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THE DESIGN OF WEBSITE APPLICATION FOR FAST-TRACK REGISTRATION OF THE JAVANESE LANGUAGE EDUCATION STUDY PROGRAMME

Venny Indria Ekowati[1], Suwardi[2], Sri Harti Widyastuti[3], Restu Budiyanti[4], Fitri Rokhimah[5]

[1,2,3,4,5] Javanese Language Education, Universitas Negeri Yogyakarta, Indonesia
Corresponding Author: venny@uny.ac.id

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Abstract

Enhancing student engagement with fast-track programmes requires an efficient and accurate registration system. This study aims to design and develop a web application to automate this process. Employing a qualitative descriptive methodology, the research first identifies the operational conditions and requirements within the institutional context. The development itself follows the Rapid Application Development (RAD) model. The resulting application significantly improves registration efficiency, minimizes data entry errors, and enhances the user experience for applicants. Key features include an online registration form, automated data verification, a registration status tracker, and a notification system. Furthermore, the application is integrated with the existing academic information system. Consequently, the developed web application presents an effective solution for streamlining the fast-track registration process, thereby improving operational effectiveness and providing superior service to prospective participants.

Keywords: *design; website; fast-track*

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INTRODUCTION

The designation of *Universitas Negeri Yogyakarta* (UNY) as a Legal Entity State University (*Perguruan Tinggi Negeri – Berbadan Hukum* / PTN-BH) under Government Regulation Number 35 year 2022 represents a pivotal milestone. This status provides UNY with a crucial drive to reinforce its role as a center for knowledge and technological development. In response to an increasingly complex global landscape, UNY is committed to equip its graduates with 4C competencies (Critical Thinking, Communication, Collaboration, and Creativity) to enhance their global competitiveness. The university recognizes that fostering a synergistic relationship between academia and industry is essential for driving innovation that yields a positive societal impact. Furthermore, through the implementation of the *Merdeka Belajar-Kampus Merdeka* (Independent Learning-Independent Campus) policy, UNY is dedicated to cultivate a dynamic and adaptable learning environment that remains relevant to contemporary demands.

With the transformation of Yogyakarta State University into a more autonomous Legal Entity State University (PTNBH), the need to enhance competitiveness in student admissions,

particularly for master and doctoral programmes that attract relatively few applicants, has become increasingly pressing. The fast-track concept, which has been examined in depth from a cultural hoplology perspective (Ekowati et al., 2023, p. 1), offers a promising solution. However, the successful implementation of this fast-track program requires an effective and well-designed model.

The fast-track programme is a selective educational initiative designed for high-achieving students, intended to accelerate their progression to an advanced degree (Rahman, 2023). This programme offers participants the opportunity to develop their academic potential more fully within a condensed timeframe.

Eligibility for the fast-track programme is typically contingent upon several criteria. Applicants must generally be enrolled as active students at a university, possess a superior Grade Point Average (GPA), and have a record of distinguished academic achievement. Furthermore, prospective participants are expected to exhibit strong learning motivation and a firm commitment to completing their studies within a shorter duration.

The fast-track program is designed to produce high-quality graduates within a shorter time frame. This program integrates undergraduate and master levels, as well as master and doctoral levels, to cultivate graduates with strong academic competencies, global competitiveness, and the ability to contribute to the advancement of science and innovation. In addition, the fast-track program aims to improve the efficiency of both time and cost in higher education, while fostering a competitive and innovative academic culture (Hapsari, 2024). Consequently, graduates of the fast-track program are expected to meet the demands of an increasingly complex job market and to contribute dynamically and substantively to national development.

Despite its objectives, the conventional implementation of the fast-track programme presents several operational challenges. A primary obstacle is the reliance on a manual registration process. This system renders the procedure cumbersome, time-intensive, and susceptible to errors, as applicants are required to navigate multiple complex stages, from compiling physical documentation to undergoing manual verification. Furthermore, the absence of an integrated information system leads to informational disarray, difficulties in monitoring application status, and an increased potential for data inaccuracies.

Constraints in the manual registration system also undermine administrative efficiency. Staff are required to handle large volumes of physical documents, conduct manual verification, and communicate with each participant individually. This results in an inefficient and time-consuming process, which may hinder the overall implementation of the program. In addition, manually stored data are vulnerable to damage and can be difficult to access when needed.

Developing a fast-track program registration website with Single Sign-On (SSO) integration offers an efficient and secure solution for the student selection process. This system enables automatic identity verification through the university database, thereby accelerating the selection process and reducing the risk of data entry errors. Students can conveniently register using their campus accounts, while program administrators can monitor and manage the registration process in real time. The automation

and integration of these systems not only enhance administrative efficiency but also promote greater transparency and accessibility for prospective participants.

Engineering is a systematic discipline concerned with the planning, design, and implementation of systems. Its objective is to develop new, more efficient and effective systems or to enhance the performance of existing ones, whether through partial improvement or comprehensive overhaul. This methodological approach is directed towards identifying optimal solutions to complex problems (Parjito et al., 2023).

A web application is a system of interconnected pages that integrates diverse content formats, including text, images, animation, audio, and video, which is delivered via the internet to serve individuals, organizations, and businesses. These applications are hosted on servers globally, interconnected through the internet network, including within Indonesia.

Web applications are broadly categorized into two types: static and dynamic (Noviana, 2022). Static websites are constructed primarily using HTML (Hypertext Markup Language) to structure content. A principal limitation of the static model, however, is that its fixed content requires ongoing maintenance to remain compatible with evolving web technologies.

Website-based applications with SSO verification also offer high levels of flexibility and security. The system can be easily adapted to evolving needs, such as the addition of online payment features or integration with other academic systems. Data security is ensured through encryption and strict access control. Therefore, this application not only addresses current challenges but also establishes a strong foundation for the future development of fast-track programmes.

The security framework of the fast-track programme registration website is reinforced through its integration with the university Single Sign-On (SSO) system, administered by the UNY Data and Information Technology Center (Pusdatik). This SSO infrastructure employs centralized authentication via the LDAP (Lightweight Directory Access Protocol) and OAuth2 protocols, ensuring that all login attempts are validated through a single, authorized access point at https://sso.uny.ac.id.

To safeguard data in transit, the SSO portal utilizes HTTPS encryption with an SSL certificate. This guarantees that user credentials are transmitted in an encrypted format, mitigating the risk of interception over public networks. Furthermore, user passwords are not stored as plaintext; instead, they are secured using modern hashing algorithms such as SHA-256 or bcrypt. This approach provides a critical defense against potential data breaches, as only the encrypted hash values are retained. The system also enforces a robust password policy, mandating the use of complex combinations comprising uppercase and lowercase letters, numerals, and symbols to enhance account security.

User data protection is further enhanced through SSO integration with the Google Workspace for Education system used by UNY, which provides an additional layer of security through two-step verification and login alerts to detect suspicious activity. Although the SSO system offers convenient access, it also presents a potential single point of failure, if an SSO account is compromised, all integrated services may be affected. Therefore, users are strongly advised to enable two-step verification (2FA) on their UNY

Google accounts, avoid using the same password as their personal accounts, and always ensure that they log in through the official UNY SSO portal.

To mitigate the risk of session hijacking, users are advised to terminate all active sessions after using shared computing facilities and to refrain from accessing the system via unsecured public Wi-Fi networks without a Virtual Private Network (VPN). These security protocols are aligned with the digital identity guidelines established in NIST Special Publication 800-63B and incorporate Single Sign-On (SSO) security best practices from the OWASP Foundation. This adherence to recognized standards ensures the robust protection of students' personal and academic data throughout the fast-track programme registration process.

Previous research relevant to this study was titled *"Rancang Bangun Aplikasi Website Administrasi Kerja Praktek dan Tugas Akhir Mahasiswa Program Studi Teknik Informatika Universitas Sam Ratulangi."* This study developed a web-based application to facilitate the administration of internships and final projects for students in the Informatics Engineering Study Program at Sam Ratulangi University (UNSRAT). The system development method employed in this research was the Rapid Application Development (RAD) approach.

Rapid Application Development (RAD) is a systems development approach that prioritizes speed and flexibility. This methodology intensively involves users throughout the development process via iterative cycles. In RAD, system prototypes are constructed incrementally and refined continuously based on user feedback until the final system is achieved (Nugroho., 2025).

This research aims to develop an application integrated with a Single Sign-On (SSO) system to facilitate and optimize the fast-track selection process. The implementation of SSO will provide a centralized authentication method, enabling users to access various selection-related services with a single set of credentials while simultaneously ensuring the security and validity of participant data. The development of this SSO-verified application is expected to yield an efficient, secure, and systematic solution for managing the fast-track selection process. Consequently, the application is anticipated to enhance the effectiveness, transparency, and decision-making within the selection proceedings.

METHODS

This study employs a qualitative descriptive methodology to identify field conditions and user needs, coupled with the Rapid Application Development (RAD) approach for system design. The essence of RAD is its iterative process, which is instrumental in refining and validating user requirements. The operational stages of the RAD methodology are illustrated in Figure 1.

Figure 1. The RAD Method (Sah et al, 2024; Purwati et al., 2023)

As illustrated in Figure 1, the methodology starts with the planning phase. This initial stage is critical for defining the objectives of the website development and identifying user requirements.

Subsequently, system developers gather the necessary data to conduct a comprehensive

analysis of user needs, which subsequently serves as a benchmark for evaluating the success of the website. Following this, the development team proceeds to the design phase, creating and iteratively refining the proposed design. This cyclical process is repeated until a design that aligns with user expectations is achieved. The outcome of this phase is a detailed website blueprint, encompassing the system architecture, site structure, and related specifications. The final stage is implementation, wherein analysts and users collaborate to configure the operational environment and establish the non-technical framework for the website.

During the implementation stage, the website is constructed by programmers based on the final design approved by both users and systems analysts. This ensures that the developed product aligns with user specifications. Subsequently, users are able to evaluate the website and provide formative feedback. Once all components have received user approval, the website undergoes a testing phase prior to its official deployment within the university context (Riyadli, Arliyana, & Saputra, 2020; Purwati et al., 2023).

Data for this study were gathered through a triangulated approach involving observation, interviews, and a literature review. First, observations were conducted of the existing registration process for the Javanese Language Study Programme to collect foundational data and identify functional requirements for the web application. Second, semi-structured interviews were held with administrative staff from the new student registration department to elucidate challenges inherent in the current process. Finally, a comprehensive review of the literature, including books, scientific journals, and e-books, was performed to inform the design of a registration system integrated with a Single Sign-On (SSO) protocol.

RESULTS AND DISCUSSION

This section presents the research findings on the fast-track application design, focusing on two core components: interface implementation and system testing. The subsequent discussion will address each component in turn.

The Interface Implementation

Figure 2. Initial Display of the Fast-track Programme Registration System

The registration system for the fast-track programme is accessible via the respective university website. Figure 2 illustrates the initial page of the Yogyakarta State University (UNY) fast-track registration portal. The interface comprises several key sections: a homepage, a features overview, profiles of the programme team, student testimonials, a list of available programmes, contact information, and a dedicated login page. Prospective applicants can navigate to the "pilihan bidang studi" (field of study options) section to select a graduate programme that is linearly aligned with their undergraduate (S1) discipline.

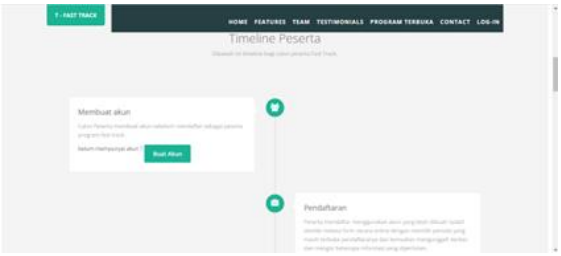

Figure 3. The Timeline of Participants

The subsequent interface presents a detailed timeline outlining the complete registration sequence for the fast-track programme. This schedule provides prospective students with a clear framework for preparing the requisite competency documents within designated timeframes to successfully navigate the selection process. The procedure for the Javanese Language Education Study Programme (FBSB, UNY) commences with applicants creating an account on the designated portal of the university. They then proceed to complete their registration and upload the necessary files, followed by the payment of a registration fee through an authorized bank. Subsequently, the submitted applications undergo an administrative review by the study programme coordinator and a designated team. Applicants who successfully pass this administrative stage are invited to participate in an interview. The final step involves the official announcement of results, confirming which candidates have been accepted into the fast-track programme.

Figure 4. The Login Page

Figure 4 displays the login page. This interface requires users to authenticate their identity by entering a username and password. Based on these credentials, the system automatically identifies the user's role and grants corresponding access privileges (Ariyani et al., 2023).

User authentication is managed through a login page integrated with the Yogyakarta State University (UNY) Single Sign-On (SSO) system. This integration permits students to utilize their centralized UNY account credentials to access a range of campus services, such as the fast-track programme registration website, eliminating the need for separate accounts.

Upon clicking the login button, the system transmits an authentication request to the UNY SSO server. The server then validates the user's credentials by cross-referencing them with the centralized directory of the university. Following successful verification, the SSO server issues an access token to the fast-track application, which contains the user's identity and authorized access privileges.

Upon receiving an access token from the SSO server, the fast-track system authenticates the user and assigns privileges based on the role information embedded within the token. The system presents three distinct access levels: (1) **Administrators**, who retain full privileges to manage all system data and configurations; (2) **Study Programme Coordinators**, who are authorized to perform administrative selections and oversee applicant data; and (3) **Students**, who are permitted to access registration features and view their individual application status. This centralized authentication mechanism enhances security by mitigating the risk of credential theft, while simultaneously improving usability by eliminating the need for users to manage multiple sets of login credentials across different campus services.

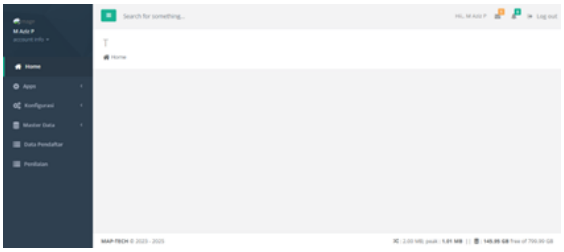

Figure 5. The Website Homepage

Figure 5 presents the homepage, which serves as the central hub for user interaction. The interface is divided into two primary sections: the left panel provides a navigation menu with features accessible based on the user's role, while the right panel displays user-specific information, including the account name, messages, notification alerts, and a logout icon. The homepage is strategically designed as the initial point of engagement between the user and the system. By presenting relevant information within a cohesive and aesthetically organized layout, the interface aims to foster a positive user experience and promote deeper engagement with the available content and functionalities (Izzah, 2020).

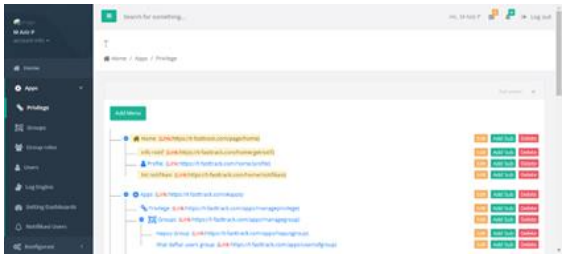

Figure 6. APK Privilege on the Fast-track Programme Website

Figure 6 illustrates the privileges management interface. Application privileges, or access rights, denote the specific permissions granted to a user or role, enabling access to particular data, features, or services within the system. This authorization mechanism is fundamentally implemented to uphold data security and confidentiality, while ensuring that all system interactions are confined to pre-approved functions.

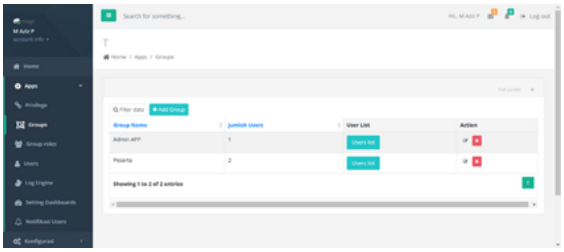

Figure 7. Apps Groups on the Fast-track Website Programme

Figure 7 presents the 'Groups' section of the application. This feature functions as an integrated social platform, enabling users to exchange ideas, share information, and cultivate virtual communities. Through integrated tools such as discussion forums, private messaging, and shared file storage, group members can engage in effective collaboration on a range of academic and co-curricular activities.

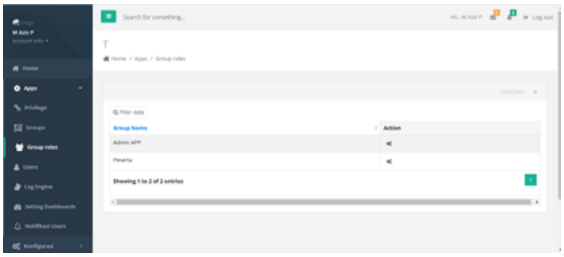

Figure 8. App Group Roles on the Fast-track Programme Website

Figure 8 presents the 'Group Roles' management interface within the application. This section is intuitively designed to facilitate efficient administration of user roles and associated permissions. The interface is systematically organized, presenting a comprehensive list of defined roles alongside their specific permission sets. Integrated search and filter functionalities enable administrators to locate and modify roles with precision. Furthermore, an embedded activity log meticulously records all modifications made to user roles, thereby enhancing both transparency and accountability in access management.

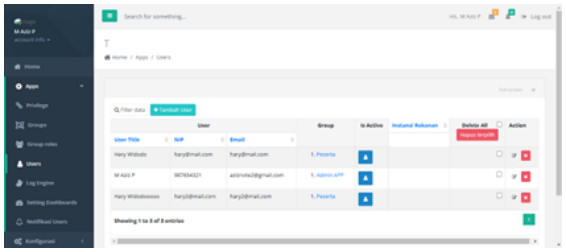

Figure 9. Apps User on the Fast-track Website Programme

Figure 9 illustrates the user management interface of the application. Within this context, 'application users' are defined as individuals who interact directly with the integrated software system. The platform enables users to perform a range of activities, including personal account management and utilization of various integrated features. Furthermore, a primary utility of the application is its function as an efficient and centralized medium for information retrieval.

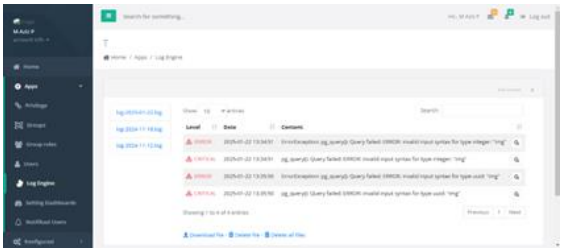

Figure 10. Apps Log Engine on the Fast-track Website Programme

Figure 10 presents the log engine interface. This module is specifically engineered to provide comprehensive visibility into all user activities within the system. It generates detailed audit trails that chronicle every user action, including login sessions, data access, and modifications to system configurations. Equipped with advanced search and filtering capabilities, the interface enables administrators to efficiently monitor specific events, thereby facilitating the prompt identification of potential security incidents or operational anomalies (Satwika et al., 2020).

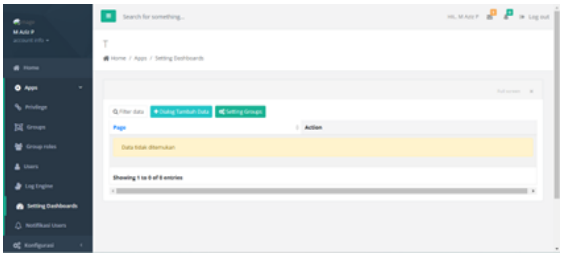

Figure 11. Apps Setting Dashboards on the Fast-track Website Programme

Figure 11 illustrates the dashboard settings interface within the application. This feature provides users with the flexibility to customize both the visual presentation and the informational content of their dashboard to align with specific preferences and operational requirements. Users can reconfigure the layout of visual components, select key performance metrics for display, and modify the visual theme. This capacity for personalization enables users to derive a more comprehensive and contextually relevant understanding of the data essential to their tasks.

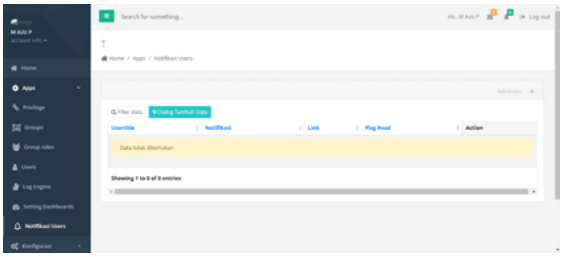

Figure 12. Notification Apps for Users on the Fast-track Website Programme

Figure 12 presents the user notification management interface. As a critical component of the communication infrastructure of the website, the notification feature enables the system to deliver real-time messages and alerts to users (Andri et al., 2020). These notifications may pertain to recent account activity, data modifications, or other system-relevant information. This functionality ensures that users remain informed and can access the most current

information without the need for manual and repeated checks of the website.

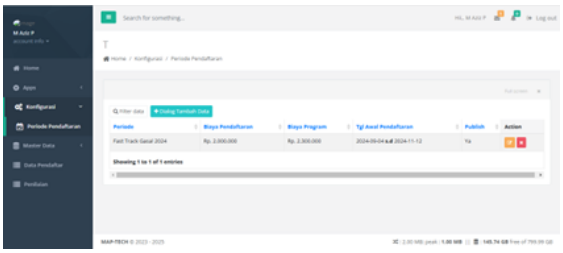

Figure 13. The Configuration of the Registration Period

Figure 13 presents the configuration interface for the fast-track programme registration period. The registration scheduling feature provides administrators with a centralized tool to define the opening and closing times for programme enrolment. This functionality enables the precise configuration of start and end dates, the establishment of participant limits, and the management of various registration types. Through these advanced controls, the registration process can be tailored to specific event requirements, thereby enhancing its overall efficiency and accuracy.

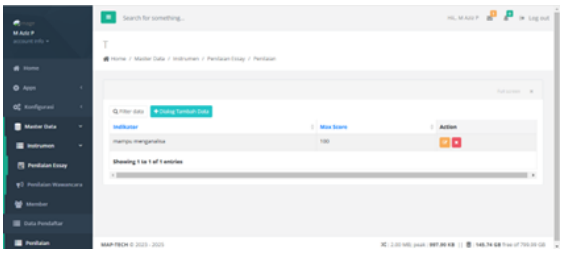

Figure 14. Master Data of Instruments of Essay Assessment

Figure 14 illustrates the master data interface for essay assessment instruments. This page is designed to facilitate the efficient and flexible management of the assessment instruments utilized within the fast-track programme. Its integrated features enable users to create, modify, and delete assessment criteria, as well as define the maximum attainable score for each criterion. Furthermore, the interface includes filtering capabilities, allowing users to rapidly locate specific instruments based on parameters such as associated course, topic, or assessment type.

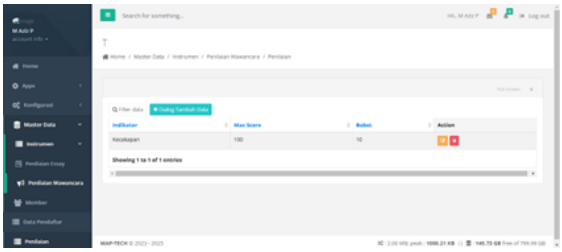

Figure 15. Master Data of Instruments of Interview Assessment

Figure 15 presents the master data interface for the interview assessment instrument. This page is designed to provide a comprehensive and structured overview of all information pertinent to the interview assessment process within the student fast-track programme. The interface employs a user-centric design, facilitating intuitive access, comprehension, and management of the various assessment instruments.

The interface incorporates search and filter functionalities, enabling users to retrieve necessary information with high efficiency. Furthermore, it provides the capacity to review specific assessment instruments, including their corresponding maximum scores and weighting for each criterion. These instruments are systematically categorized according to relevant attributes, such as question type, assessment criteria, or the specific stage of the interview process.

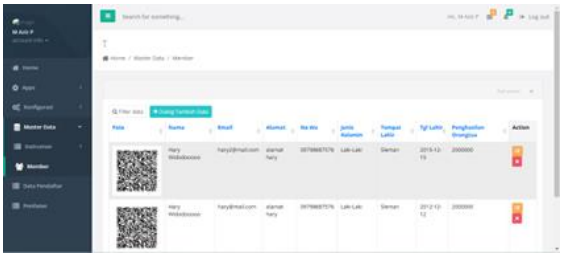

Figure 16. Master Data of Members

Figure 16 presents the master data interface for the member management section. This page functions as a centralized repository for storing and managing comprehensive information pertaining to all website members. It enables users to access, update, and manage their personal data, preferences, transaction history, and account settings. Enhanced by a robust search function and an intuitive user interface, the module facilitates efficient navigation and information retrieval.

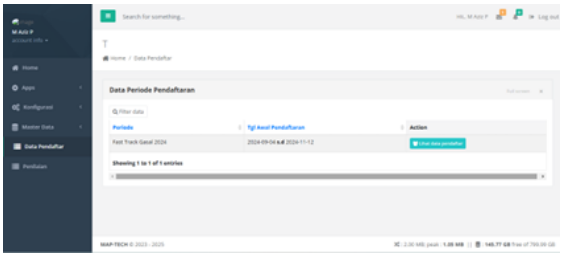

Figure 17. The Data of Registrants

Figure 17 presents the registrant data interface for the fast-track programme. This page serves as a centralized information portal for prospective students interested in the accelerated study programme. It provides a clear and structured presentation of all requisite information, including registration requirements, selection schedules, and final results. The intuitive interface design facilitates efficient navigation, enabling prospective students to locate relevant information with ease.

Figure 18. Assessment

Figure 18 presents the assessment interface for the student fast-track programme. This page is designed to facilitate a comprehensive evaluation of participant data. A key feature is the data filter function, which enables users to segment participants based on various criteria, such as registration period, study programme, or entrance examination scores (Ghozali et al., 2024). Additionally, the interface displays metadata, including the initial registration date, to serve as a reference for longitudinal analysis. The structured and lucid presentation of data allows users to identify underlying patterns, thereby providing a substantive foundation for informed decision-making.

The Testing of the System

The final phase of this research involves conducting system testing. The primary objective of this evaluation is to assess whether the developed system fulfills user requirements. Furthermore, testing serves to identify and rectify any potential deficiencies or system inconsistencies. Consequently, this process ensures that the final product delivers an effective and efficient solution to the initially identified problems.

An expert validation process was conducted to measure the feasibility of the system depicted in Figure 18. The subsequent findings from this validation are presented as follows.

Table 1. Results of Expert Validation

No.	Aspect	Score
1.	Usage and Navigation	
	a. Media ease of usage	4
	b. Clarity of user guidance	4
	c. The accessibility of navigation buttons	4
2.	The Technical Quality	
	a. Media Interactivity	4

No.	Aspect	Score
	b. Operational stability (absence of lag, crashes, or errors)	3
	c. Comfort of display resolution	4
3.	Display and Aesthetics	
	a. Visual appeal	4
	b. Cohesion of color scheme, imagery, and background	3
	c. Appropriate typography variation (font type, color, size)	3
	d. The consistency of text layout, images, menus, sub-menus	4
4.	Media Integration	
	a. Content unity and coherence	4
	b. Suitability of images and icons with the content	4
	c. Unity of navigation and the content	4
	Overall Average Score	3.8

The Score Category:

1-1.75 = Poor

1.76-2.5 = Less

2.51-3.25 = Good

3.26-4.0 = Very good

The average media validation result is 3.8 in the very good category.

System testing was conducted in two phases: login functionality and data display verification (Winanjar & Susanti, 2021). For the login test, the website administrator input their designated credentials. The expected outcome, a successful login redirecting to a personalized homepage, was confirmed, indicating proper authentication.

The data display test followed a similar protocol, requiring the administrator to log into the system. The test successfully validated that the correct homepage was rendered upon authentication.

In addition to expert validation and functional testing, a user acceptance trial was conducted to evaluate the effectiveness of the system and user satisfaction. This trial involved five students who performed a simulated registration for the fast-track programme on the developed website. Key metrics assessed included user satisfaction, perceived ease of use, and the time required to complete the registration form.

During the trial, participants were given a comprehensive scenario to complete the entire registration process, from accessing the website to submitting the final application. Upon completion, participants completed a questionnaire rating their satisfaction and perceived ease of use. The time taken by each respondent to finish the registration was also recorded to measure operational efficiency.

Table 2. Results of Try-out on Real Users

No	Aspect	Result
1.	User Satisfaction	
	a. Satisfaction with interface design	4
	b. Satisfaction with available features	4
	c. Overall user satisfaction	4
2.	Perceived Ease of Usage	
	a. Clarity of registration procedure	3

No	Aspect	Result
	b. Ease of form completion	4
	c. Ease of document upload	3
	d. Ease of navigation between pages	4
3.	Completion Time	
	a. Average registration completion time	8 minutes 24 seconds
	b. Fastest time	6 minutes 45 seconds
	c. Longest time	10 minutes 15 seconds
	Composite Mean Score (Satisfaction & Ease)	3.7

The Score Category:

1-1.75 = Poor/very difficult

1.76-2.5 = Less/fairly difficult

2.51-3.25 = Good/easy

3.26-4.0 = Very good/very easy

As illustrated in Table 2, the user acceptance trial yielded a composite mean score of 3.7 for satisfaction and ease of use, indicating a positive reception. The highest-rated metrics were overall user satisfaction and the ease of form completion, both achieving a score of 4. In contrast, the ease of document upload received a comparatively lower score of 3. Regarding time efficiency, the average registration completion time was 8 minutes and 24 seconds, with a range from 6 minutes 45 seconds to 10 minutes 15 seconds. In summary, the trial results demonstrate that the fast-track programme registration website meets the threshold for feasibility in terms of user satisfaction, perceived usability, and operational efficiency.

CONCLUSION

This research successfully designed and developed a web application for fast-track programme registration in the Javanese Language Education study programme at Yogyakarta State University. The system streamlines the application process for prospective students and facilitates administrative data management. Furthermore, it ensures the provision of accurate and timely information to all stakeholders. This application represents a significant contribution to the efforts of the university to enhance the efficiency and effectiveness of its academic services.

ACKNOWLEDGEMENTS

We would like to thank all the participants of this study.

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