

Enhancing Information Dissemination through the Development of the DIKDASMEN PDM Malang City Website Using WordPress CMS

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Abstract

Inadequate effectiveness and efficiency in disseminating educational information pose significant challenges for DIKDASMEN PDM Malang City. Addressing these issues is crucial for improving administrative management and ensuring timely access to important educational content. This study aims to develop a website for DIKDASMEN PDM Malang City using the WordPress Content Management System (CMS) to enhance information dissemination effectiveness and efficiency. The research seeks to answer whether the implementation of WordPress CMS can significantly improve these aspects. The website was developed using the Waterfall method, encompassing stages of needs analysis, design, implementation, integration and testing, and maintenance. The target population included users involved in accessing and managing educational information in Malang City. The development process resulted in an 83.3% improvement in the effectiveness and efficiency of information dissemination, as evidenced by user surveys. The website now provides easy access to educational content, including school profiles, data, vision and mission statements, and activity documentation. The WordPress-based website has effectively enhanced the quality of information dissemination and management of educational administration under DIKDASMEN PDM Malang City. The study suggests continued use and periodic updates to maintain its effectiveness and recommends exploring additional features for further improvements.

Keywords: CMS, Education, Website Development, WordPress, Information Dissemination.

INTRODUCTION

Dikdasmen (Primary and Secondary Education Council) is an organization under the Regional Leadership of Muhammadiyah (PDM) in Malang City, tasked with managing and developing primary and secondary education in the region. The council has specific responsibilities, including ensuring educational quality, conducting research and development, fostering institutional relationships, and promoting Islamic boarding schools. Additionally, PDM Dikdasmen in Malang City is actively engaged in various initiatives, such as convening meetings with school principals to discuss strategies for advancing educational excellence and developing programs for leadership succession.

To address the challenges faced by this organization, the development of a WordPress-based Content Management System (CMS) website utilizing the waterfall method is proposed. WordPress CMS is chosen for its capability to create an integrated and user-friendly website. A CMS serves as an essential tool for managing systems, facilitating the collaborative creation, updating, and publishing of content [1]. Specifically, WordPress is a web-based CMS built using the PHP programming language, with MySQL as its database [2][3]. This website aims to provide easier and faster access to educational information, enhance school administration management, and serve as a comprehensive resource hub accessible anytime and anywhere.

Related research has highlighted the effectiveness of WordPress CMS in various contexts. For instance, Susanto et al. developed the official website for the Yogyakarta City Tourism Promotion Agency (BP2KY) using WordPress CMS, employing plugin features to enhance website appearance and functionality [4]. Similarly, Dian Fauzyyah created a company profile website for Konoba Coffee, showcasing WordPress's user-friendly features, which are particularly beneficial for beginners [5]. These studies emphasize the advantages of WordPress, including ease of use, flexibility, and reduced programming complexities, making it suitable for a wide range of applications, such as website creation, e-commerce, and user communication.

The novelty of this project lies in the introduction of Full Site Editing (FSE), a feature that enables users to completely customize all website elements through an intuitive editor. This advancement enhances WordPress's flexibility and user-friendliness while allowing for modular theme development, granting users full control over their site's design without the need for coding expertise.

This study aims to investigate the implementation of the WordPress CMS in developing an effective website for DIKDASMEN PDM Malang City. It seeks to explore the potential for improved information dissemination and management of educational administration. By addressing gaps in existing research regarding the practical application of WordPress in educational contexts, this study will provide insights into enhancing usability and accessibility of educational resources.

METHODS

The research on the development of information systems for Muhammadiyah Primary, Secondary, and Non-Formal Education in Malang City employs a Research and Development (R&D) approach. R&D is a systematic method used to create specific products and evaluate their effectiveness [6]. In this study, the development model utilized is the waterfall model, which is illustrated in Figure 1. The waterfall model is a traditional software development lifecycle approach that outlines a sequential flow of phases, including analysis, design, coding, testing, and support. This model is also referred to as the linear sequential model or classic lifecycle [7]. Each phase must be completed before the next one begins, ensuring a structured progression throughout the development process. By using the waterfall model, this research aims to systematically develop an effective information system that meets the needs of the Muhammadiyah educational institutions.

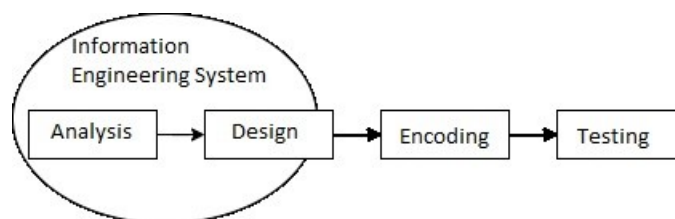


Figure 1. Waterfall Model Illustration

DATA COLLECTION

According to Parinsi, Mewengkang, & Rantun, data collection in research involves three primary activities: observation, interviews, and documentation [8].

a. Observation

This method entails direct research or observation of the research subjects to gain firsthand insight into the problems faced by the educational institutions.

b. Interviews

This process involves collecting data through direct question-and-answer interactions with educational leaders and staff affiliated with the Malang City Basic

Education Department. The interviews aim to gather detailed information about their experiences and perspectives.

c. Documentation

In this research, documentation focuses on acquiring data in the form of records, including images and photographs depicting various school activities within the Dikdasmen schools of Malang City. This method helps provide a visual context to the research findings.

ANALYSIS OF THE RUNNING SYSTEM

Dikdasmen Malang City, an Education Council under the auspices of Muhammadiyah, currently utilizes a manual approach for disseminating school information. This process primarily involves direct socialization through community interactions, which includes sharing details such as school profiles, the number of students and teachers, and the institution's vision and mission. However, this socialization is limited to only once a year, coinciding with the admission period for new students. Consequently, individuals who do not receive information directly from the school must physically visit the institution to obtain the necessary details. This method is not only inefficient but also restricts access to information for those who may not be able to visit the school in person.

SYSTEM DESIGN

The design stage aims to create a new system that effectively addresses the issues faced by Dikdasmen by selecting the best alternative solution.

a. Profile Table

The profile table is an essential component used to store data related to school profiles. This table is designed to encompass various specifications to ensure comprehensive data management. As illustrated in Table 1, the profile table includes key attributes that facilitate the organization and accessibility of information pertinent to each school, such as school name, location, number of students, and staff details.

Table 1. School Profile

Nama	Type	Size	PrimaryKey
Idprofil	int	11	*
Judul	varchar	25	
Isi	text		

b. Malang City PDM Member Data Table

The PDM member table is utilized to store data related to members of the PDM in Malang City. This table is designed to capture important information about each member, as outlined in Table 2. The specifications of the PDM member table include essential attributes such as member names, contact information, roles within the organization, and membership status. This structured approach facilitates effective data management and enables easy retrieval of information for organizational purposes.

Table 2. PDM Member Data for Malang City

Nama	Type	Size	Primary Key
idanggota	int	11	*
nama	varchar	100	
jabatan	varchar	50	

c. School Data Table

The School Data Table is designed to store information related to schools under the auspices of the Malang City Education and Elementary School. As detailed in Table 3, this table includes various specifications to ensure comprehensive data management. Key attributes of the School Data Table encompass the school name, address, type of school, number of students, and staff details. This structured format facilitates the efficient organization, retrieval, and management of school-related data.

Table 3. School Data

Nama	Type	Size	Primary Key
npsn	int	55	*
namas	varchar	100	
akreditasi	varchar	10	
identitas	text		
visi	varchar	255	
misi	text		

d. Documentation Table

The Documentation Table is utilized to store data related to the documentation of PDM and Dikdasmen in Malang City. As specified in Table 4, this table comprises essential attributes that ensure systematic organization and accessibility of documentation. Key elements included in the Documentation Table consist of document titles, types, dates of creation, and any relevant descriptions. This structured approach facilitates efficient management and retrieval of documentation related to the activities and records of PDM and Dikdasmen.

Table 4. Documentation

Nama	Type	Size	Primary Key
lddok	int	11	*
Judul	varchar	100	
Isi	text		

CONTEXT DIAGRAM

A context diagram visually represents the entire system, encapsulating a single process that illustrates the interactions between the system and its external entities. The context diagram for the Malang City website-based Basic Education Information System, as shown in Figure 2, emphasizes the key components and their relationships to the system. This diagram serves to clarify how external entities, such as users and

administrative bodies, interact with the system, providing a high-level overview of the information flow and functionality within the Basic Education Information System.

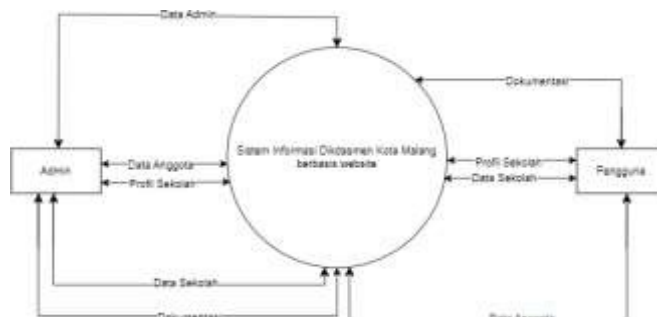


Figure 2. Context Diagram

The Level 1 Data Flow Diagram (DFD) provides a more detailed representation of the system design, illustrating the various processes and the flow of information within the Malang City website-based Basic Education Information System. As depicted in Figure 3, this diagram highlights the interactions between different components of the system and the external entities involved. It delineates how data is processed, transferred, and stored, offering insights into the functional aspects of the system and facilitating a clearer understanding of the information flow.

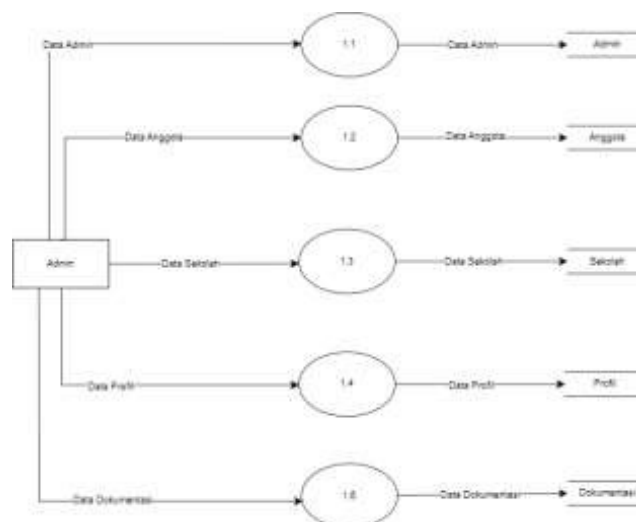


Figure 3. DFD
 Level 1

ENTITY RELATIONSHIP DIAGRAM (ERD)

Entity Relationship Diagrams are used to describe the relationships that occur in each entity. The ERD of the Malang City Basic Education Information System based on the website is as shown in figure 4.

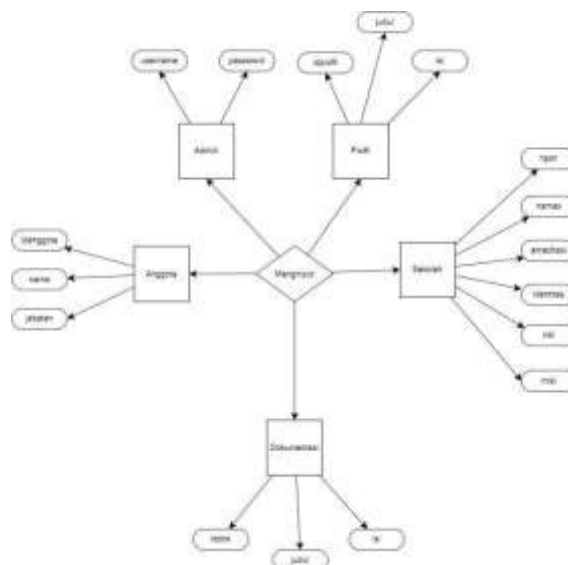


Figure 4. Entity Relationship Diagram

SYSTEMS DEVELOPMENT ENGINEERING

During the system development stage, the Waterfall method is employed. This structured approach enables developers to manage and schedule each work process effectively. By utilizing the Waterfall method, potential errors can be minimized as each phase is completed in sequence before moving to the next. This ensures each stage is executed thoroughly, reducing the chance of oversight.

The Waterfall method is a classic lifecycle model in software development, notable for its systematic and sequential processes. It involves distinct stages including requirements analysis, system design, implementation, testing, and maintenance. Each stage is carried out with great attention to detail to ensure that the final product meets the anticipated specifications and standards of quality.

The stages of designing a website using the Waterfall method, as illustrated in Figure 5, the Research Stages Flowchart, are as follows:

- a. Requirements
In this stage, the researcher gathers comprehensive information regarding the software requirements, focusing on user desires and software limitations. Data is collected through interviews, surveys, and discussions with potential users. This information is then analyzed to develop a thorough understanding of user needs for the software that is being created.
- b. Design
The design phase utilizes Figma, an accessible design platform that provides a variety of features conducive to website design. Figma's collaborative tools allow team members to work together efficiently and effectively on the design of the website.
- c. Implementation
In the implementation phase, the design is applied to WordPress, an open-source Content Management System (CMS) [11]. This platform is chosen for its flexibility and ease of use in website development. At this stage, a detailed examination is conducted on the created modules to ensure they fulfill the desired functionalities.
- d. Integration & Testing
During the integration and testing phase, the previously developed modules are combined into a cohesive system. Comprehensive testing is performed to

determine whether the software aligns with the specified design and to identify any existing errors [12].

- e. Operation & Maintenance The final stage of the Waterfall development method involves the operation and maintenance of the completed software. Here, the software is deployed and put into use by the end users, along with necessary ongoing support to address any emerging issues or updates.

These stages ensure a comprehensive and methodical approach to development, leading to high-quality outcomes.



Figure 5. Research Stages Flowchart

RESULTS AND DISCUSSION

Website management encompasses various facets, including the appearance of the website, individual pages, content, and other essential components.



Figure 6. Homepage of Dikdasmen Website

Figure 6 presents the introduction summary page for the Muhammadiyah Elementary and Secondary Education (Dikdasmen) in Malang City. This summary highlights that the Dikdasmen Council operates as one of the Leadership Assistant Units (UPP) under the Muhammadiyah Regional Leadership (PDM) of Malang City, tasked with implementing core activities of the PDM.



Figure 7 Homepage of Dikdasmen Website 2

Figure 7 features a webpage detailing the brief history, vision and mission, main tasks, functions, objectives, the number of schools under Dikdasmen, associated programs, and contact information. This section provides a comprehensive overview of the Dikdasmen assembly, outlining essential elements such as its history, objectives, functions, and work programs.



Figure 8. Leadership Structure of Dikdasmen

Figure 8 illustrates the organizational structure of the Muhammadiyah Regional Leadership and the Primary, Secondary, and Non-Formal Education Council in Malang City, currently in office.



Figure 9. Elementary School/Islamic Elementary School Website

Figure 9 displays the webpage dedicated to Elementary Schools under the Dikdasmen council. This section consists of three pages corresponding to the three educational levels: Elementary, Middle, and High School. The displayed example focuses on the Elementary School level, listing the schools operated under the Muhammadiyah umbrella in Malang City. Each school name is clickable; selecting a school directs users to a new page that provides detailed information about that institution.



Figure 10. Website Home Dikdasmen

Figure 10 shows the gallery page, which features documentation of activities organized by the Dikdasmen assembly. Figures further illustrate that upon clicking on a school name, users are redirected to a detailed school page containing crucial information about that institution (as seen in Figure 11).



Figure 11. Website Details of Dikdasmen

The results from the user survey indicate a positive reception of implemented features, particularly regarding documentation and the availability of school data. Notably, 83.3% of the 15 participants rated their satisfaction regarding the website design highly. This feedback underscores the significance of user involvement at all stages of development to create solutions that are not only functional but also aligned with user expectations.

CONCLUSION

The research indicates that the development of the website has significantly enhanced the effectiveness and efficiency of information dissemination. Results from a user survey reveal that 83.3% of participants are satisfied with the features and design of the implemented website. The platform effectively provides access to crucial information, including school profiles, school data, vision and mission statements, and documentation of activities. These findings suggest that users find the website beneficial for accessing essential educational information. The high satisfaction rate reflects the website's user-centered design and functionality, indicating that it meets the needs of its intended audience.

The successful development of a WordPress-based Content Management System (CMS) website serves as an effective model for improving educational information management. This advancement not only streamlines administrative processes under the auspices of the DIKDASMEN PDM Malang City but also enhances communication between the council and the educational institutions it oversees. This study is limited by its sample size of only 15 participants, which may not fully represent the broader user population. Additionally, the research primarily focuses on the initial implementation of the website, without assessing long-term user engagement and the potential need for further enhancements over time.

Future research should consider a larger sample size to gain a more comprehensive understanding of user perceptions and experiences. Additionally, longitudinal studies could be conducted to evaluate the impact of the website on information dissemination and educational administration over time, as well as to identify areas for improvement. The development of the WordPress CMS-based website has proven to be a valuable solution for enhancing the quality of information dissemination and supporting educational administration within the DIKDASMEN PDM Malang City. The positive feedback from users highlights the importance of such digital solutions in the modern educational landscape.

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