAMPP is used as a liaison. The details of the software equipment needed in designing this system can be: a) Windows 10 OS, b) Installing local server XAMPP v3.2.2, c) Sublime text, d) MySQL Server, e) Mozilla Firefox/Google Chrome web browser, f) Microsoft windows office 2016 licensed.

Information Needs

The information needed to build the Asoka Makassar Integrated PAUD E-Book Activities information system is: The information needed to build the Asoka Makassar Integrated PAUD E-Book Activities information system is student data, class data, student activity schedule data, monitoring, payment type data, recapitulation or student payment reports every at least one academic year. Regarding information regarding problems or things that you want to upgrade to run a better system. In addition, it also takes someone who functions as an administrator who will operate the program that is being made or the application that has been made, consisting of one administrator, principal, teacher, and parents or guardians of students.

System Feasibility Analysis

Describes the feasibility analysis of the new system that will be created if it is implemented in the object of research objectives. This application was created to speed up the data processing process and provide information on case handling that is faster, more precise, and more accurate to related parties. Feasibility assessment is carried out as a material consideration for whether the information system to be built is feasible and necessary. The feasibility assessment is carried out on 3 things, namely: a) The feasibility of the technique is carried out in two ways, namely the availability of technology in this system research, namely website technology. This system will be built using the PHP programming language with the help of XAMPP as a server for making this system and MySQL databases as a database. b) The legal feasibility referred to in this case is related to the software used is official software, which has been licensed, so it will not trigger problems in the future. c) Operational feasibility assessment is carried out to measure whether this system can later be operated properly or not by users or officers or admins.

The operational feasibility considerations such as the ability of the system user (user), where the user only answers based on the symptoms shown in the system. So the user will not have difficulty in operating to consul on the system later. Furthermore, the ability of the system to produce information where this system will provide data in the form of class data, student activity schedules, monitoring, payment transactions, student data, arrears data, and recapitulation or

student payment reports. Then it takes someone who has knowledge in the field of administration in order to guarantee the correctness of knowledge and recommendations for decisions produced by the system.

System Design Method

One of the methods in building or designing a system is system modeling. System modeling is an activity to make a technical design based on the evaluation that has been done during the analysis activity. At the time of designing a design of the proposed system, the features will be designed according to the purpose of simplifying and streamlining the performance and work activities as well as providing a general description related to the right mechanism in designing or designing a system that can meet the installation needs, advantages, and benefits involved. present it through an application design (Muna et al., 2018).

This system design uses Extreme programming modeling. Extreme programming is a model that is included in the most commonly used agile software development approach and has become a well-known software approach method. Extreme programming (XP) is an approach to software development methods that tries to simplify the various stages in the software development process so that it is more adaptive and flexible. Dominant software developers use extreme programming methodologies to develop software quickly.

The extreme programming stages in the research are a) planning: this stage is planning the function features that will be applied to the designed application, determining the costs used for application implementation, and application paths. b) design: This stage emphasizes simple application design. Making software design with Microsoft Visio 2003. Based on the UML Standard benchmark in software modeling. c) coding: this is an important point for developing applications using XP, XP usually involves 2 or more programmers. To design applications. d) testing: here the focus is on testing the features of the system, to avoid errors and the system according to user needs.

Results and Discussion

Result

The results of this study describe the testing of research results designed using the black box method. Black box testing can be seen in the test table below, namely:

Table 2. Test results using black box testing

No	Test	Things to Expect	Test result	Conclusion
1	Sign-in form, user enters username and password	If the sign in is successful, the user will be directed to the dashboard form	the user has successfully signed in, then the system will direct you to the dashboard form	Succeed
2	Student lesson form, the user inputs student learning	After the user successfully inputs and saves student learning data, the system will display the results of the new student data input.	The user successfully inputs and saves student lesson data, the system displays the results of new student data input.	Succeed
3	Child development form	After the user has successfully input and saved the child's development data, the system will display the results of the new student data input.	After the user successfully inputs and saves the child's development data, the system displays the results of the new student data input.	Succeed
4	Daily recording form	After the user successfully inputs and saves the daily recorded data, the system will display the new data input results.	After the user inputs and saves the daily recorded data, the system displays the new data input results.	Succeed
5	Payment form	After the user successfully inputs student payment data, the system will save it into the databases and display the results of inputting new student data.	the system displays the results of the student's new data input.	Succeed
6	Child arrears form	The user inputs student arrears data on the arrears form and if the data is correct the system saves it to databases	The data is correct, the system saves to databases and displays the results of new data input	Succeed
7	employee form	The user inputs data, if the data is appropriate, it will save the data to databases and display new data	The inputted data is appropriate, stored in databases, the data will be displayed	Succeed

No	Test	Things to Expect	Test result	Conclusion
8	Student Forms	The user inputs and uploads student data, if successful the system will save the data into databases	The input data has been successfully stored in databases	Succeed
9	User Form	Admin inputs user data, if successful the system will save the data into databases	The input data has been successfully stored in databases	Succeed
10	Authority group form	Admin adds members to the authority group, if successful the system will add new data to the databases, and the new data will be displayed on the authority group form.	The data is successful, the system adds new data to the databases, and the new data will be displayed on the authority group form	Succeed

Discussion

Based on the results of the study, it appears that this system can be used at PAUD Asoka Makassar and can run as expected can assist PAUD schools in monitoring children's activities and development during early childhood and can be used to control student financial administration. The use of this system can be guided by looking at the program manual that has been made previously and explaining each form in the program. The explanation regarding the program manual can be seen in the following explanation:

1. Sign-in form

The sign-in form is on the main page when you first access it using a web browser, or other internet media, to log in or enter the application. this system requires account data such as registered email and password, enter your email and password to be able to connect to the system, then click the sign-in button, if the email and password are entered correctly according to the data in the system, the system will redirect to the main menu page.

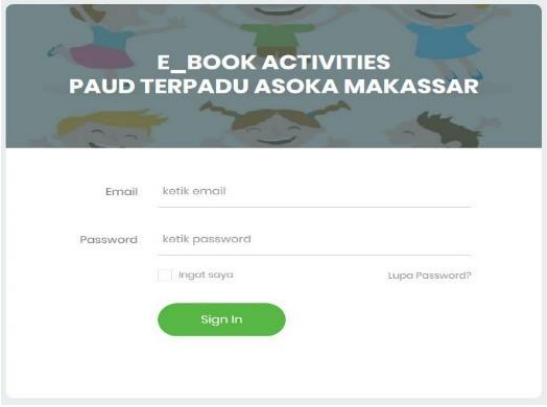

Figure 1. From sign in

2. Main menu form or dashboard

This form is on the initial screen when you have logged into the application. This form provides brief information related to student monitoring, school payments, and teacher data.

Figure 2. Main menu form or dashboard

3. Student Forms

This student development form explains the details of the child's development during early childhood which is updated every day. And will be updated by the teacher or homeroom of the students.

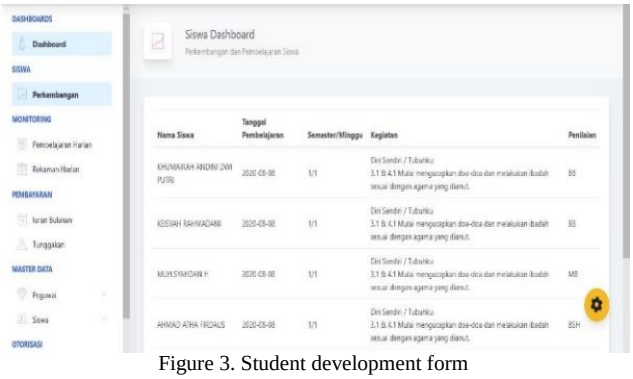

Figure 3. Student development form

4. Daily lesson form

The daily lesson form contains the student's daily study schedule according to the order of time, and based on the student's learning theme. This form serves to input the child's learning schedule while in early childhood.

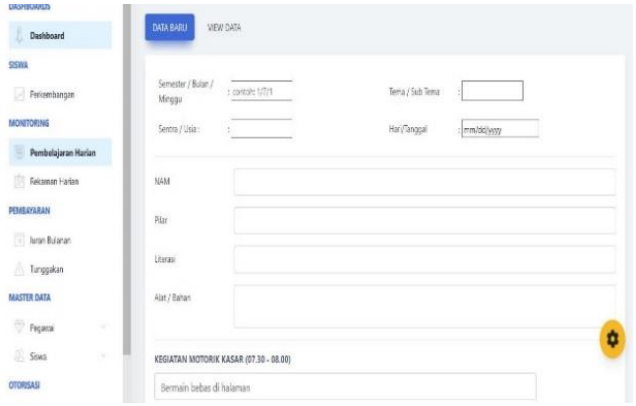

Figure 4. Daily lesson form

5. Payment form

This form contains data related to the monthly payments of early childhood students each month. This form serves to provide information regarding student school payments and input student payment data.

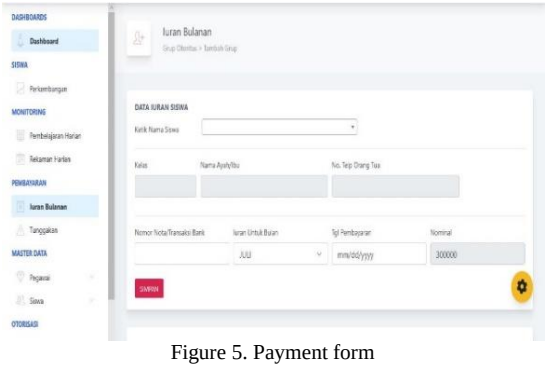

Figure 5. Payment form

6. form arrears

This form contains data on the names of students who still have not paid school fees, while the school payment deadline that has been determined has passed. This form serves to input data on students who have school payment arrears.

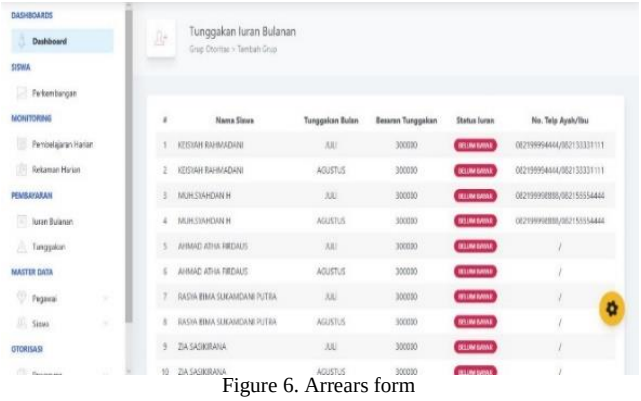

Figure 6. Arrears form

In this discussion, we will briefly discuss the application listings and database tables used in making this application.

7. Form master

The master data form contains some early childhood employee data and early childhood student data.

Figure 7. Form master

8. User Form

This form has the function of explaining some of the name data that has been registered as an application user or using this application.

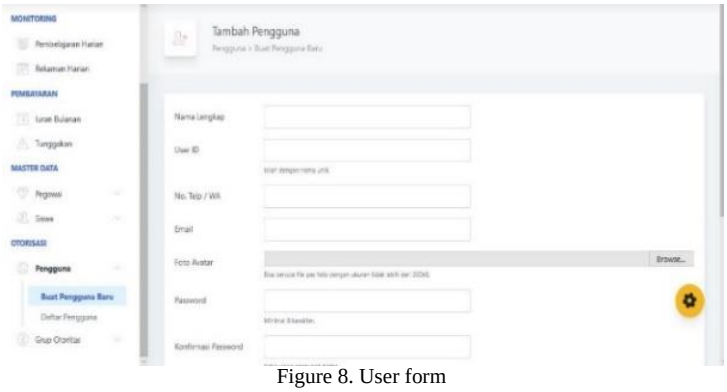

Figure 8. User form

9. Group form

This form contains some data related to names that have been registered as members of the related application user group. This form serves to record the email or username of anyone who is registered as an application user. To see who is registered as an application user, select the authority group form, then click the authority group list form..

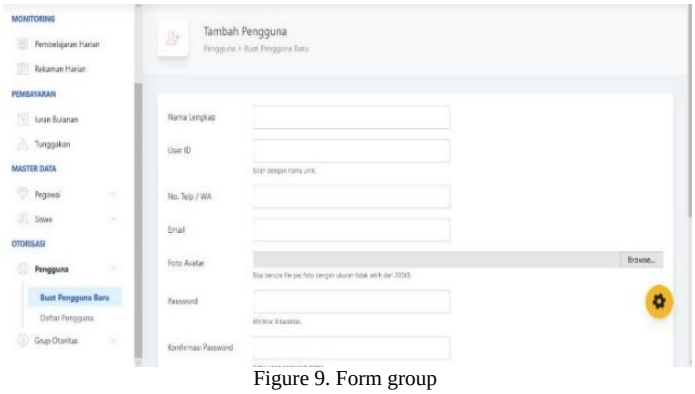

Figure 9. Form group

Conclusions and Suggestions

Conclusions

The results of the research and discussion of the implementation of Extraim programming in the E-Book Activities of Early Childhood Education Asoka Makassar can be concluded in the discussion below.

1. The implementation of Extraim programming in the E-Book Activities of Early Childhood Education in Asoka Makassar aims to ease the burden on schools and parents in monitoring children's activities and development during early childhood.
2. The implementation of Extraim Programming in the E-Book Activities of Early Childhood Education in Makassar, Makassar provides faster payment transaction services for children's schools. And help admins to make it easier to manage teacher and student data.
3. From the results of the tests carried out based on the black box testing contained in table (4.1): table of black box testing results, where the features available in the E-Book Activities application have successfully run as desired.

Suggestions

Suggestions that the author gives to the developers of this application in the future, namely:

1. For further application developers, students should be more creative by adding icon functions to forms that require additional new icon functions.
2. Added the print version icon function of the file.
3. More and more diverse testing techniques are needed, to get more accurate test results.

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