

CONSTRUCTION OF A SCHOOL WEBSITE AS AN INFORMATION SYSTEM SOLUTION AT MTS NURUL HUDA, PANGGUNG TANGGAMUS ISLAND LAMPUNG

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Abstract

The fact that Madrasah Tsanawiyah Nurul Huda Tekad Pulau Panggung District only distributes brochures throughout the Pulau Panggung District and its environs has a significant influence on the admission of new students, as only potential students who receive the brochure are aware of MTS Nurul Huda. As a result, the school has not yet expanded its information dissemination efforts. A website-based information system that can assist in distributing information to potential students is adopted to ensure that information is sent appropriately. To facilitate information access for administrators, instructors, and the general public via the school website, this study intends to develop a website-based information system at MTS Nurul Huda School. The waterfall problem-solving approach will be employed in this study, and data will be gathered via literature review, interviews, and observation. In addition to the presence of a PPDB feature that can facilitate prospective students' access to the registration form at MTS Nurul Huda via the website, this web-based information system has the potential to reduce the management and provision of academic information, including school profiles, school history, vision, and mission.

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INTRODUCTION

The web is developing very quickly for several reasons, one of which is the rapid development of infrastructure such as the Internet. Website is a type of internet technology, where technology is a system created by humans to help them do things more easily, achieve better results, and save labor and resources [1].

Many businesses, educational institutions, healthcare institutions, and others use the Internet for business purposes and information dissemination, and it is very popular in modern cities. In 1989, Tim Berners-Lee invented a new way to connect documents on the internet to each other. Then this technique continued to be developed until it finally became a website. Furthermore, in 2000, Tim O'Reilly

(www.oreilly.com) introduced the idea of web 1.0. This concept became very famous and became very popular as many companies started using this medium to grow their businesses [2].

An information system is a collection of data that is well-communicated, correct, and well-received [3]. In another sense, to make it easier to find the necessary information and manage data more efficiently and effectively, the technology needed is an information system. [4].

Information systems in schools are essential for school administration and academic data management. Currently, almost all levels of education, from junior high school/MTS to college, have a school website. This website is used to meet the needs of school

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management by its function. The community can get a better education with the help of information systems [5].

Previous research, such as "Design and Build a Web-Based Student Information System at the Buddhist Sunday School of Vihara Dharmaloka Pekanbaru", found that by having a web-based information system, Smb Vihara Dharmaloka Pekanbaru can manage data, including teacher data, student grade data, and other data more easily and quickly because the information system is already available as a report [6].

The research "Building School Website Information Using Google Sites" studies the school's web information system. This study found that school websites can be used as a tool or medium for publishing information for a wider community. In addition, the information system offered by the school makes communication between the school and the community easier [7].

The study "Design and Build a Web-Based School Academic Information System (SIAS) Application" found that this application will make it easier for administrators, homeroom teachers, and teachers to manage academic data and student grades. The grading and recapitulation system and student report cards were previously done manually with a few simple office applications, but now this web-based Siakad application can help in managing these data so that it is even more effective [8].

The study "Creation of the SMA Negeri 1 Sungailiat School Website Portal as an Information Media" found that the school website allows schools to disseminate important information such as announcements, school activities, and others. In addition, this website serves as a tool to promote the school to the community. With chat features and the ability to upload necessary forms, such as those required for new student registration, the community can directly interact with school operators through this web [9].

However, it is different from MTS Nurul Huda, which is one of the private schools in the Pulau Pangung District area. The process of disseminating information about his school is currently only disseminated through brochures in the Pulau Pangung District and its surroundings, which hurts the admission of new students because only prospective students who receive the brochure know about

MTS. Then the information is conveyed only in the area, and usually if a brochure is given, people don't want to hold it so most of it is scattered on the street.

The results of previous research on information systems show that previous research has only focused on school information and school profiles, but this study will expand the scope by adding features related to the admission of new students. This feature will make it easier for the public or prospective students to access the registration form on the school website. Based on the above problem, the author wrote this article entitled "School Website Development as an Information System Solution at Mts Nurul Huda, Pulau Pangung Tanggamus Lampung". The hope is that this website will add value to MTS Nurul Huda, especially for the managers, teachers, and people in Pulau Pangung District.

METHOD

This research will use the waterfall method, which is one of the methods of developing a systematic and sequential information system, where each stage is carried out sequentially and continuously [10]. The waterfall model is also the oldest in software development [11].

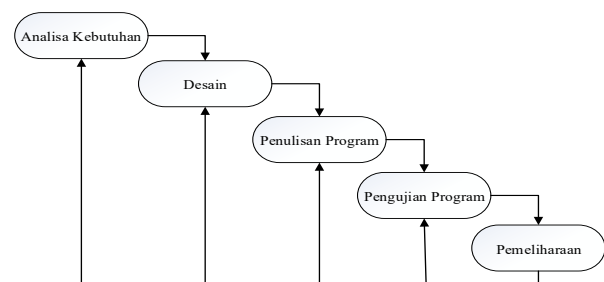


Figure 1. Waterfall

Stages of the Waterfall Method:

1. System needs analysis: This step analyzes the system requirements. In this stage, data can be collected through interviews or literature studies. An analytics system will gather as much information as possible to create a computer system that can do what the user wants. Data related to the user's wishes during the system creation process will be generated at this stage. This document will be used to translate the

analysis system into a programming language.

2. Design: before coding begins, the design process will translate the need for a predictable software planning system. This process concentrates on data structure, software architecture, interface representation, and procedural details. Programmers will use a document called Software Requirements to perform system creation activities.
3. Program writing: the translation of a design into a language that computers recognize is called coding. Performed by programmers, who will translate the user's transactions. This is the actual step in running the system. Here, computer users will be maximized. Once the coding is complete, the system will be tested. The purpose of testing is to find system errors and fix them.
4. Program testing: after the analysis, design, and coding process is complete, the system can be used by users. This is the final stage in the creation of the system.
5. Maintenance: the software that has been provided to the user will inevitably change. This could be due to errors made because the software had to adapt to a new environment, such as a new peripheral or operating system, or because the user needed a functional fix.

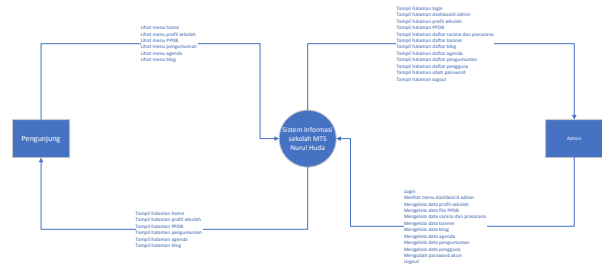
RESULTS AND DISCUSSION

System Design

Using context diagrams, level 0 data flow diagrams, and level 1 data flow diagrams, as well as input and output page views, the system design stage will provide a clear picture of the system design that will be created and implemented to meet the needs of system users.

Context Diagram

For the information system of the MTS Nurul Huda school, a context diagram is used to show the relationship between entities in a system. This diagram can be seen here:

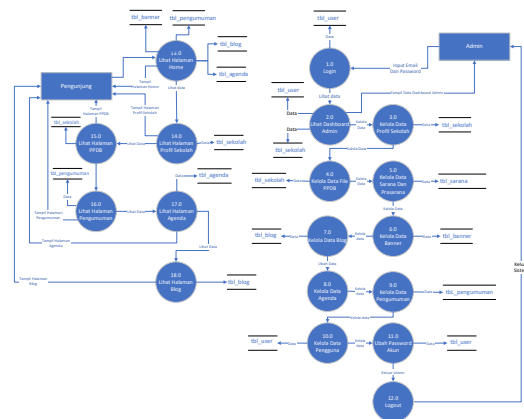


Source: Author (2024)

Figure 2. Context Diagram

DFD Level 0

The MTS Nurul Huda school information system uses a data flow diagram, which is a type of diagram used to show the data flow of a process or system:

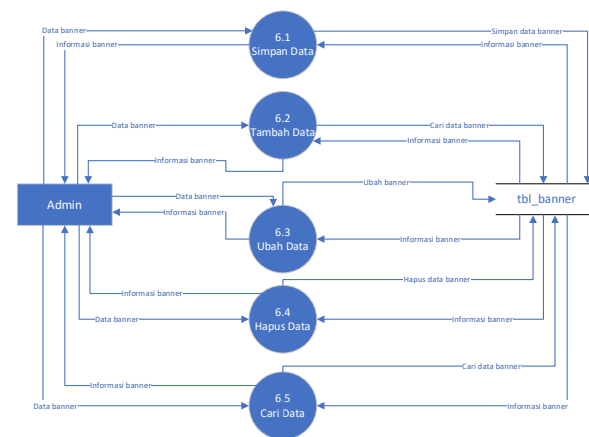


Source: Author (2024)

Figure 3. Data Flow Diagram Level 0

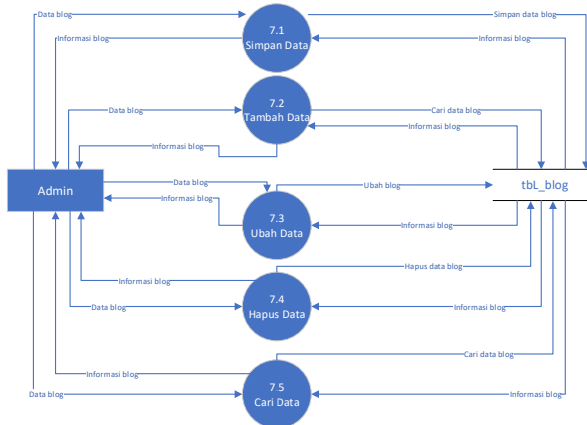
DFD Level 1

DFD level 1 is a continuation of DFD level 0, where each process runs in more detail at this level to break down the main process into smaller sub-processes. The DFD Level 1 design used in the MTS Nurul Huda school information system is as follows:



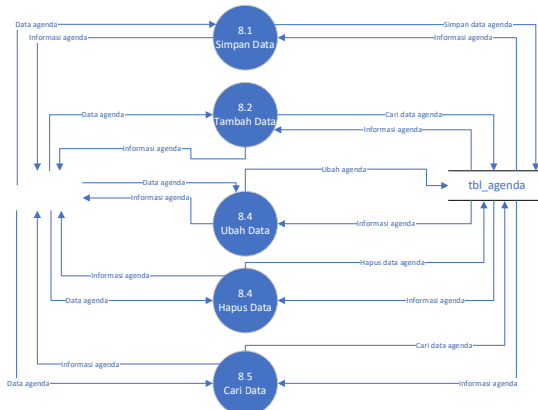
Source: Author (2024)

Figure 4. Data Flow Diagram Level 1 Process 6.0 Kelola data Banner



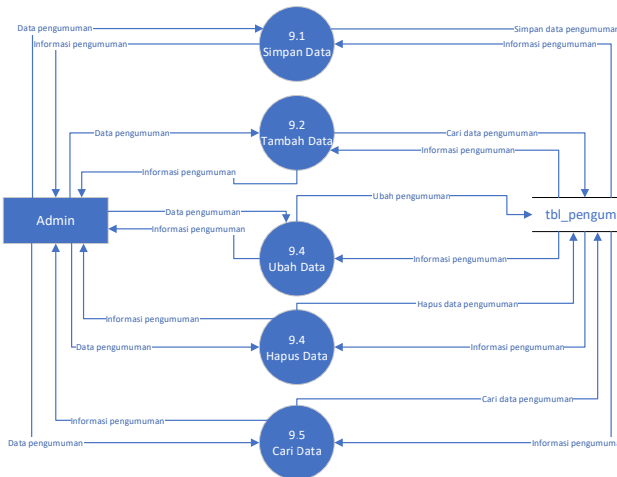
Source: Author (2024)

Figure 5. DFD Level 1 Process 7.0 (Manage Blog Data)



Source: Author (2024)

Figure 6. DFD Level 1 Process 8.0 (Manage Data Agenda)



Source : Author (2024)

Figure 7. DFD Level 1 Process 11.0 (Manage School Data)

Entity Relationship Diagram (ERD)

In database design, an Entity Relationship Diagram is a common diagram to show the relationship between an entity and its attributes. The following figure shows the Entity Relationship Diagram used in the MTS Nurul Huda school information system:

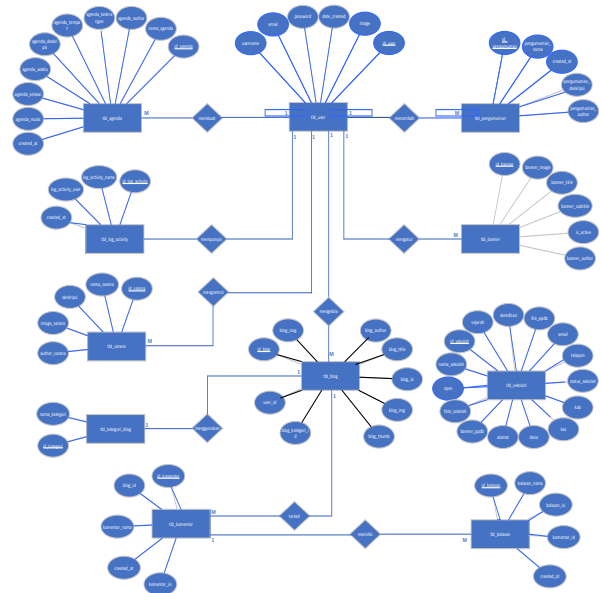


Figure 8. Entity Relationship Diagram (ERD)

Data Dictionary

Data dictionaries allow system analysts to identify data streams thoroughly. At the system analysis stage, the data dictionary functions as a means of communication between system analysts and system users regarding the data entered into the system, including the type of data entered into the system and what information is needed by the system user. At the system design stage, data dictionaries are used to design inputs, reports, and bases. Data dictionaries are derived from the Unified Modeling Language (UML), which displays only the names of data streams and is global. The following data dictionaries offer more information about the structure of UML dataflows:

Table 1. Data Table Tbl_user

No	Name	Type	Information
1.	Id_user	Int(11)	Key
2.	Username	Varchar(25)	
3.	Email	Varchar(25)	
4.	Password	Varchar(16)	
5.	Date_created	Timestamp()	
6.	Image	Varchar(128)	

Table 2. Data Table Tbl_sekolah

No	Name	Type	Informat ion
1.	Id_sekolah	Int(1)	Key
2.	Nama_sekolah	Varchar(30)	
3.	Npsn	Int(20)	
4.	Foto_sekolah	Varchar(100)	
5.	Alamat	Varchar(50)	
6.	Desa	Varchar(50)	
7.	Kec	Varchar(50)	
8.	Kab	Varchar(30)	
9.	Status_sekolah	Varchar(30)	
10.	Telepon	Varchar(20)	
11.	Email	Varchar(50)	
12.	Akreditasi	Varchar(5)	
13.	Sejarah	Text()	
14.	Banner_ppdb	Varchar(128)	
15.	File_ppdb	Varchar(128)	

Table 3. Data Table Tbl_sarana

No	Name	Type	Informat ion
1.	Id_sarana	Int(11)	Key
2.	Nama_sarana	Varchar(50)	
3.	Deskripsi	Text()	
4.	Image_sarana	Varchar(128)	
5.	Author_sarana	Varchar(50)	

Table 4. Data Table Tbl_pengumuman

No	Name	Type	Informat ion
1.	Id_pengumuman	Int(11)	Key
2.	Pengumuman_nama	Varchar(100)	
3.	Created_at	Timestamp()	
4.	Pengumuman_deskripsi	Text()	
5.	Pengumuman_author	Varchar(50)	

Table 5. Data Table Tbl_log-activity

No	Name	Type	Informat ion
1.	Id_log_activity	Int(11)	Key
2.	log_activity_name	Varchar(55)	
3.	log_activity_user	Varchar(55)	
4.	Created_at	Timestamp()	

Table 6. Data Table Tbl_komentar

No	Name	Type	Informat ion
1.	Id_komentar	Int(11)	Key
2.	Blog_id	Int(11)	
3.	Komentar_nama	Varchar(25)	
4.	Created_at	Timestamp()	
5.	Komentar_isi	Text()	

Table 7. Data Table Tbl_kategori_blog

No	Name	Type	Informat ion
1.	Id_kategori_blog	Int(11)	Key
2.	Nama_kategori	varchar(50)	

Table 8. Data Table Tbl_blog

No	Name	Type	Informat ion
1.	Id_blog	Int(11)	Key
2.	Blog_slug	Text()	
3.	Blog_author	Int(11)	
4.	Blog_title	Varchar(50)	
5.	Blog_isi	Text()	
6.	Blog_img	Varchar(50)	
7.	Blog_thumb	Varchar(50)	
8.	Created_at	Timestamp()	
9.	kategori_blog_id	Int(11)	
10.	User_id	Int(11)	

Table 9. Data Table Tbl_banner

No	Name	Type	Informat ion
1.	id_banner	Int(1)	Key
2.	Banner_image	Varchar(55)	
3.	Banner_title	Varchar(50)	
4.	Banner_subtitle	Varchar(50)	
5.	Is_active	Int(1)	

Table 10. Data Table Tbl_balasan

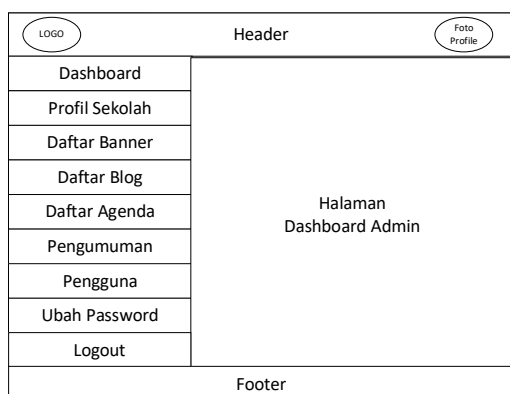
No	Name	Type	Informat ion
1.	id_balasan	Int(11)	Key
2.	Balasan_nama	Varchar(45)	
3.	Balasan_isi	Text ()	
4.	Komentar_id	int(11)	
5.	Created_at	Timestamp()	

Table 11. Data Table Tbl_agenda

No	Name	Type	Information
1.	id_agenda	Int(1)	Key
2.	Agenda_nama	Varchar(100)	
3.	Created_at	Timestamp()	
4.	Agenda_mulai	Varchar(45)	
5.	Agenda_selesai	Varchar(45)	
6.	Agenda_waktu	Varchar(45)	
7.	Agenda_deskripsi	Text()	
8.	Agenda_tempat	Varchar(100)	
9.	Agenda_keterangan	Text()	
10.	Agenda_authorized	Int(11)	

Interface Design

Admin Master Page Design

**Figure 9.** Admin Master Page Design

The admin page should be designed in a way that makes it easy to use and enjoyable for administrators to manage the data or information present in the system. The admin master page has several main menus, as shown in the image above. This includes admin dashboard, school profile, banner list, blog list, agenda list, announcements, users, password changes, and logout.

Input Dialog Design

Some of the important functions of the design of the MTS Nurul Huda information system display include:

1. Visualizing the Concept: The display design helps to see the concept or idea behind the website to be built.

2. Facilitates Communication: Display design helps developers, designers, and stakeholders communicate better. This helps them understand how the interface will look and interact with users. They can talk about interface components, make changes, and make sure that they understand the desired web look by looking at the display design.
3. Provide Development Guidance: Display design helps developers develop user interfaces in a clear way, including layout, UI components, and expected interactions. Developers can use the design of the display as a reference during the development process, so they can ensure that the resulting application meets expectations.
4. Improves User Experience: A good display design ensures that the app has a good user experience. Display design helps structure interface elements in a way that is easy to understand and easy for users to understand. This has the potential to increase user satisfaction and the effectiveness of website use.
5. Initial Evaluation and Feedback: The display design can be used to conduct initial evaluations and get feedback from users or test teams. By looking at the display design, users or teams can provide suggestions or necessary changes before website development begins, which helps to find potential problems or user needs that have not been met in the first place.

Overall, the design of the website serves as a visual guide that helps communicate ideas, provide direction for development, improve the user experience, and gather initial feedback before starting full-fledged website development.

Login Input Design

Figure 10. Login Page Design

The login page design is the input design used by all users to log in to the system.

Input Plan Change School Profile

Figure 11. Change School Profile Input Page Design

Admins will use the input plan of the change school profile page to change the school profile data in the system.

Add Banner Input Plan

Figure 12. Add Banner Input Page Design

To enter new banner data into the system, admins will use the add banner page design.

Banner Change Input Page Design

Figure 13. Banner Change Input Page Design

Admins will use the banner change page input design to change the banner data in the system.

Blog Add Input Page Design

Figure 14. Blog Add Input Page Design

To enter new blog data into the system, admins will use the blog add page design.

Blog Change Input Page Design

Figure 15. Blog Change Input Page Design

Admins will use the "blog change page" input design to change the existing blog data in the system.

Add Agenda Input Page Design

Figure 16. Add Agenda Input Page Design

To enter the new agenda data into the system, administrators will use the design of the add agenda page.

Change Agenda Input Page Design

Figure 17. Change Agenda Input Page Design

Admins will use the draft agenda change page input to change the existing agenda data in the system.

Announcement Add Input Page Design

Figure 18. Announcement Add Input Page Design

To enter new announcement data into the system, admins will use the input design of the add announcement page.

Draft Input Page Change Announcement

Figure 19. Draft Input Page Change Announcement

The design of the announcement page change announcement is an input design that will be used by the admin to change the announcement data in the system.

Add User Input Page Design

Figure 20. Add User Input Page Design

Admins will use the add user page design to enter new user data into the system.

Change User Input Page Design

Figure 21. Change User Input Page Design

Admins will use the user change page input design to change the existing user data in the system.

Change Password Input Page Design

Figure 22. Change Password Input Page Design

The input design intended to be used by admins and prospective new students to change the password of the existing account in the system is the Change Password Page.

Admin Dashboard Page Design

Figure 23. Admin dashboard page design

This page gives admins access to system data such as user count, blogs, agendas, announcements, and activity logs.

School Profile Page Design

Figure 24. School Profile Page Design

On this page, administrators can view all the school profile data that is in the system. This includes the school's name, accreditation, address, village, sub-district, district, phone number, email, or school website, and status. They can also change their profile data.

Banner List Page Design

Figure 25. Banner List Page Design

Admins can see all banner data on this page. They can also manage banner data, such as adding, searching, changing, and deleting banners.

Blog List Page Design

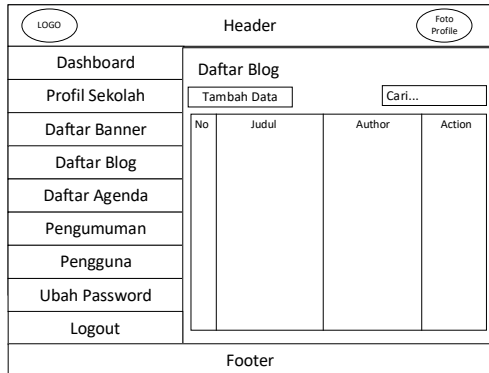


Figure 26. Blog List Page Design

Administrators can view all existing blog data in the system on this page. They can also manage blog data, including adding, modifying, searching, and deleting blogs.

Agenda List Page Design

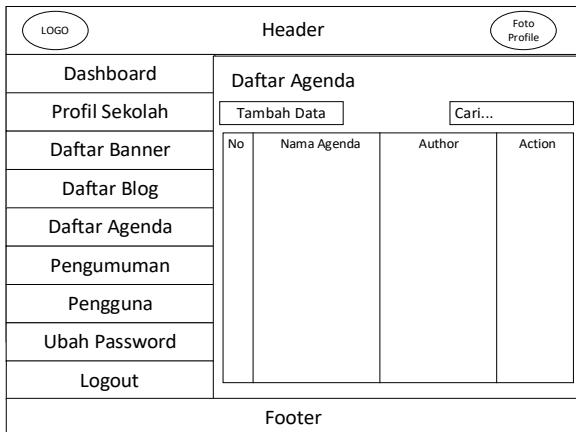


Figure 27. Agenda List Page Design

Admins can view all information about agenda data in the system on this page. They can also manage agenda data, which means adding, changing, searching, and deleting agendas.

Announcement Page Design

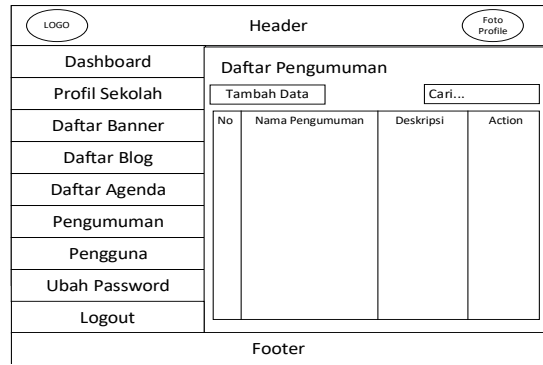


Figure 28. Announcement Page Design

Admins can view all information about the announcement data in the system on this page. They can also manage announcement data, including adding, modifying, searching, and deleting announcements.

User Page Design

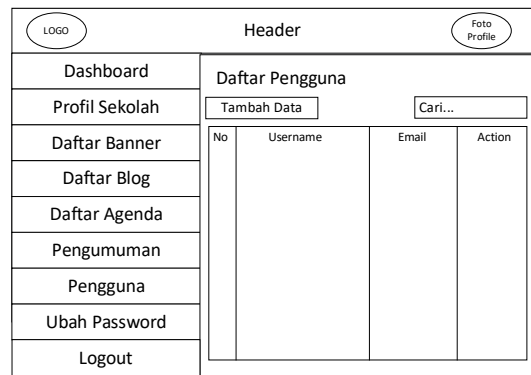


Figure 29. User Page Design

Admins can view all user data in the system on this page. They can also manage user data, such as adding, changing, searching, and deleting users.

Home Page Design



Figure 30. Home Page Design

This page allows users to view the footer, current menu list, sliders, breaking news, facilities and infrastructure, and other information.

School Profile Page Design

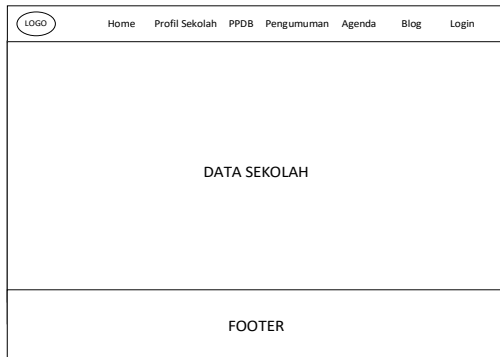


Figure 31. School Profile Page Design

All users who use the system can view the school profile on this page.

PPDB Page Design

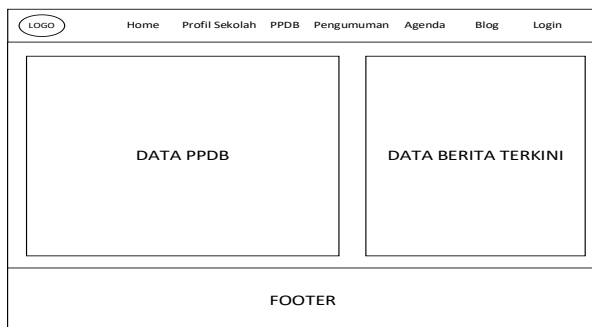


Figure 32. PPDB Page Design

On this page, all users can see the ppdb banner, ppdb file, and the latest news data.

Announcement Page Design

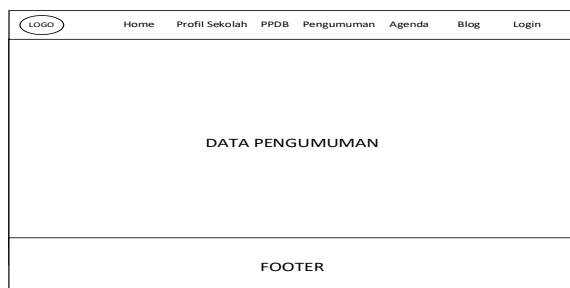


Figure 33. Announcement Page Design

On this page, all users can view the current system announcement data.

Agenda Page Design

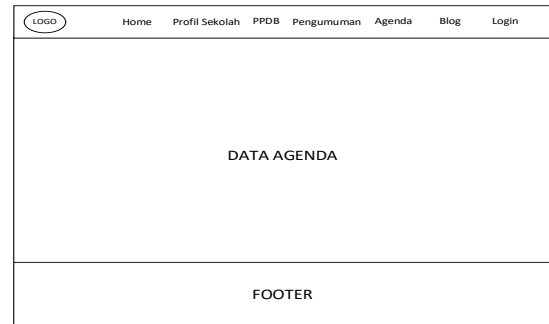


Figure 34. Agenda Page Design

The school agenda data in the system can be viewed by all users on this page.

Blog Page Design

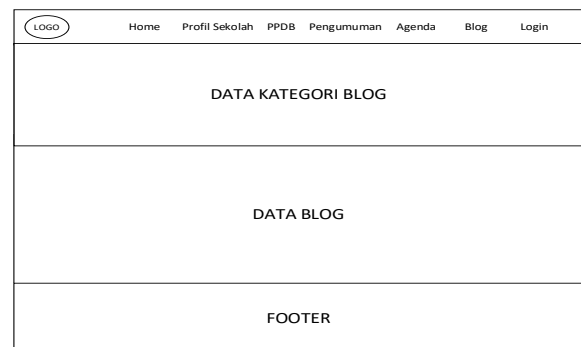


Figure 35. Blog Page Design

On this page, each user can see the data of blogs or articles in the system.

System Implementation

Login Page View

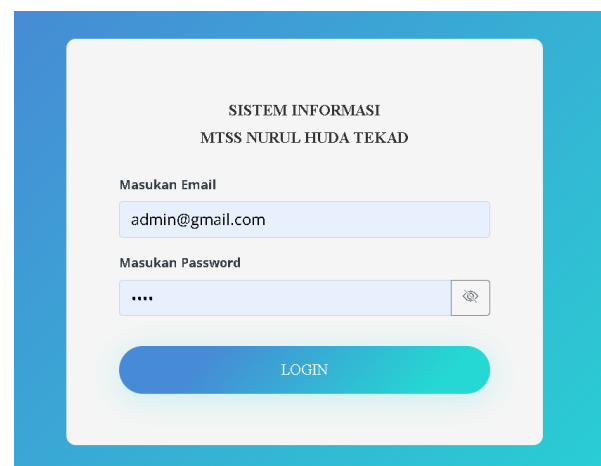


Figure 36. Login Page View

This page shows the initial image of the new student information system, which is used to authenticate users. Users will be asked to enter their email and password in the fields provided. If the email and password provided match, the user will be taken to the user dashboard page.

Admin Dashboard Page View

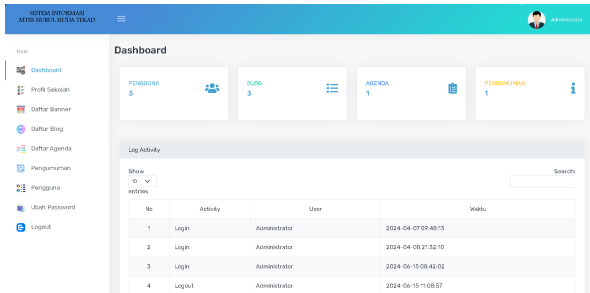


Figure 37. Admin Dashboard Page View

Admins can view all school information system data on this page. This includes the number of users, blogs, agendas, announcements, and admin activity logs.

School Profile View

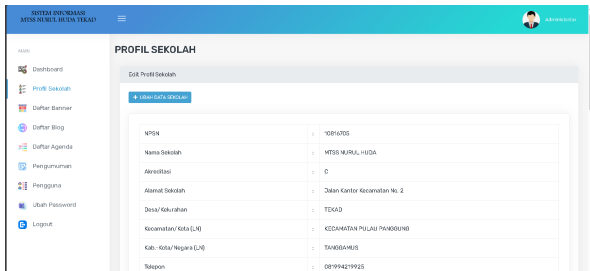


Figure 38. School Profile Page View

Admins can view all data in the system, including school profile data, PPDB data, and infrastructure data. They can also manage data by adding, searching, changing, and deleting data.

Banner List Page View

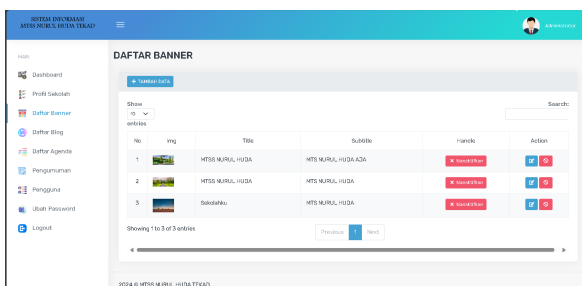


Figure 39. Banner List Page View

Administrators can view all information about the list of banners in the system on this page; This includes banner photos, titles, subtitles, handles, and actions. They can also manage banner data, including adding, searching, changing, and deleting banners.

Blog List Page View

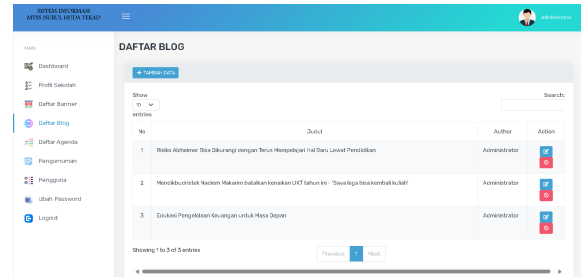


Figure 40. Blog List Page View

Administrators can view this page to see all the information about the list of blogs and blog categories that are in the system, including the blog title, author, category name, and action. They can also manage this data by adding, searching, changing, and deleting.

Agenda List Page View

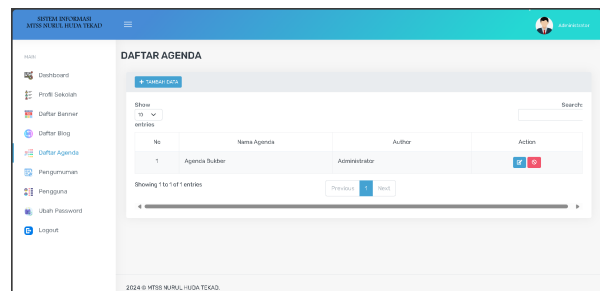


Figure 41. Agenda List Page View

Admins can view all the information about the agenda list in the system on this page, including the agenda name, author, and other information. They can also manage agenda data, such as adding, searching, changing, and deleting agendas.

Announcement List Page Display

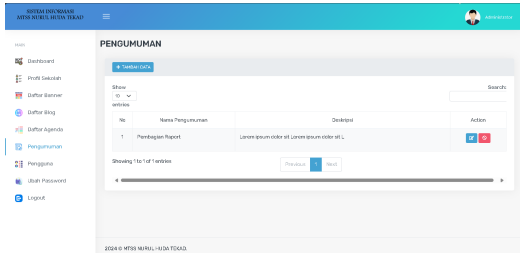


Figure 42. Announcement List Page Display

Administrators can view all information about the list of announcements that are in the system on this page, including the name of the announcement, description, and action. They can also control announcement data by adding, searching, changing, and deleting announcements.

User List Page View

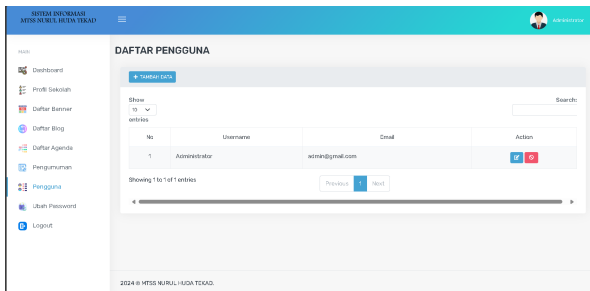


Figure 43. User List Page View

Administrators can view all the user list information that exists in the system, such as usernames, emails, and actions. They can also manage user data, such as adding, searching, changing, and deleting users.

Change Password Page Display

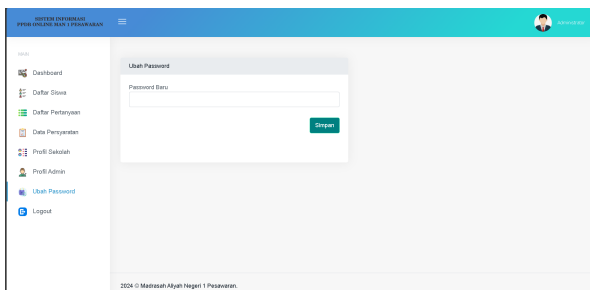


Figure 44. Change Password Display

Administrators can change the personal account password on this page by entering a new password and then clicking the "save" button.

Home Page View

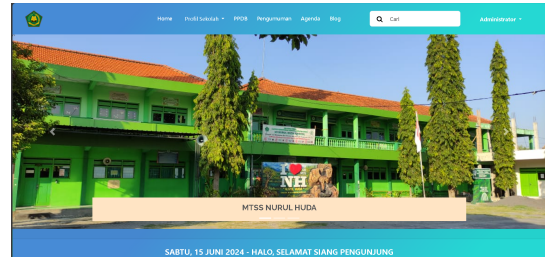


Figure 45. Home Page View

This page allows users to view the footer, current menu list, sliders, breaking news, facilities and infrastructure, and other information.

School Profile Page View

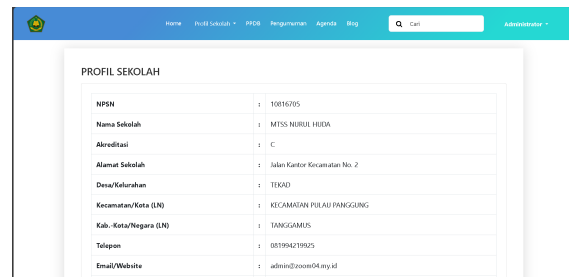


Figure 46. School Profile Page View

All users who use the system can view the school profile on this page.

PPDB Page View

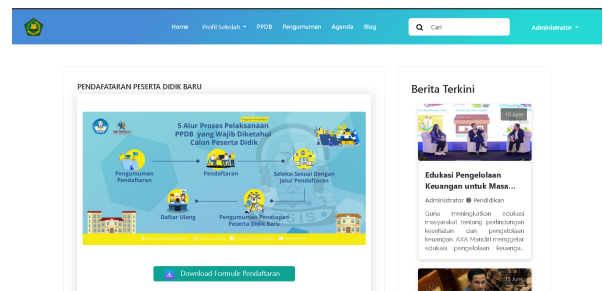


Figure 47. PPDB Page View

On this page, all users can see the latest PPDB banners, PPDB files, and news data.

Announcement Page View

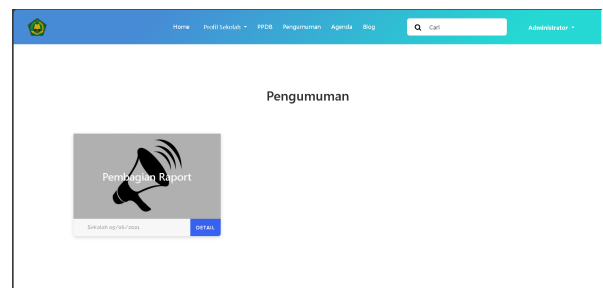
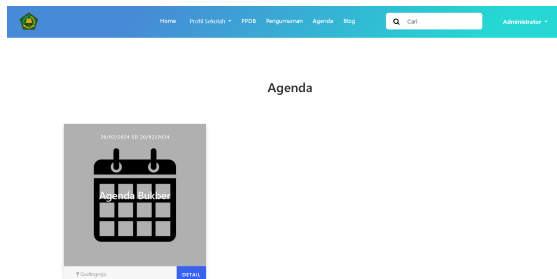


Figure 48. Announcement Page View

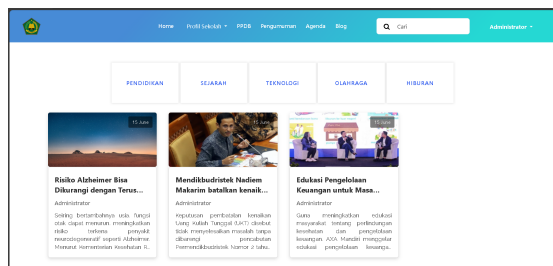
On this page, all users can view the current system announcement data.

Agenda Page View

**Figure 49.** Announcement Page View

On this page, all users can view the current system announcement data.

Agenda Page View

**Figure 50.** Blog Page Views

On this page, each user can see the data of the school blog in the system.

CONCLUSION

The results of the web-based information system research at the MTS Nurul Huda school in Pulau Panggung District, Tanggamus, Lampung, show that the waterfall model is used for the web-based information system. The stages of the research include analysis, design, programming, testing, and maintenance. The process of creating this web-based school information system includes creating context diagrams, level 0 data flow diagrams, and level 1 data flow diagrams. In addition, there is also an input and output page display. First, you use the XAMPP webserver to create the database, and then you use the sublime text editor application to write the code using the PHP

programming language to process the data on the website. Furthermore, after the programming is complete, the website is hoasting to allow access to the internet.

The results of the Black Box Testing analysis show that the school's information system program has been designed and built correctly. In addition, the output of the program does not contain any logic errors or errors. Therefore, at MTS Nurul Huda in Pulau Panggung District, Tanggamus, Lampung, a web-based information system was built that can help in disseminating information to students, teachers, and the general public.

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