

Design a Web-based Education Development Contribution Payment Application at SDIT Tahfidz Bintangku

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Abstract

Improving services to facilitate the management and monitoring of billing and payment of SPP (Education Development Contribution) in educational institutions must get serious attention because the quality of educational institutions is greatly influenced by the availability of adequate payment management. The research method used in application development uses the waterfall method. The application developed is web-based using the Laravel 9 framework with a combination of design with bootstrap so that it is more responsive and uses the Mysql database. The results of the developed application are able to assist the treasurer and student guardians in managing, provide convenience for students and parents in making payments online, reduce the need to queue at physical payment counters, save time and energy, make it easier for treasurers and parents to track payment history, can verify transactions that have been made and ensure that no payment transactions are left behind, make it easier for schools to manage financial recording processes and payment processing to be more organized and controlled quickly.

I. INTRODUCTION

Facilities and infrastructure in educational institutions are very important to support the implementation of teaching and learning activities both directly and indirectly so that educational goals are achieved properly. The benchmark for the quality of educational institutions is strongly influenced by the availability of facilities and infrastructure that are very adequate [1]. In this case, researchers feel that improving services to facilitate the management and monitoring of bills and SPP (Education Development Contribution) payments at educational institutions must get serious attention because the quality of educational institutions is strongly influenced by the availability of adequate payment management.

For this reason, the management of facilities and infrastructure in educational institutions must get serious attention. As a form of attention in managing facilities and infrastructure, namely with a computerized system that can manage facilities and infrastructure or referred to as applications. The use of applications at this time is very necessary because of its rapid development, it must be utilized properly as a support for data management to manage facilities and infrastructure [2]. As in previous research if the SPP payment system is served through cash and transfer. For payments by transferring confirmation via Whatsapp, there will be a buildup of files containing student payment data which can be at risk of being lost [3].

Along with the development of computing technology, education management is directed towards the utilization of information technology so as to be able to produce applications that make it easier for students, teachers and parents

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to carry out transactions. billing and payment. The media is known as web-based technology, where this tool is well known and utilized by many people in the community [4].

For this reason, it is deemed very necessary to have an application that can manage billing and tuition payments at SDIT Tahfidz BintangKU. The application developed uses the Laravel 9 framework with a combination of design with bootstrap so that it is more responsive and uses the Mysql database.

II. RELATED WORKS/LITERATURE REVIEW

A. Related research

This research is related to several studies conducted by several previous researchers, including:

Mohammad Adam Setioardi and Sukisno with the title "Design of a Web-Based Inventory Management Information System at SMAN 24 Tangerang Regency" obtained the conclusion The system designed using PHP and MySql to help employees manage inventory at SMA Negeri 24 Tangerang Regency aims to change the current inventory management system, namely using spreadsheets to be computerized and web-based [1].

Surya Ardy Pramudya, Moch.Ardiansyah, Dwiki Airlambang, Bagus Wijarnako, & M. Dafa Putra Susyanto with the title "Web-Based SPP Payment Application at Man 15 School" concluded that using a web-based application that supports all SPP payment activities can facilitate daily reports, monthly reports that are useful to support performance for the administration in making reports so that there is no need for manual recording [5].

Faridi, Dyas Yudi Priyanggodo, Yanuardi, and Kurnia Nur Fazar with the title "Designing an Information System for Payment of Education Development Contributions (SPP) at Voctech 2 Vocational School Tangerang City Web Based" concluded that the system designed using HTML, CSS, PHP, Javascript as a programming language, Codeigniter Framework (CI), MySQL as a database makes it easier for Administration to record, and students / guardians of students can find out the amount of fees that have been paid without checking with the school [3].

Edi Sabara & Heriyanto with the title "Spp Payment Information System Using Website-Based Virtual Account at Imam Muslim School Bekasi" where the Education Contribution Payment Information System (SPP) program uses a website-based virtual account using the PHP and MySQL programming languages. This system can simplify the process of operational activities at school in managing tuition payments [6].

Rando Sony Putrasma & Khairul Marlin with the title "Designing an Accounting System for Receiving Education Development Contributions (SPP) at Sd Qur'an Al-Fityan Batusangkar". The application used is Native PHP, Visual Studio Code, MySQL. The resulting product has implemented an accounting system application for recording the receipt of Education Development Contributions (SPP) and has produced a receipt report and proof of payment [7].

Muhammad Ali Tegar, Muhammad Wafiy Ulhaq & Perani Rosyani with the title "Designing a Web-Based School Payment Information System at Smp Paramarta, South Tangerang City" with data that can be processed using the Dreamweaver application program, Microsoft Word 2007, Adobe Photoshop CS3 and using the MySQL database to produce applications that can help relieve TU officers in making payment transactions easily and quickly, without fear of losing transaction data. By using this system, payment transactions will be received quickly, save costs and time. [8]

B. Theoretical foundation

Education Development Contribution (SPP) in accordance with the Ministerial Regulation stipulated in the Ministerial Regulation Law Number 44 of 2012 issued a circular that private schools have the right to withdraw the Education Fee Collection and Contribution in Primary Education Units, which was signed by the Minister of Education and Culture Mohammad Nuh on June 28, 2012. The regulation also replaced Ministerial Regulation No. 60/2011 on the Prohibition of Education Fee Collection in Primary Schools The regulation is the basis for SDIT Tahfidz BintangKU school in withdrawing tuition fees to students every month which will be allocated to improve school facilities. Website or web is a set of pages containing digital data, such as text, images, sound, video or a combination of all these things, which can be accessed by everyone via the internet [4] Framework is a container or framework of a website to be built. By using this framework, the time used in creating a website is shorter and makes it easier to make improvements [10]. One framework that is widely used by programmers is the Laravel framework. Laravel is a PHP-based framework that is open source, and uses the Route-Model-View-Controller (RMVC) design pattern [10] so that one file does not contain too much code.

III. METHODS

A. Data Collection Methods

The data collection methods used in this study are:

a. Interview

Interview is a method of collecting data by asking directly to the source. The interview aims to obtain the required data and information related to SPP payment services at SDIT Tahfidz BintangKU which is located in Sumber Wetan, Kec. Kedopok, Probolinggo City, East Java.

b. Observation

Observation is one method of collecting data by observing or reviewing carefully and directly at the research location to find out the conditions that occur or prove the truth of a research design that is being carried out. Where in this observation the researcher collects data in the form of photographs of proof of payment and direct statements from all parties related to SPP payment services at SDIT Tahfidz BintangKU.

c. Literature Study

Collecting data and studying matters related to the making of this application program from various sources, among others, taken from literature related to the basis of SPP payments and programming techniques using the Laravel framework, PHP, HTML and JavaScript from guidebooks, tutorials and references from previous journal articles.

B. Development Method

The method used for designing this system uses the waterfall method. This method ensures that each sequence of work is clearly structured. The beginning of this strategy requires data information that has been clearly examined and data information is carried out to create a system with clear results. The waterfall method is a method that emphasizes sequential and structured phases, this method is often referred to as the "classic life cycle."

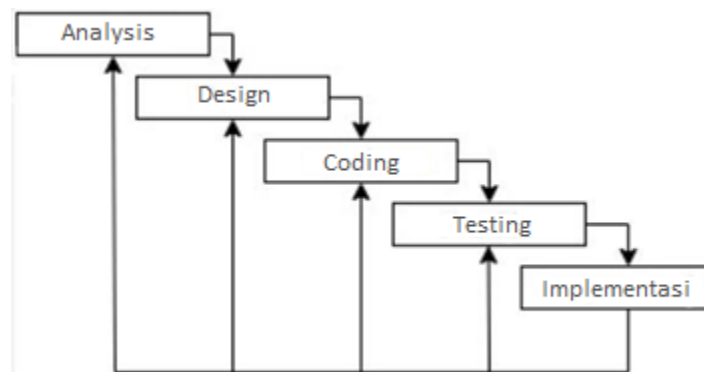


Fig. 1. Model of waterfall

Figure 1 is an overview of the sequential stages of the waterfall model development. Below is an explanation of the stages of the waterfall model that has been created. The stages of this analysis refer to the waterfall method software development method, which is a systematic and sequential software development method. The stages are as follows [11] :

1. Analysis

The first stage of the waterfall method is to prepare and analyze the needs of the software to be worked on. Information and insight obtained can be in the form of interviews, surveys, literature studies, observations, and discussions.

In this case the researcher asked several questions directly to the treasurer as the one responsible for researching the student tuition income report that is paid every month, from here the researcher obtained information in the form of photos and data needed including the flow that has been run until now.

2. Design

The next stage is making an application design or system design before entering the coding process. The purpose of this stage is to have a clear picture of the appearance and interface of the software which will then be executed by the researcher using the agreement from the discussion at the previous requirement stage as a reference.

3. Coding

The fourth stage, entering the process of making applications by utilizing coding and other support. At this stage, there will be a combination of system design with the use of existing data and information agreed upon at the previous stage.

4. Testing

The fourth stage after the system integration process has been completed, then enters system testing, where at this stage testing will also be carried out not only on the system but also on the database and the application of the payment system flow that will be used.

5. Implementation

The last stage of the waterfall method is the operation and improvement of the application. After testing the system, it will enter the product stage and the use of software by users. For the maintenance process, it allows developers to fix errors found in the application after being used by the user.

C. Flow Map

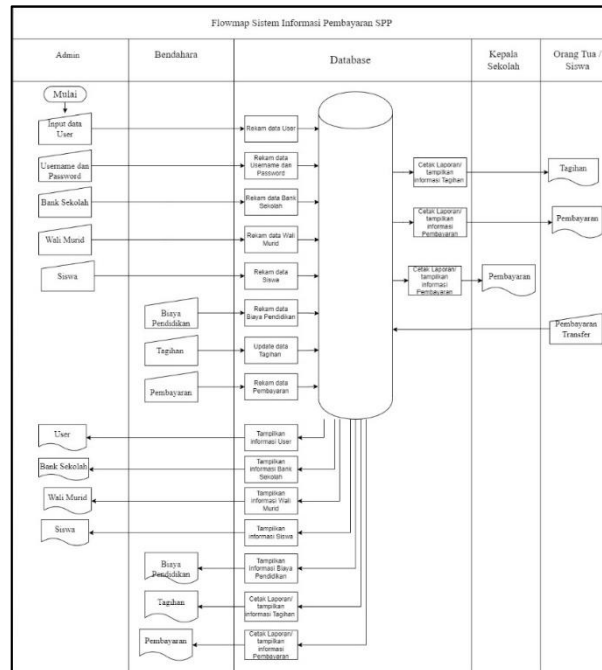


Fig. 2 Flowmap

D. Context diagram

Context diagram form an outline that explains how entities interact with each other, the data sources obtained, and the results in the framework (Rani & Ahmad Jakaria, 2018).

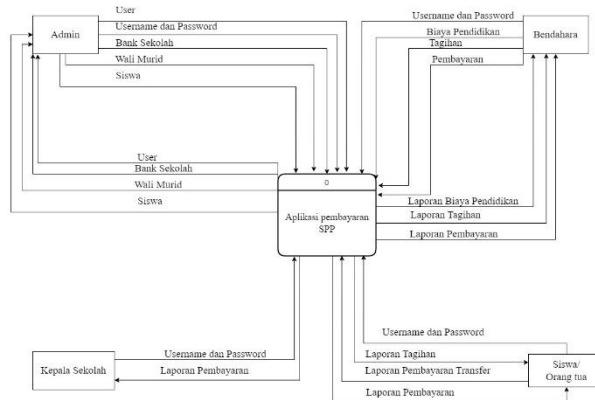


Fig. 3 Context diagram of spp payment system.

In Figure 3 about the context diagram of the spp payment system, the admin processes user data, usernames and passwords, school banks, student guardians, students to be processed in the information system so that the data can be used by the bursar to input bills and confirm spp payments then print tuition reports, bill reports and payment reports that can be seen by the principal and student guardians.

E. Data Flow Diagram (DFD)

DFD is a model or rational cycle of information used to describe where information data comes from, where information data comes out, and where information data is stored. (Salsabila et al., 2021).

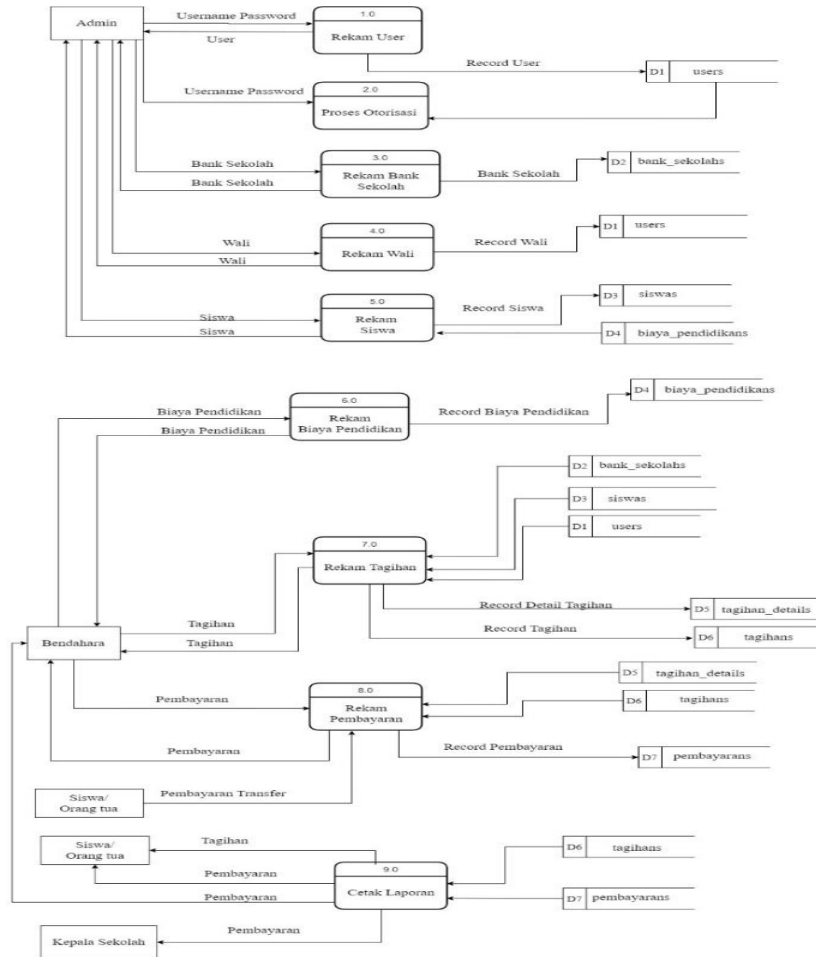


Fig. 4 DFD of spp payment system.

The Data Flow Diagram (DFD) in Figure 4 above will be explained in Table 1 below:

TABEL I Data Flow Diagram		
No.	DFD	Description
1.0	User Record	The process of entering user data, granting user access
2.0	Authorization Process	The process of entering username and password data
3.0	School Bank Record	Process of entering School Bank Data
4.0	Guardian Record	Guardian data entry process
5.0	Student Record	Process of entering student data, Batch Billing, Class, School Year
6.0	Tuition Record	Education fee data entry process

7.0	Bill Record	Process of entering billing data
8.0	Payment Record	Process tuition payment transactions
9.0	Print Report	The process of displaying billing report data and SPP Payment transactions

IV. RESULTS

This research produces a web-based SPP billing and payment management application, which makes it easier for admins, treasurers, student guardians and school principals to manage, monitor, pay by using the Laravel framework and page design using bootstrap CSS so that the display is more responsive and more attractive. The facilities provided in the application are quite complete such as the bill generation feature, manual payment feature, view and confirm transfer payments, print receipt feature, and automatic report generation feature.

The following are the implementation results of the web-based billing and payment management application that has been built and will be implemented at SDIT Tahfidz BintangKU Probolinggo city.

1. Main page

There are three sections, where the first section is for the student guardian home section, if you click on the student guardian login it will be directed to the student guardian login.



Fig. 5. Main Page Display

The second part is the about section, where this is a testimonial of previous users.

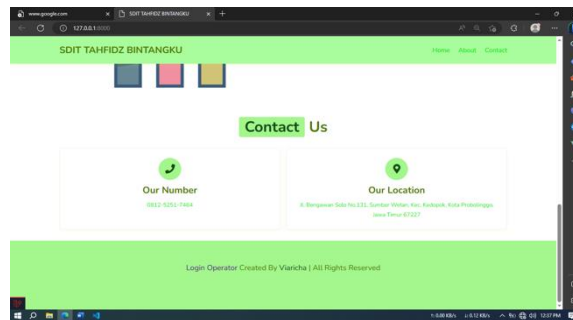


Fig. 6 Contact Page Display

The third section (Figure 6) contains contact and login for the operator, which when clicked will redirect to the operator login.

2. Login Display

A textbox is provided to enter an email and password in order to access according to the user's access rights.

There are three users, namely admin, treasurer, and student guardian. Each has a different dashboard according to their access rights..

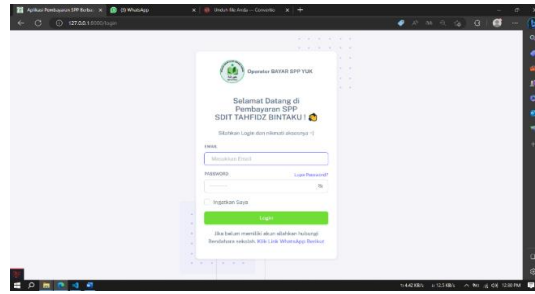


Fig. 7. Login Display

3. Admin Display

A display like Figure 8 when logged in as admin..

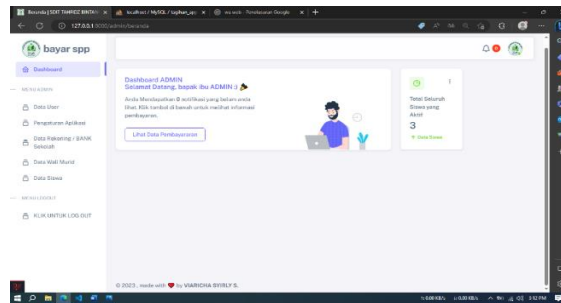


Fig. 8. Dashboard Admin Display

Access rights owned by the admin include, managing user data, institutional settings,

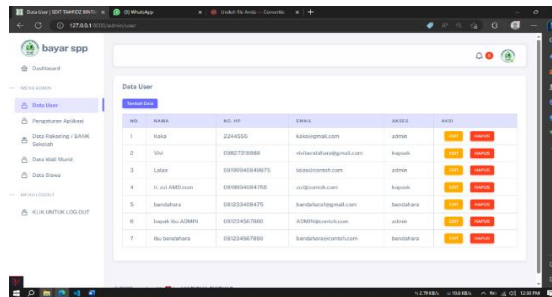


Fig. 9. Managing User Display

This feature is used to set the agency name, address, contact number, Figure 10.

a. Responsible Person Settings, used to change the identity of the school authority..

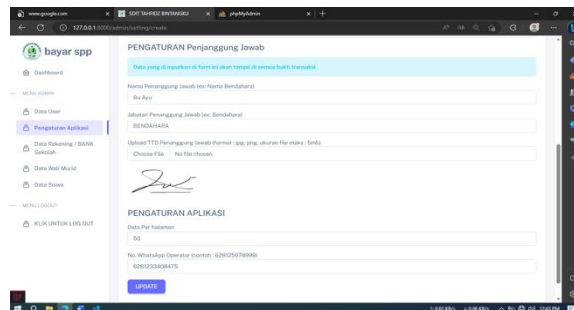


Fig. 10. Responsible Person Settings Display

b. School Bank Account Data Management, used to prepare if students make payments via transfer.

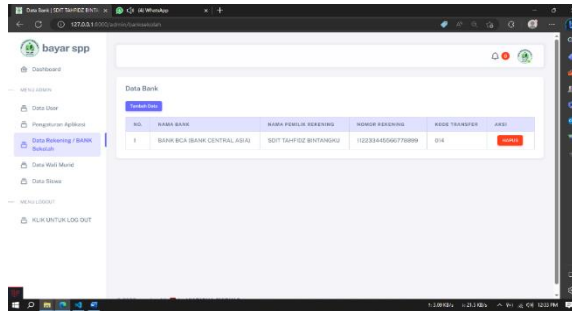


Fig. 11. School Bank Account Data Management Display

- c. Student Guardian Data Management, used to prepare student guardian data as well as create a username and password for login purposes.

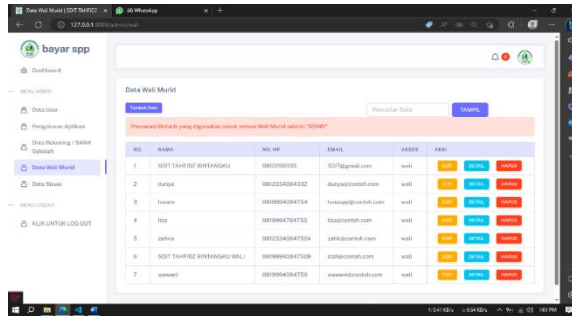


Fig. 12. Student Guardian Data Management Display

- d. Student Data Management, used to manage student data.

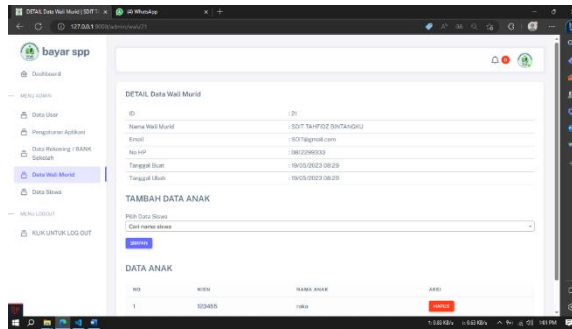


Fig. 13. Student Data Management Display

4. Treasurer Dashboard Display

When logged in as Treasurer, a different feature will appear from the admin dashboard, namely the display of bills that appear every month billed.

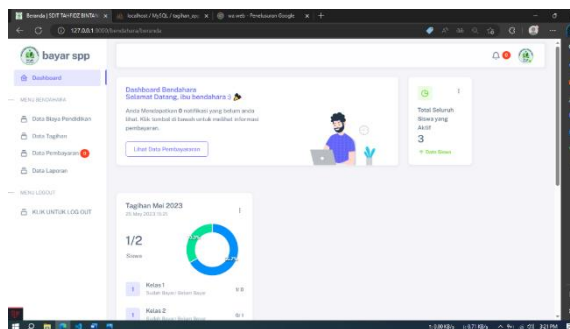


Fig. 14. Treasurer Dashboard Display

Other features that the treasurer has are presented in Fig. as follows:

a. Managing tuition fee bills

Every billing period, bills are prepared in advance so that parents are aware of the bills that must be paid.

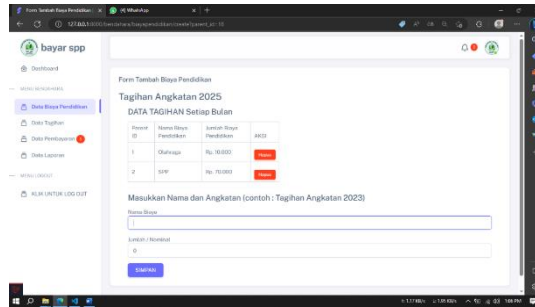


Fig. 15. Managing tuition fee bills Display

b. Cash payment Display

In order for the system to be used flexibly, a cash payment option is provide.

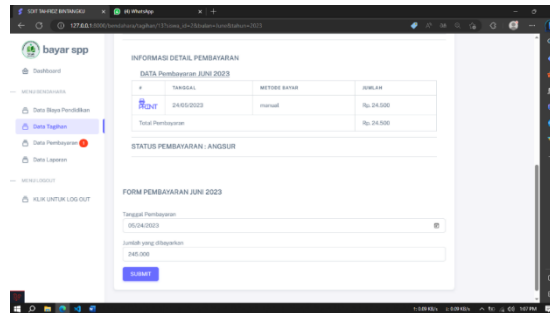


Fig. 16. Cash payment Display

c. Print Payment Receipt Display.

Each payment transaction is given a receipt, as proof that parents have made a payment.

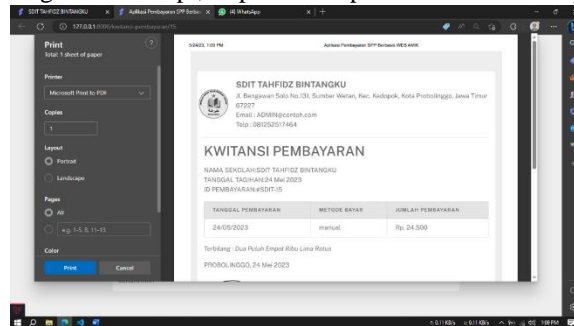


Fig. 17. Print Payment Receipt Display

d. Payment confirmation page Display

This feature is used if parents make payments via transfer..

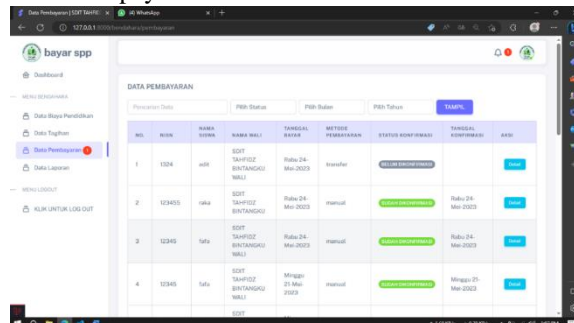


Fig. 18. Payment confirmation page Display

- e. SPP card print page Display
Used to find out the recap of tuition payments for each student.

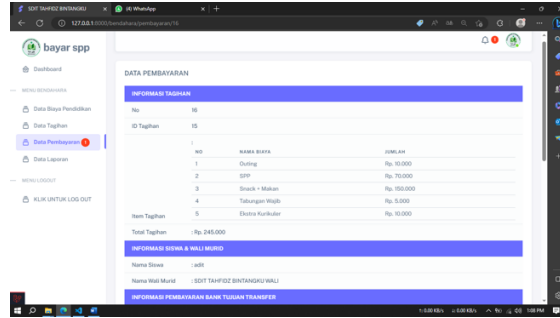


Fig. 19. SPP card print page Display

- f. The billing and payment report page Display

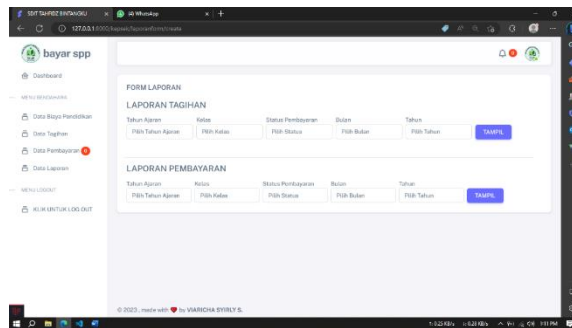


Fig. 20. The billing and payment report Display

5. Student Guardian Dashboard Display

Pada The student guardian dashboard displays payment data with the status "Unpaid, Installment, Paid".

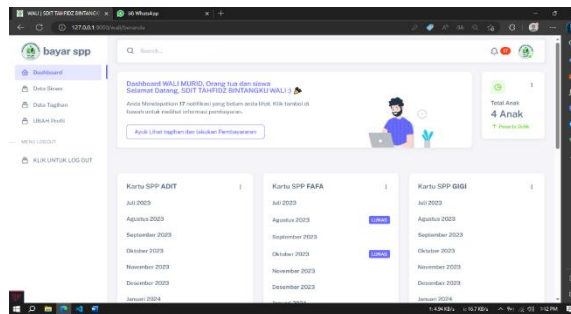


Fig. 21. Student Guardian Dashboard Display

From the Student Guardian login has several features, namely:

- a. Displaying bills per type of fee.



Fig. 22. Displaying bills per type of fee

b. Bill and Payment Notifications Display

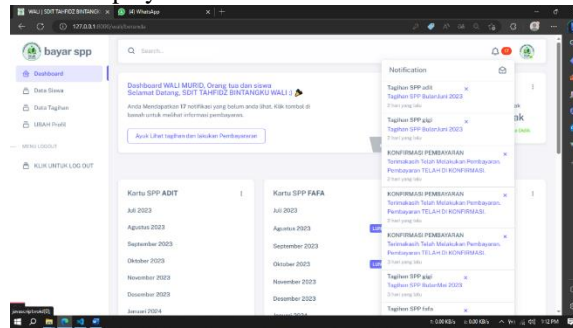


Fig. 23. Bill and Payment Notifications Display

c. Viewing status as well as being able to attach a photo proof of bill payment.

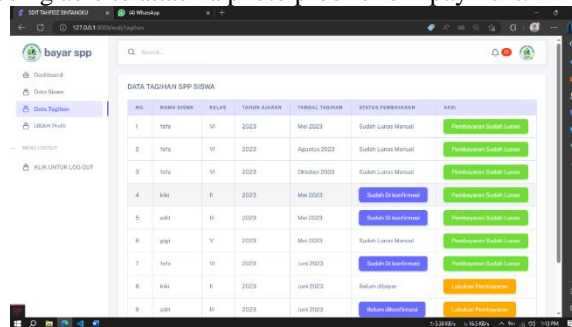


Fig. 24. Status Display

V. DISCUSSION

From the result that has been presented, it can be hereby state that with the SPP payment application at SDIT Tahfidz BintangKU, which are made, increasing various benefits such as provides convenience for students and parents in making payments online, reduces the need to queue at the physical payment counter and saves time and energy. Furthermore, it makes easier for treasurers and parents to track payment history. They can verify transactions that have been made and ensure there is no confusion or concern about payments that previously being left behind. Make it easier for schools to manage their finances. With an automated system, the process of recording and processing payments becomes more organized and controlled.

VI. CONCLUSIONS

From the discussion that has been presented, it can be concluded that with the SPP payment application at SDIT Tahfidz BintangKU, there are various benefits, namely:

1. Provides convenience for students and parents in making payments online. This reduces the need to queue at the physical payment counter and saves time and energy.
2. Makes it easy for treasurers and parents to track payment history. They can verify transactions that have been made and ensure there is no confusion or concern about payments being left behind.

3. Make it easier for schools to manage their finances. With an automated system, the process of recording and processing payments becomes more organized and controlled.
4. In Further research, the limitation might be found, upon that deeper research can be implemented to improve the application development.

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