

New Student Admission Information System for PG TK Aisyiyah VI Candi Using the End-User Method

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Abstract. There is an increasing demand for educational institutions to digitize the New Student Admission (PPDB) process in order to improve transparency and ease of management and operations. PG TK Aisyiyah VI Candi, located in Durung Bedug Village, Candi District, Sidoarjo Regency, currently still implements conventional student admission procedures. This situation causes long waiting times, inefficient documentation processes, and the potential for errors in data recording and entry. This study designs a web-based information system infrastructure with an End User Development (EUD) approach that aims to improve service quality, reduce administrative burdens, and increase stakeholder satisfaction. The EUD approach is a good model because it allows non-technical staff to customize the system according to their operational needs without full dependence on technical assistance, while maintaining system agility through feedback from stakeholders. The main features of this system include online registration initiated by parents, data transmission for file sharing, student identity verification by the school, and an electronic registration process. Validation results show that the system is capable of performing key functions such as identity verification, digital form management, document validation, process monitoring, and management analytics. This infrastructure not only achieves technical optimization but also drives the advancement of digital transformation in early childhood education institutions.

Keywords: PPDB, web-based platform, End-User Development, online registration, educational technology.

1 Introduction

The mechanism for selecting new students is a crucial annual agenda carried out by educational institutions based on pre-formulated selection criteria. This activity is the initial foundation for building public trust in the credibility of educational institutions. However, the implementation of conventional procedures often encounters various problems, such as extensive queues, irregularities in file management, and the risk of inconsistencies in information documentation [1].

PG-TK Aisyiyah VI Candi, located in the Durung Bedug Village area in Candi District, Sidoarjo Regency, was established in 2013 and obtained its official deed of establishment in 2015. As an early childhood care institution, some of its biggest responsibilities include helping children aged 3-6 years develop their brains to support their motor, interpersonal, intellectual, and psychological abilities. According to the curriculum implemented at PG-TK Aisyiyah VI Candi, a conducive environment is created for children to develop holistically through engaging, instructive, and responsive methodologies tailored to the developmental characteristics of early childhood.

Progress in the field of information and communication technology has spurred various institutions to implement digital-based infrastructure policies to accelerate the effectiveness and accountability of new student selection procedures. In addition, web-based solutions for this process have become one of the most progressive options for completion. This is due to superior accessibility, both for education-related entities and guardians [2]. This infrastructure facilitates the execution of all registration procedures virtually, implying every phase from form compilation to the transmission of required documentation.

The End-User Development (EUD) methodology was selected as the framework for constructing this infrastructure based on its capacity to optimize end-user participation in configuring and adapting the infrastructure according to their operational specifications [3]. EUD empowers individuals without technical expertise to participate substantively in the construction process, thereby amplifying the relevance and utility of the resulting infrastructure [4]. Furthermore, this framework accommodates an accelerated iteration cycle,

allowing developers to implement modifications based on direct feedback from stakeholders.

This investigation aims to construct a Web-Based Digital PPDB Information Infrastructure for PG TK Aisyiyah VI Candi that is not only designed to fulfill administrative obligations, but also to amplify accessibility, transparency, and effectiveness in the new student selection procedure [5].

2 Method

The approach applied in creating this online PPDB information platform is End-User Development (EUD). The EUD method was chosen for its ability to actively involve end users in the system development process, ensuring that the resulting system truly meets daily operational needs. The online PPDB application system uses a framework that supports multi-school development, which was also a consideration in the system architecture design [6].

The EUD strategy has been validated as productive in producing responsive user interfaces, accelerating affordability and agility for users [7]. This method has also been successfully applied in various information systems, including geographic information infrastructure for disaster risk zone cartography [8].

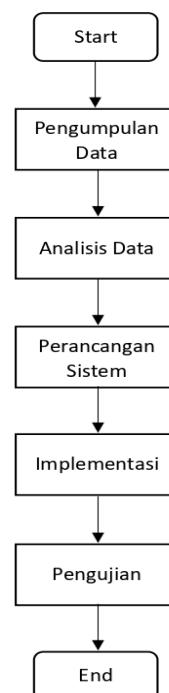


Figure 1. Steps in the End-User Development method

3 Results and Discussion

3.1 Data Collection and Analysis

In this phase, the mechanism for collecting and analyzing information needed to create a platform that is in line with user needs is established. In the context of the Online PPDB platform, this phase includes identifying the main features needed by parents/guardians, student candidates, and school institutions so that the registration mechanism runs more effectively and efficiently. Web-based information platforms have the capability to replace manual mechanisms that are prone to errors and inefficient [9]. The implementation of online systems can increase process speed, reduce queues, and facilitate access to information for users [10]. Experience in developing websites for educational institutions shows the importance of responsive designs that can be accessed through various devices to improve service accessibility [11].

Table 1. Data Collection

No	Category	Need	Description
1	Registration	Registration Form	Parents/guardians can fill out the form online without having to come to the school in person. This form includes the student's personal data, school choices, and other supporting information.
		Upload Documents	Parents/guardians can upload the required documents.
2.	Registration Status	Registration Tracking	Parents/guardians can monitor the registration progress in real-time through the registration system. They can find out whether the registration is still in the verification process or has been confirmed.
3.	Security System	User Authentication	This system uses a login mechanism for users based on email and password with encryption that will be removed first to protect user data from hacking attempts.
		Access Rights	Admin users have full control over the system, while parents/guardians are given access to information about their children's registration only. This access is necessary to ensure system security and proper data usage.
4.	Chatbot & Support	Chatbot Service	Another feature provided by the system is a chatbot designed to assist parents or guardians in obtaining information about the PPDB process, including registration schedules, required documents, and the steps to follow during the PPDB process. This chatbot is a manually managed feature where every question sent by users to the chat feature is answered directly by the admin through the chat feature, and only certain phrases can trigger automatic messages. With this feature, communication between the school and users will be easier, faster, and more efficient without incurring significant costs or going through complicated processes.
5.	User Interface	Ease of Navigation	The system interface is designed to be simple and easy to understand, with intuitive menus and step-by-step guides to assist users who are unfamiliar with the Online PPDB system.

6.	System Users	Admin	Manage registration data, verify documents, provide acceptance confirmation, and manage the system as a whole to ensure all processes run smoothly.
		Parents/Guardians	Register students, upload documents, monitor registration status, and obtain information.

3.2 System Design

This phase covers the infrastructure design procedure using the End-User Development framework, which directly integrates stakeholders in the construction of the interface and infrastructure functionality, and provides a systematic and organized construction structure [12]. This framework ensures that each phase of construction can be executed in a structured manner, from needs assessment to implementation and testing [13]. The infrastructure is designed based on previously evaluated requirements. This design also includes the construction of infrastructure flowcharts, data repository structures, and intuitive page designs so that stakeholders can interact directly and understand the functionality of the infrastructure without in-depth technical training. This framework aims to accelerate the efficiency, accessibility, and convenience of stakeholders in operating the Digital PPDB application.

2.2.1 Flowchart

Figure 3 shows a visual representation explaining the workflow in the online PPDB system:

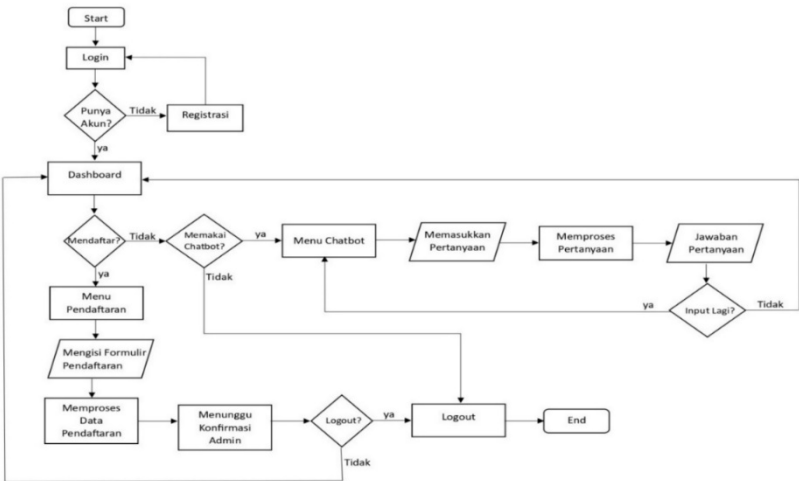


Figure 2. Flowchart

The explanation of the flowchart above is that when parents/guardians want to register, they must first log in or register if they do not yet have an account. When logging in to register, they will be directed to the dashboard homepage. If they want to register, they only need to select registration in the menu, then fill in the required form correctly. After they fill out the form, the system will process the data, and parents/guardians must confirm it with the admin. In addition, parents/guardians can use the chatbot in the system to request assistance or additional information about anything. With this chatbot, they can enter questions, which will then be processed by the system to provide relevant answers. After all processes are complete, parents/guardians can choose to log out or continue using the system for other purposes.

3.2.2 Use Case Diagram

A Use Case Diagram is a graphical visualization that demonstrates the pattern of user-system interaction. This diagrammatic instrument facilitates the identification of actors and the mapping of their respective functional accessibility. In the Online PPDB system, there are several main actors, such as parents/guardians and administrators. Parents/guardians can register, upload documents, check registration status, or ask questions via chatbot. Meanwhile, administrators are tasked with managing registration data, verifying documents, and

providing confirmation of acceptance. Through this diagram, the infrastructure workflow can be clearly observed and the congruence of each functionality with user requirements can be verified.

3.2.3 Student Use Case Diagram

In Figure 4, the student use case diagram shows how students interact with the Online PPDB system to register online by filling out forms, uploading documents, viewing registration status, and using the chatbot feature if needed to ask questions related to registration.

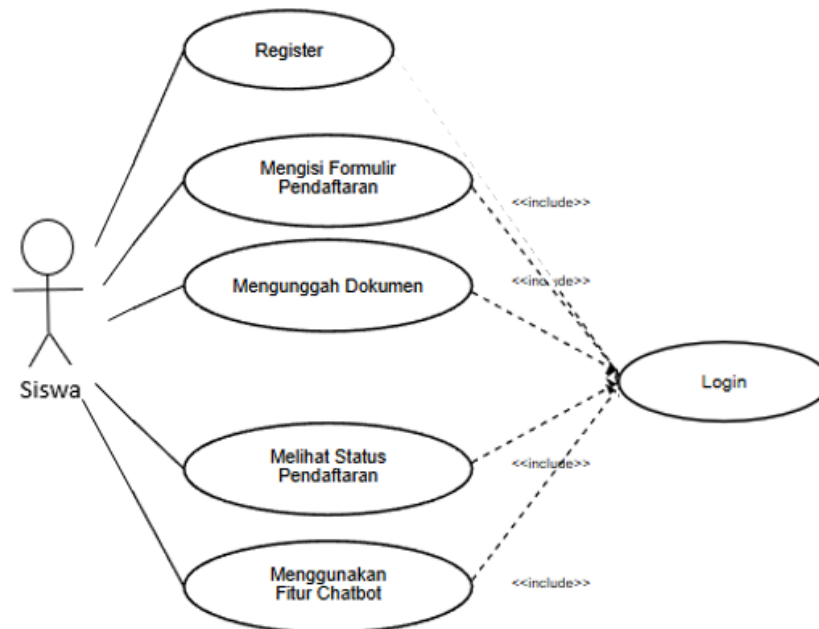


Figure 3. Student Use Case Diagram

3.2.4 Administrator Use Case Diagram

Figure 5 shows the administrator use case diagram, where the administrator interacts with the Online PPDB platform to view existing registrant information, verify registrations if all data is correct, and answer questions directly in the chatbot feature.

The following is Figure 5 below.

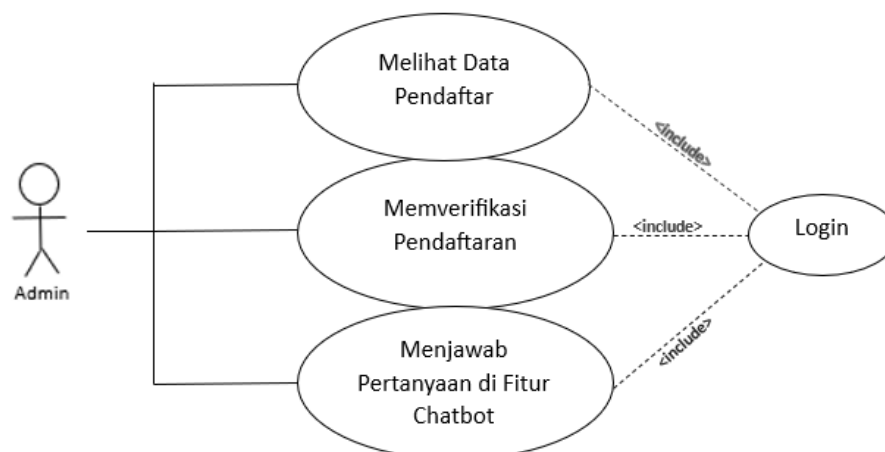


Figure 4. Administrator Use Case Diagram

3.2.5 Activity Diagram

The Activity Diagram for the Digital PPDB Infrastructure illustrates the workflow of interactions between two actors: students and administrators. Students execute registration, authentication, compilation of enrollment forms, wait and observe administrator validation, and terminate sessions. Meanwhile, administrators log in, check student registration data, provide confirmation, and end the process by logging out. This diagram clarifies the relationship between the activities of the two actors in supporting the online registration process. See Figure

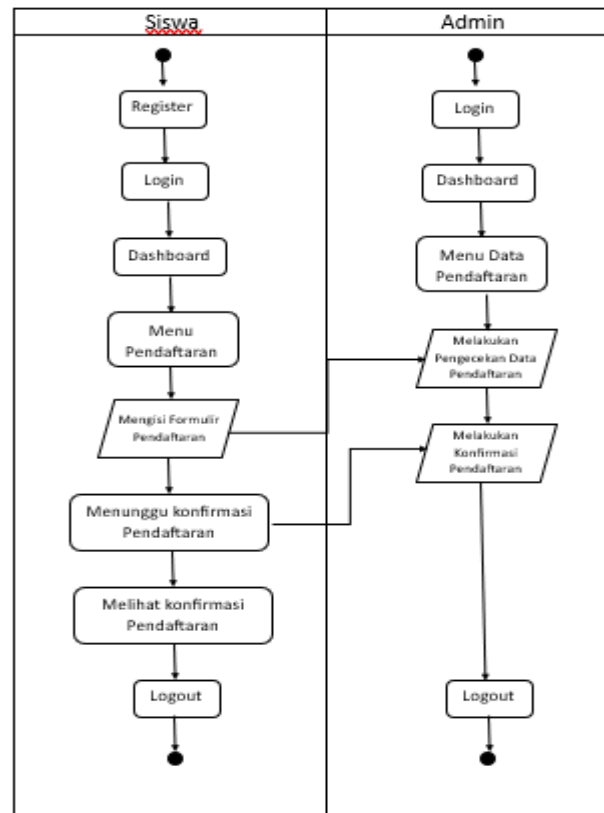


Figure 5. Activity Diagram

3.2.6 Sequence Diagram

A Sequence Diagram is a diagram that shows how interactions between users and the system occur sequentially based on time. This diagram helps to understand the flow of communication and processes within the system. In the Online PPDB system, a Sequence Diagram can illustrate how parents/guardians register, starting from logging in, filling out forms, uploading documents, to receiving confirmation from the administrator. Similarly, the admin processes registration data, verifies documents, and confirms the status of students. With this diagram, the system workflow becomes clearer and easier to develop as needed. See Figures 7 and 8 below.

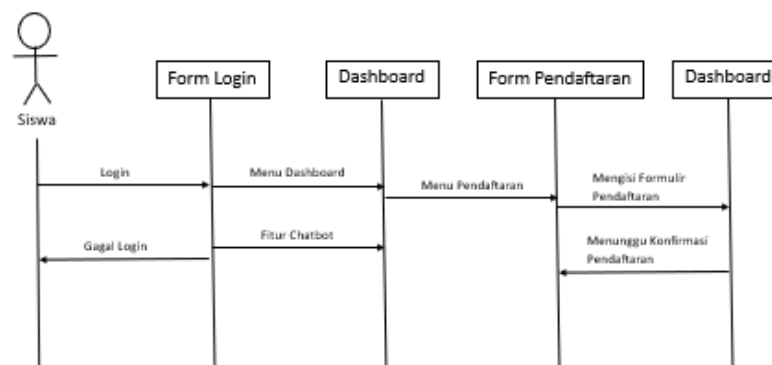


Figure 6. Student Sequence Diagram

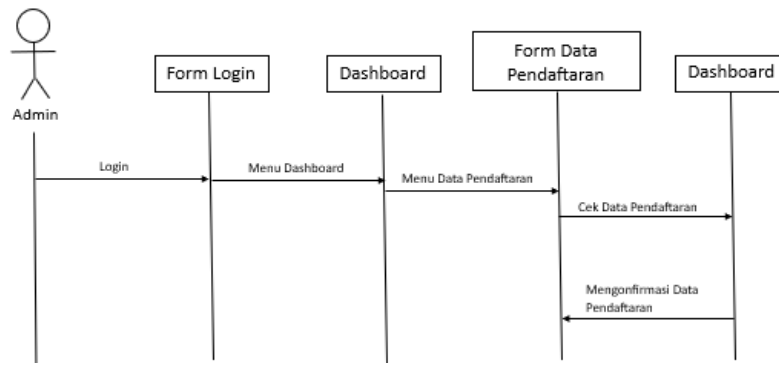


Figure 7. Admin Sequence Diagram

3.2.7 Database Relations

Entity Relationship Database illustrates the interconnection of datasets in an infrastructure configured to construct a productive architecture. In the context of digital PPDB infrastructure, database relations play a crucial role in organizing associations between entities: user tables, registration tables, and administrator tables. Through these relations, each registrant's data, user account, and verification process by the admin can be managed properly and integrated with each other. See Figure 9 below.

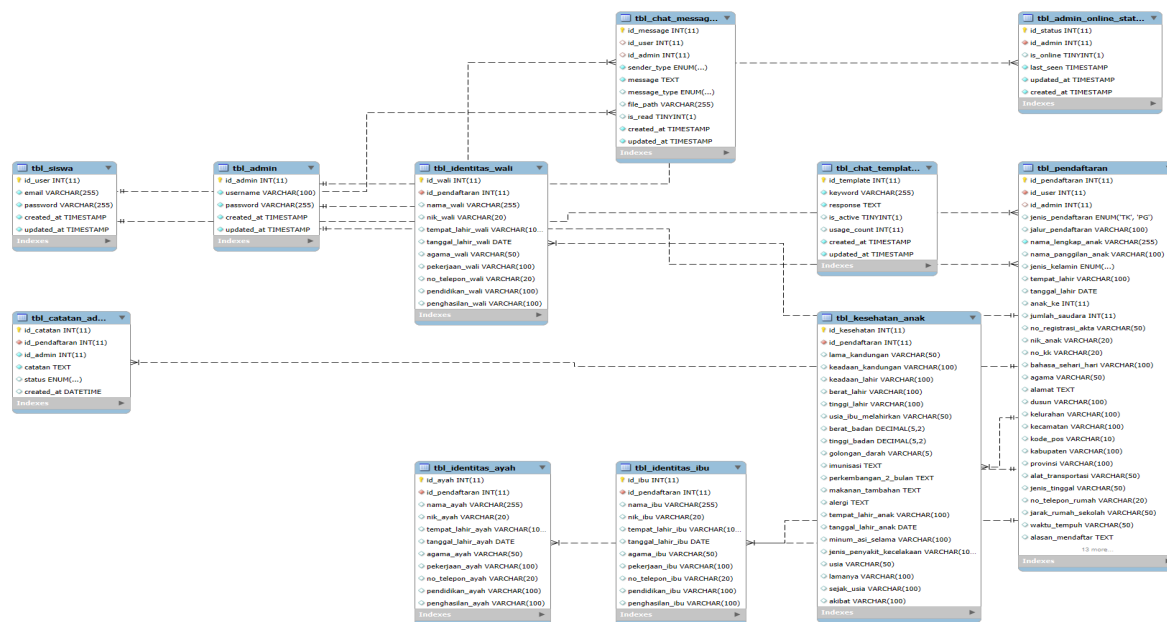


Figure 8. Database Relationships

Database relations themselves provide connections between data in the system, helping to build an efficient structure. For the online PPDB system, database relations also help to organize efficient connections between tables such as user tables, registration tables, and admin tables. With these relations, the data of each registrant, user account, and admin verification action will be well integrated and can be automated.

3.3 Implementation

In this phase, the previously constructed infrastructure design is implemented into an operable program format. Each segment of the infrastructure is then developed into functional units. After that, each unit is tested holistically to ensure that all functionalities operate according to their intended purpose and that the infrastructure is ready to be operated by educational entities and registrants.

The user authentication and access rights management system is an important aspect of the information system to ensure data security and integrity [14]. Interactive features such as chatbots can increase the responsiveness of the system in providing information and assistance to users in real-time [15].

3.3.1 User Login Page

The authentication module feature is operated by registered users to access the PG TK Aisyiyah VI Candi digital PPDB platform. See Figure 10 below.

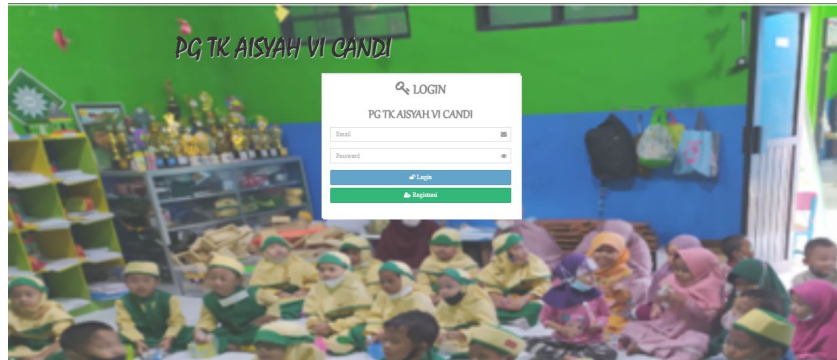


Figure 9. User Login Page

3.3.2 Registration Page

This page facilitates the creation of new credentials for guardians of prospective students who have not been registered previously. At this stage, users need to fill in their email, password, and password confirmation as the first step before they can log in to the system. See Figure 11 below.

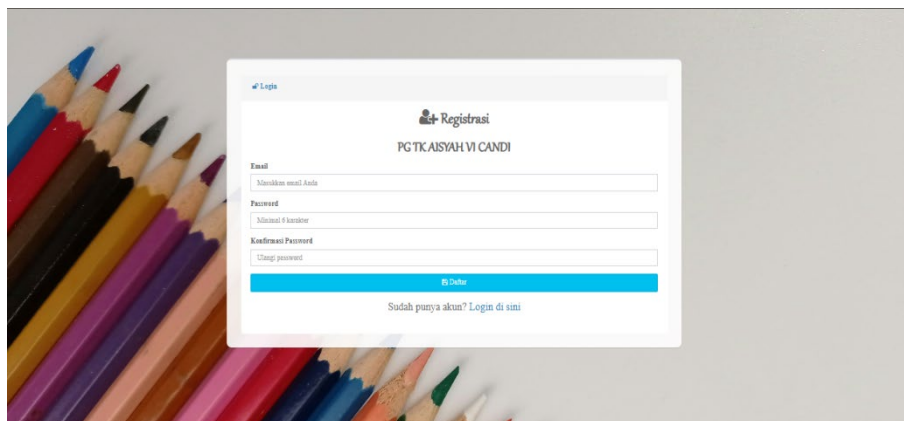


Figure 10. Registration Page

3.3.3 Dashboard Page

The dashboard page is the primary interface that is visualized after user authentication to the infrastructure. On this page, users can observe various significant information related to the registration procedure. See Figure 12 below.

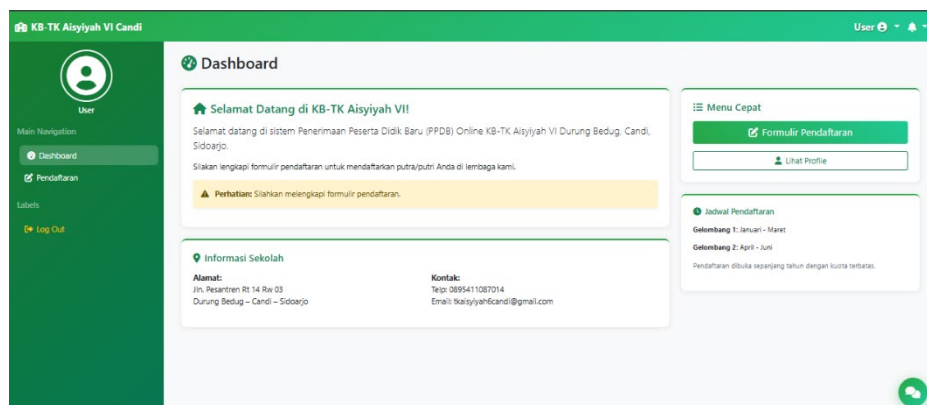


Figure 11. Dashboard Page

3.3.4 Registration Page

The registration form interface is an essential segment that users utilize to compile a dataset of prospective new students. After logging in, users can directly open this page through the Registration menu on the left navigation panel. See Figure 13 below.

Figure 12. Registration Page

3.3.5 Chatbot Page

The ChatBot feature is an interactive service designed to help users quickly and easily obtain information about new student registration, which will be answered directly by the admin. There are also several phrases that will automatically generate messages based on the prepared conversation database. The ChatBot appears in the lower right corner of the PPDB website and can be accessed at any time. As shown in Figure 14 below.

Figure 13. Chatbot Page

3.3.6 Admin Login Page

Educational institutions create an Admin Authentication login page to connect to the PPDB administration infrastructure. By selecting this page, educational institutions have access to applicant information in the form of various lists and searches, perform authentication, and oversee student admission operations.

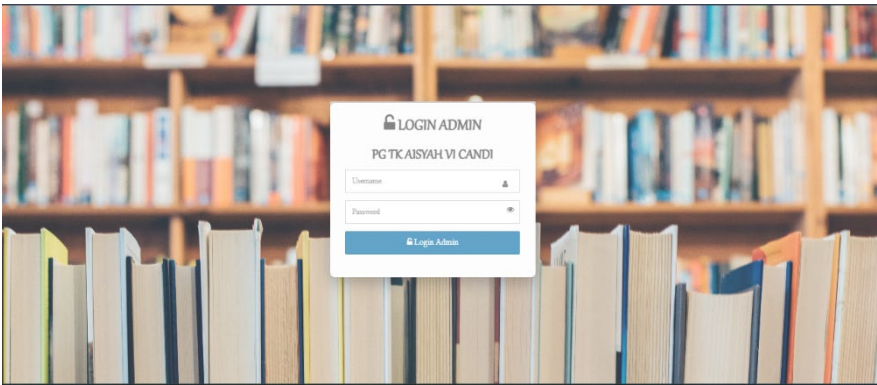


Figure 14. Admin Login Page

3.3.7 Admin Dashboard Page

The Admin Dashboard Page is the main control center for schools to manage all new student admission activities (PPDB). Through this display, administrators can monitor registration data, student numbers, and the verification process in real time.
As shown in Figure 16 below.

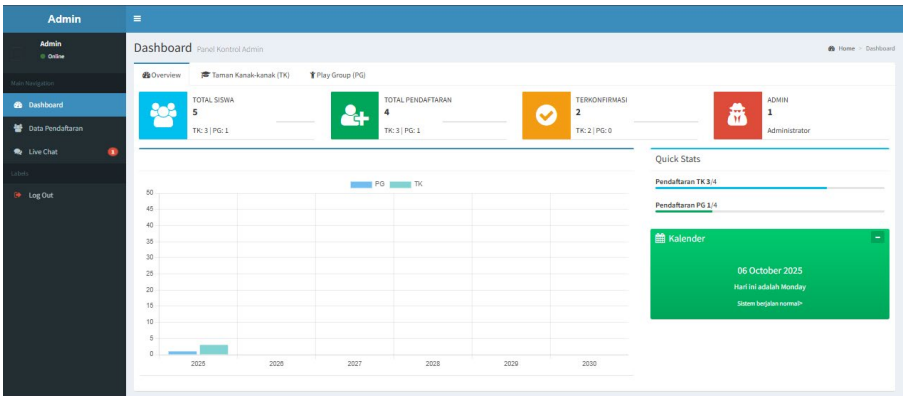
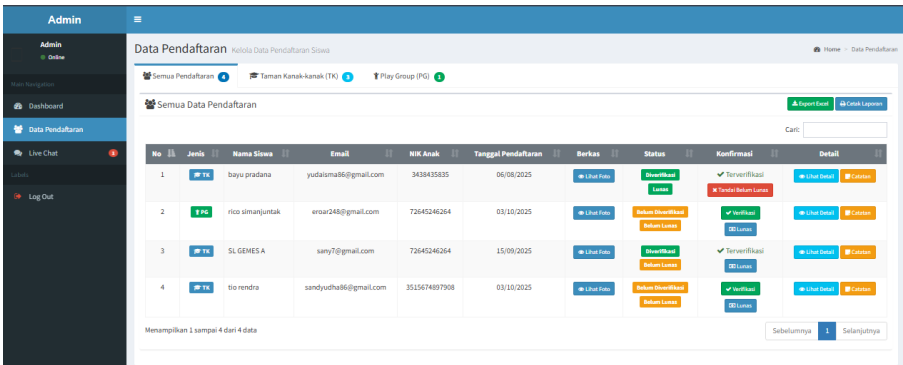


Figure 15. Admin Dashboard Page

3.3.8 Registration Data Page

The Registration Information Page serves as a location for administrators to observe, administer, and authenticate all information of prospective students who have completed digital registration. Through this page, administrators can monitor registration status in detail and ensure that all information entered is consistent with the requirements.

A screenshot of the Registration Data Page. It displays a table of student registration data with columns for No., Jenis, Nama Siswa, Email, NIK Anak, Tanggal Pendaftaran, Berkas, Status, Konfirmasi, and Detail. The table lists four students with their respective details and registration status. The page also includes a search bar and pagination controls.

No.	Jenis	Nama Siswa	Email	NIK Anak	Tanggal Pendaftaran	Berkas	Status	Konfirmasi	Detail
1	TK	bayu pradana	yudasmalla@gmail.com	3438435835	06/08/2025	Libat Foto	Siapa Bisa	Terverifikasi	Libat Detail
2	PG	rico simanjuntak	enrar248@gmail.com	72645246264	03/10/2025	Libat Foto	Bukan Siapa Bisa	Verifikasi	Libat Detail
3	TK	SL GEMES A	kamy7@gmail.com	72645246264	15/09/2025	Libat Foto	Bukan Siapa Bisa	Terverifikasi	Libat Detail
4	TK	tio rendra	sandyotha86@gmail.com	3515674897908	03/10/2025	Libat Foto	Bukan Siapa Bisa	Verifikasi	Libat Detail

Figure 16. Registration Data Page

3.3.9 ChatBot Management Page

The ChatBot Management Page is used to manage conversations between administrators and prospective parents/guardians who use the chatbot feature on the Online PPDB website. Through this page, administrators can interact directly with users to provide information, answer questions, or follow up on automatic messages sent by the chatbot system. See Figure 18 below.

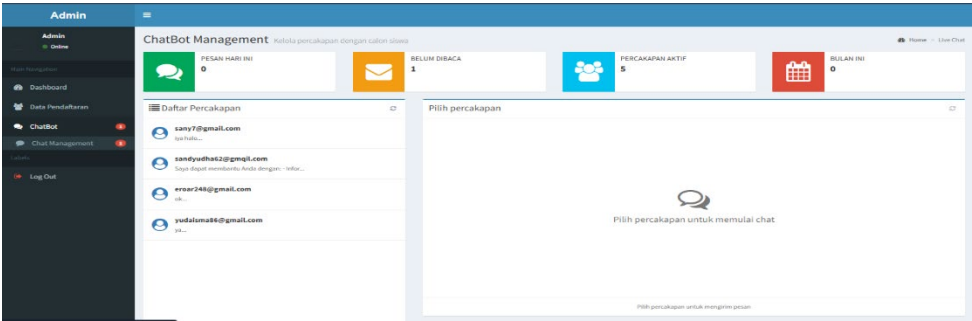


Figure 17. ChatBot Management Page

3.4 Testing

In this phase, the previously constructed infrastructure design is developed into interconnected program segments. After the implementation procedure is complete, each program unit is tested to ensure that all functionalities can be operated as required.

3.4.1 Blackbox Testing

In the testing procedure, the Black Box Testing methodology or behavioral infrastructure testing is used, which focuses on examining the output results based on the input information without considering the program code structure. The objective of this methodology is to ensure that the infrastructure provides accurate responses according to the operational scenario. Table 2 presents the specifications of the test results.

Table 2. Testing Using Blackbox

No	Feature Tested	Test Steps	Expected Results	Test Results
1.	Parent/guardian account registration.	Fill out the registration form with complete data including email, password, and password confirmation	Data successfully saved to the database, the system displays a "Registration Successful" notification, and the user can log in using the newly created account	SUCCESS
2.	Parent/Guardian System Login.	Enter the registered email and secret code, then click the login button.	The dashboard page displays important information related to the registration process.	SUCCESS
3.	Access the user dashboard page.	After logging in, users will be directed to the dashboard page.	The dashboard displays child registration information and registration verification status.	SUCCESS
4.	Access the prospective student registration page.	Users click the "Registration" menu in the left navigation panel.	The registration form page opens and users can fill in the data for new prospective students.	SUCCESS

5.	Fill out and save the registration form.	The user fills in all the prospective student's data and clicks the save button.	The registration data has been successfully saved to the database and the system displays the notification "Registration Successful."	SUCCESS
6.	Accessing the chatbot feature.	Users click the chatbot icon in the lower right corner of the website page.	The chatbot opens and the user can send questions about registration.	SUCCESS
7.	The chatbot provides an automatic response,	The user sends a question that matches the conversation database.	The system displays relevant automated messages or forwards the question to the admin.	SUCCESS
8.	System login for admin.	Enter the predefined admin username and password, then click the login button.	The admin successfully logs into the management system and is directed to the admin dashboard page.	SUCCESS
9.	Access the admin dashboard page.	After logging in, the admin is on the dashboard page.	The admin dashboard page displays registration data, number of students, registration bar chart, and verification status.	SUCCESS
10.	Access the registration data page.	The admin clicks the "Registration Data" menu in the navigation panel.	The registration data page opens, displaying a complete list of prospective students who have registered.	SUCCESS
11.	Verify registration data	The administrator reviews the details of the prospective student's data and changes the verification status (verified).	The registration status has been successfully changed and saved to the database, and the data has been updated in the system.	SUCCESS
12.	Access the chatbot management page,	The administrator clicks the "ChatBot Management" menu.	The chatbot management page opens, displaying a list of conversations with users.	SUCCESS
13.	Respond to user questions via the chatbot.	The admin reads the user's question and sends a direct response.	The message from the admin was successfully sent and the user received a new message.	SUCCESS

4 Conclusion

Based on the results of the development and testing of the PG TK Aisiyiah VI Candi Online New Student Admission (PPDB) system, it can be concluded that this system has successfully improved the efficiency of the new student admission process and provided easy access for parents/guardians of prospective students. Thus, the End-User Development approach has proven to be effective in developing a system that meets the school's requirements while also being safe for end users. Key features such as user login and registration, online registration form application, system information screen or dashboard, information verification, and interactive chatbot are functioning properly. BlackBox testing found that every platform function worked as intended without any significant obstacles identified. The

implementation of this system will make it easier for administrators to carry out the administrative process of registering prospective students in regular schools and help schools reduce the use of paper and eliminate manual data entry, which is prone to errors, in line with the trend of digitization in education. Therefore, the developed Online PPDB system can serve as a suitable digital solution for educational levels ranging from early childhood education (PAUD) and kindergarten at the lower level to higher education at the upper level, particularly in enhancing the effectiveness of new student admission processes and supporting digital transformation in the education sector.

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