

# Design of a Web-Based Company Profile Information System for Mestika Abadi School (Chong Ren School) Using the Waterfall Method

Jeslin Halim<sup>1\*</sup>, Wilson<sup>2</sup>, Rudiyanto Tanwijaya<sup>3</sup>

<sup>1,2</sup>Information Systems STMIK Time, Medan, Indonesia

<sup>3</sup>Informatics Engineering, STMIK Time, Medan, Indonesia

[jeslinhalim321@gmail.com](mailto:jeslinhalim321@gmail.com)<sup>1\*</sup>, [wu95.wilson@gmail.com](mailto:wu95.wilson@gmail.com)<sup>2</sup>, [rudiyanto.tanwijaya1512@gmail.com](mailto:rudiyanto.tanwijaya1512@gmail.com)<sup>3</sup>

## Abstract

The development of information technology, particularly the internet, has brought significant changes in various fields, including education. Mestika Abadi School (Chong Ren School) in Medan still uses manual methods in delivering school information. This creates several obstacles such as limited information reach, slow information dissemination process to parents and the general public, and lack of efficiency in promoting the school's profile and excellence to prospective new students. This study aims to design and build a web-based school company profile information system that can replace the manual process in promoting school information, using the Waterfall method in its software development. This method was chosen because it has clear and structured stages, including needs analysis, system design, implementation, testing, and maintenance. The results of this study indicate that the developed system is able to increase efficiency in delivering school information through an attractive and informative company profile page.

**Keywords :** Information Systems, Website, Waterfall, Digitalization, Company Profile

## 1. Introduction

The internet is currently developing rapidly, as information is becoming increasingly easy to obtain. Currently, the internet is not only used as an information medium, but is also used in almost all areas of life, one of which is education. One medium used to disseminate information for organizations, whether business or education, is the use of website-based information systems as information technology that utilizes the internet [1][2].

Media that can be used to accommodate various types of information that can be accessed anytime and anywhere is the definition of a website. [3]. School websites are currently trending in the world of education and are receiving very positive attention and responses from various parties. In the context of school digitalization, the implementation of the Independent Curriculum provides an opportunity for schools to integrate technology into the learning process. By utilizing websites, schools can present teaching materials, extracurricular activities, and other important information interactively, supporting more flexible and tailored learning to students' needs, and increasing parental involvement in their children's education [3].

Mestika Abadi School (Chong Ren School) is located in Medan city which still borrows a monastery located at Gg. P Jl. Benteng, RT. Environment 22/RW. Environment 22, Rengas Pulau, Medan Marelal District, Medan City, North Sumatra and is a Buddhist school that teaches character, moral ethics and good manners [4]. At Mestika Abadi School / Chong Ren School, not only does it teach theory, but the teachers instill an attitude of wisdom and love so that children grow into responsible, empathetic individuals and have high integrity [5]. Mestika Abadi School / Chong Ren School provides information about the school which is still done manually, namely where the principal socializes and interacts with the community. This conventional method is certainly very ineffective and inefficient and is time consuming and requires large costs [6]. Implementation of an integrated digital system can be a solution to increase efficiency and accuracy in the academic process.

One way to develop information systems is through software engineering. Software engineering is a discipline that focuses on the systematic development, management, and maintenance of software. This process includes requirements analysis, design, development, testing, and maintenance. In the context of academic information systems, software engineering is important to meet the needs of users such as students, teachers, and parents. Various development methods, such as Waterfall, Agile, Spiral, and V-Model, are used to ensure quality and efficiency. The Waterfall method is linear and structured, while Agile is more flexible for frequently changing requirements. Spiral combines planning and risk management, while the V-Model emphasizes continuous testing. By applying software engineering principles and choosing the right method, developers can produce functional and maintainable solutions [7].

This study uses the Waterfall method in developing the proposed company profile information system. The Waterfall method is a linear and sequential software development model, where each stage must be completed before proceeding to the next stage. The stages in this method include needs analysis, system design, implementation, testing, and system maintenance. The advantage of the Waterfall method is its clear and orderly structure, making it easier for schools to process data, store data, and so on. With this approach, system needs and objectives can be identified well at the outset, thereby reducing the possibility of significant changes mid-development. Each stage has complete documentation, making it easier for the development team to understand the process and maintain system quality. In addition, this method is suitable for use in projects that have clear needs from the start and do not change much. The order and good documentation in the Waterfall method also facilitate the system maintenance process in the future [8].

## 2. Research Method

Below, Figure 1 shows the stages of the Waterfall method implemented in the development of the company profile information system in this study.

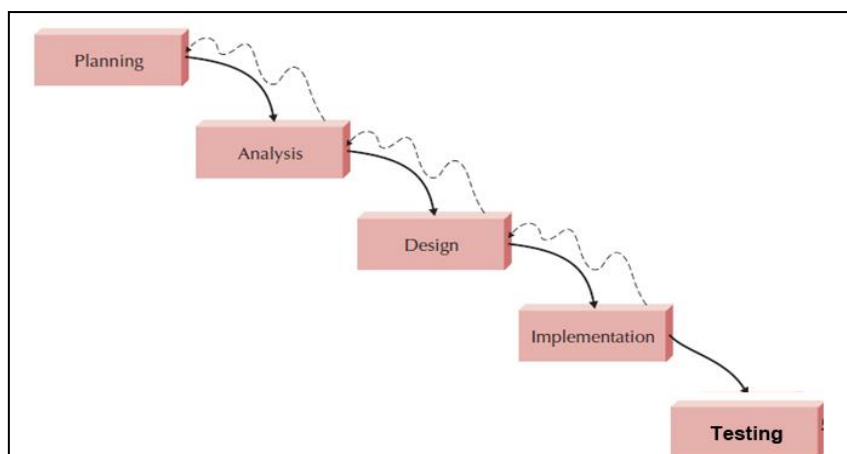


Fig. 1: Stages of Analysis of the Proposed Method

The Waterfall model is also called the linear sequential model or the classic life cycle because it is structured and flexible. This model proposes a systematic and sequential approach to software development that begins at the system level and progresses through each phase [10]. The following describes the stages of the Waterfall Model method, including:

1. Planning  
In this phase, the application's potential requirements are analyzed into a specific document that serves as the basis for all future development. This process will produce a requirements document that defines what the application should do, not how it should do it.
2. Analysis  
During the second phase, the system will be analyzed to produce the business model and logic that will be used in the application.
3. Design  
This third stage typically covers technical design concerns, such as programming languages, data layers, services, and so on. Design specifications are typically created to outline how the business logic covered in the analysis will be technically implemented.
4. Implementation  
From the third and second stages, a technical system design is obtained, then implementation will be carried out by building applications using the selected programming languages.
5. Testing  
The final stage is to test the application that has been built and implemented so that any bugs or errors in the application can be fixed.

## 3. Results

The results of this research include the development of a web-based company profile information system for Mestika Abadi School (Chong Ren School) using the Waterfall method. The following is a complete overview of the school information system at Mestika Abadi School for user visitors:

1. Homepage  
This page contains a school slideshow, teacher attendance information, and school-related announcements. Figure 2 shows the home page.

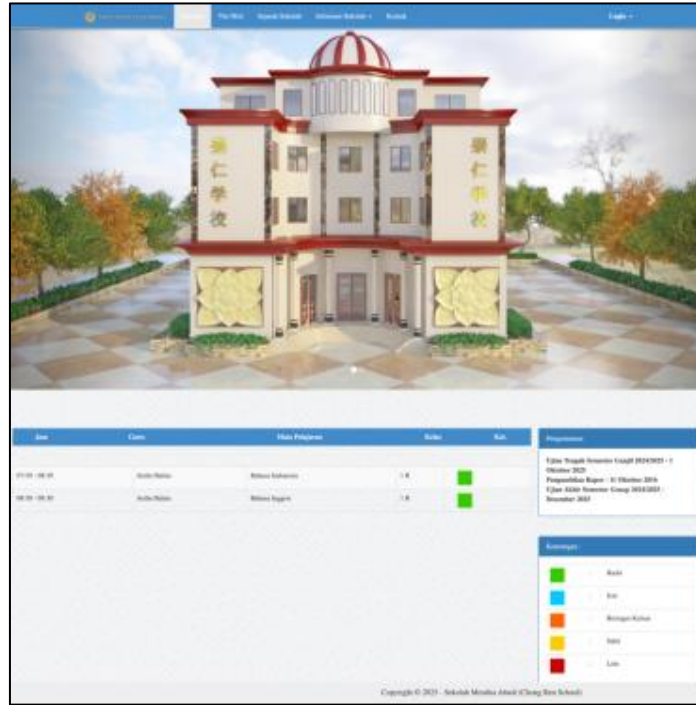


Fig. 2: Home/Login Page

2. School Vision and Mission Information Page.

The school's vision and mission page contains information about the school's vision and mission presented in text form. The information aligns with the school's long-term goals. Figure 3 shows the school's vision and mission information page.

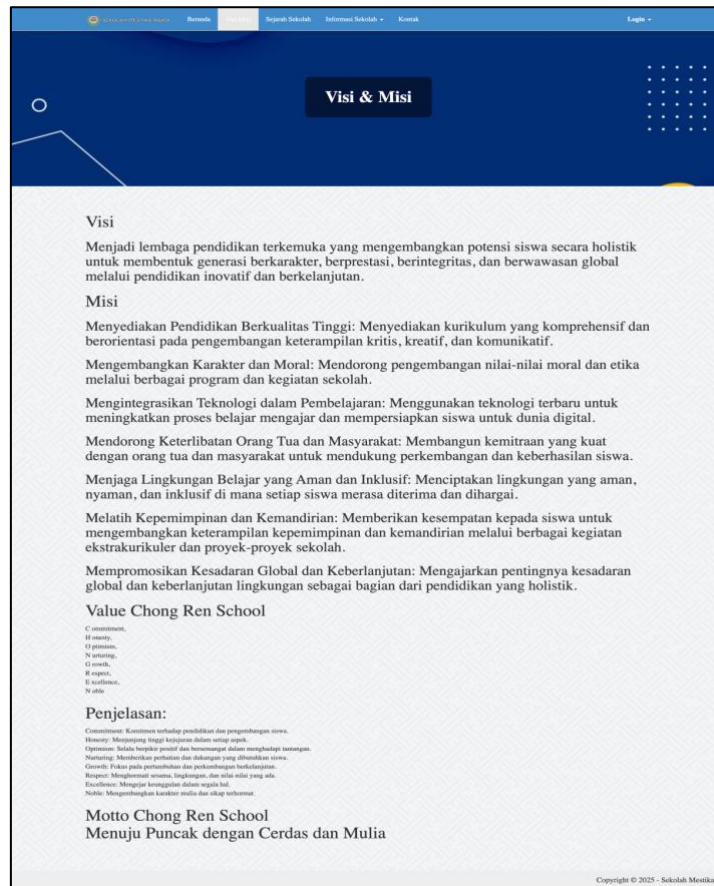


Fig. 3: School Vision and Mission Page

3. School History Information Page.

This page contains information about the school's history, including the year of its founding, a brief description, and key figures who played a role in its formation. Figure 4 shows the school's history information page.

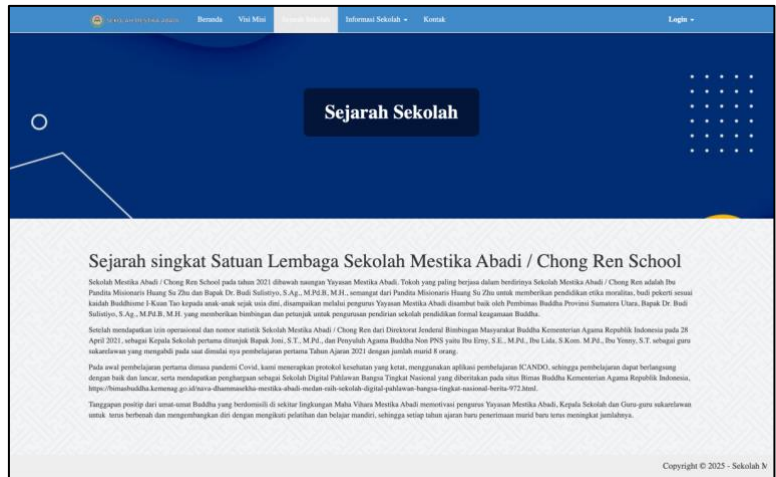


Fig. 4: School History Information Page

4. School Facilities Page.

This page contains complete information about the school's facilities, including photos of the facilities available at the school, such as classrooms, computer labs, kitchens, and so on. Figure 5 shows the school's facilities page.

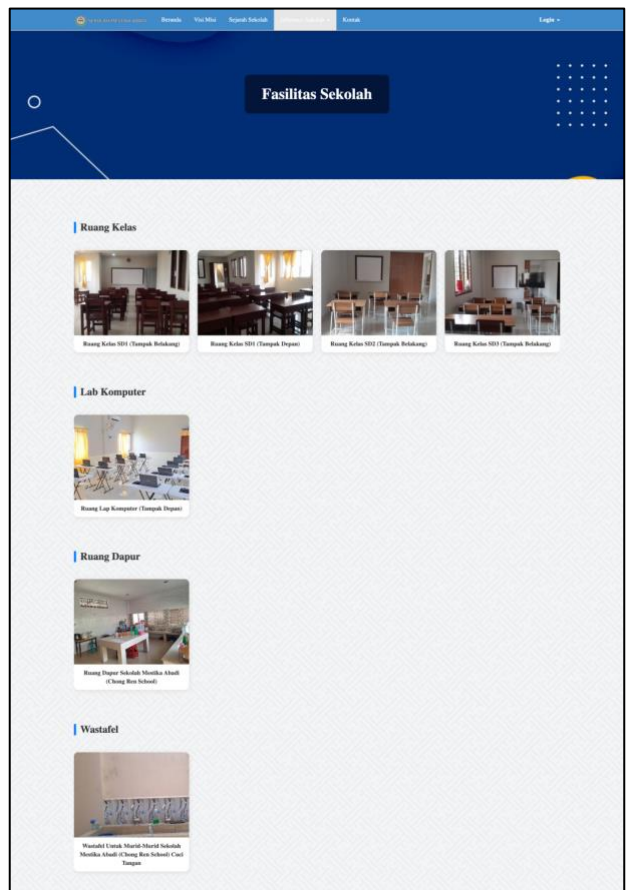


Fig. 5: School Facilities Page

5. School Gallery Page .

This page contains complete information about the school gallery , including gallery photos available at the school, including events, activities, and so on. Figure 6 shows the school gallery page.

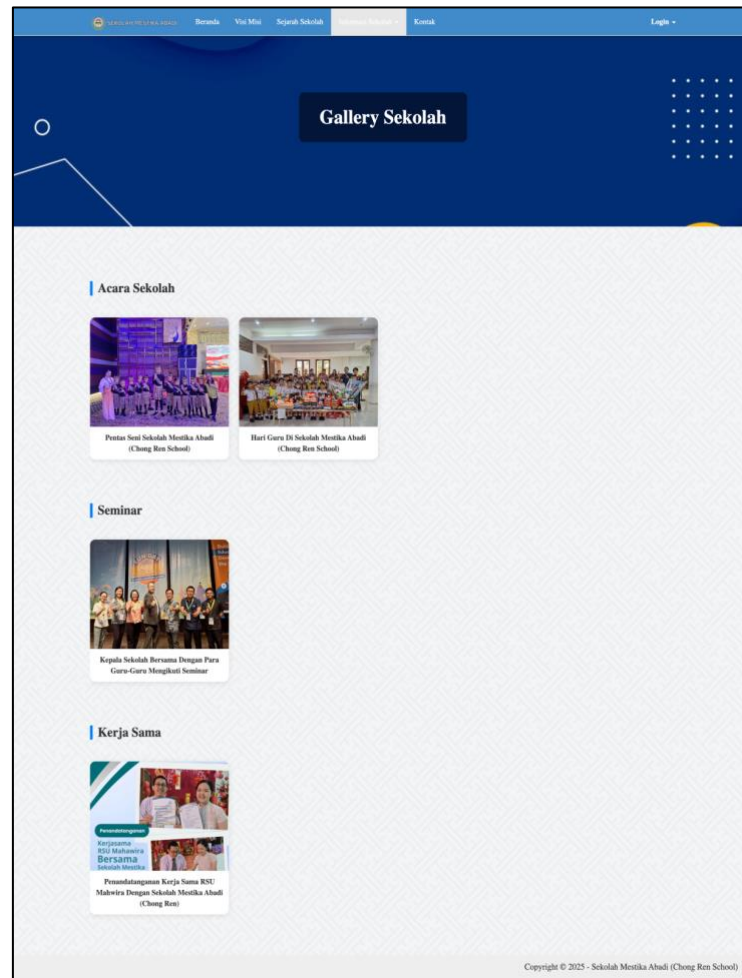


Fig. 6: School Gallery Page

#### 6. Registration Requirements Page.

This page contains information about the registration requirements, including information on how to register, and a registration form that can be downloaded from this page. Figure 7 shows the registration requirements page.

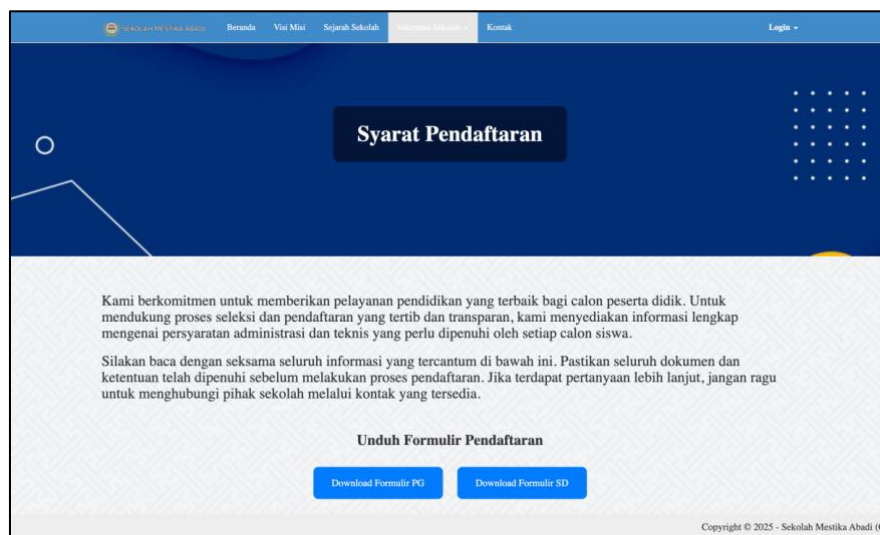


Fig. 7: Registration Requirements Page

#### 7. School Achievement Page.

This page contains complete information about the school gallery, including gallery photos available at the school, including events, activities, and so on. Figure 8 below shows the school's achievements page.

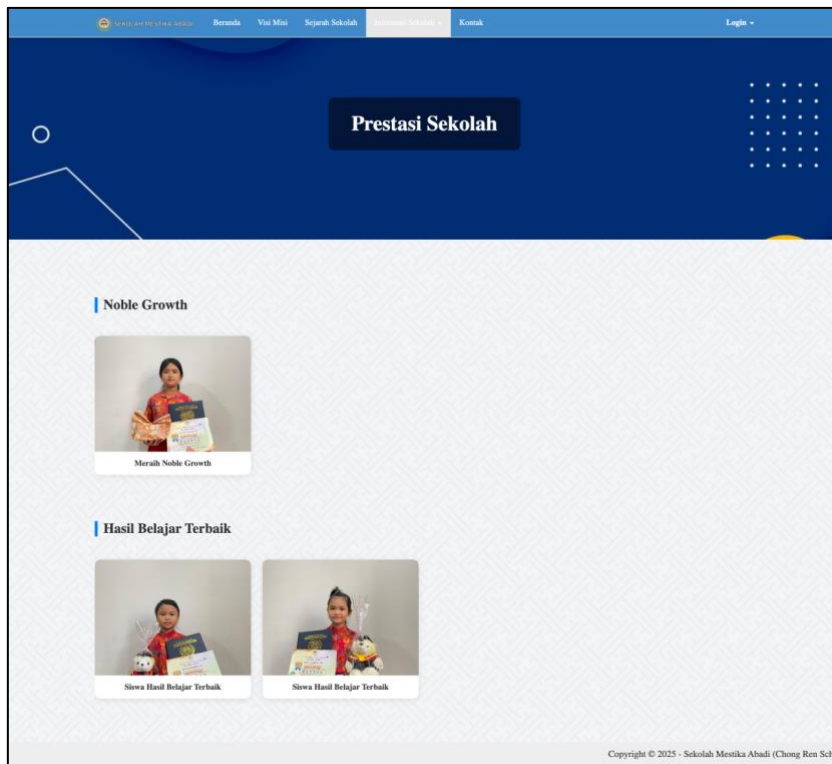


Fig. 8: School Achievement Page

8. School Contact Information Page.

This page contains important school contact information, such as the school's complete address, phone number, email address, and official social media accounts. This information is structured to make it easier for visitors to contact the school or obtain further information. Figure 9 shows the school's contact information page.

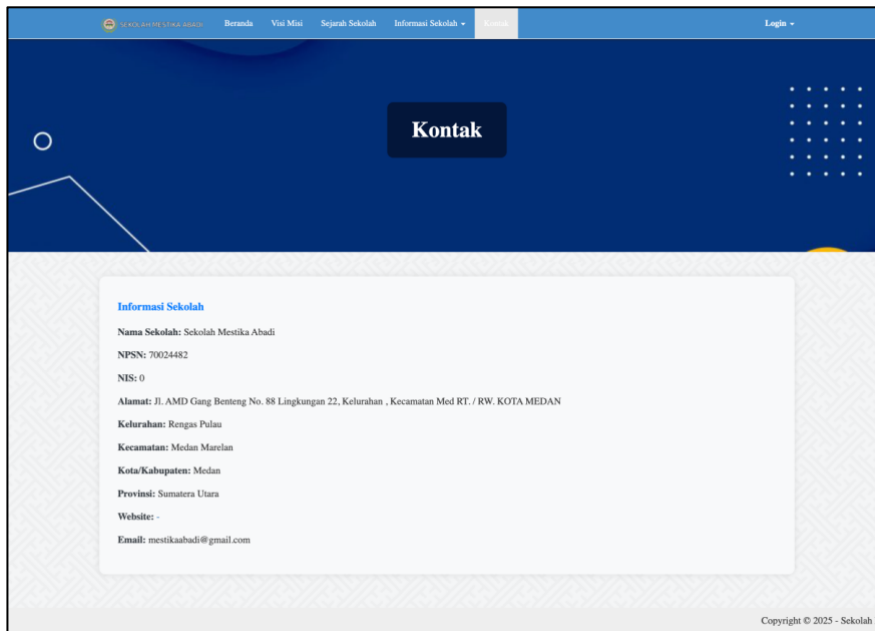


Fig. 9: School Contact Information Page

4. Discussions

The development of the web-based company profile information system for Mestika Abadi School (Chong Ren School) was carried out using the Waterfall method , a sequential system development method through five main stages: Planning, Analysis, Design, Implementation, and Testing . This method was chosen because it provides a clear structure and is suitable for projects with predetermined needs and objectives. The following is a description of each stage of system development along with an estimated timeframe:

1. Planning – 1 Week

This initial stage aims to determine the direction of company profile system development and the scope of the project.

Main activities:

- a. Identifying school needs in publishing profile information, vision-mission, activities, facilities, and student registration.
- b. Determine the features to be developed, such as school profile pages, news/activities, galleries, contact forms, and registration information.
- c. Prepare a work plan and division of tasks for the development team.

Reason for time estimation:

1 week is sufficient because this stage is conceptual and focuses on initial understanding of the project and overall planning.

## 2. Analysis – 2 Weeks

The analysis stage is carried out to understand the system requirements in more depth based on input from the school and potential users.

Main activities:

- a. Conduct observations and interviews with the principal and staff.
- b. Review the information delivery media currently used.
- c. Prepare a System Requirements Specification (SRS) document as a reference for design and implementation.

Reason for estimation:

This stage takes 2 weeks so that the analysis results reflect real needs and are able to direct the design appropriately.

## 3. Design - 2 Weeks

The design is carried out based on the requirements specifications, to produce a design of the system to be built.

- a. Designing the interface of the main page, profile, news, gallery, contact, and registration forms.
- b. Create website navigation structure and database design (for news content, galleries, admin, etc.).
- c. Creating a mockup/display design using Balsamiq Mockup 3.

This stage is estimated to take 2 weeks, because the design must be prepared carefully to avoid errors during implementation.

## 4. Implementation – 3 Weeks

The implementation phase is the process of translating the design into a real system using programming languages and web technologies. Some tasks at this stage include:

- a. Frontend development using HTML, CSS, and JavaScript.
- b. Backend development using PHP and MySQL database integration.
- c. Creation of school company profile modules.

The implementation duration is 3 weeks, as it involves system coding and integration between components.

## 5. Testing – 2 Weeks

Once the system is complete, testing is performed to ensure that all functions operate as required and are error-free. The testing phases include:

- a. Unit Testing to test each function/method separately.
- b. Integration Testing to ensure modules work in an integrated manner.
- c. User Acceptance Testing (UAT) by the school to ensure the system is suitable for use.

The time allocated for testing is 2 weeks, so that all features can be thoroughly tested and improvements made if bugs or inconsistencies are found.

## 5. Conclusion

The following describes the conclusions from the website that was built in this research, namely:

1. The research results show that the Waterfall method can be effectively and gradually applied to the development of a web-based school information system and can provide solutions to the digitalization needs of data management and communication at Mestika Abadi School. This method allows the development team to understand the system thoroughly, minimizes the risk of changes mid-development, and produces a stable and functional system.
2. The website presents important information such as the school's background, vision, mission, school layout, facilities, and photos of activities in a structured and engaging manner. This supports the school's professional image and provides easy access to information for the public and prospective students.

## References

- [1] K. Liong and M. D. Firmansyah, "Perancangan dan Implementasi Website Profil Sekolah di Sekolah Advent Mission Sagulung Menggunakan Wordpress dan MySQL," *J. Ilm. Betrik*, vol. XIII, no. 3, 2022.
- [2] Andi, C. Juliandy, Robet, and O. Pribadi, "Securing Medical Records of COVID-19 Patients Using Elliptic Curve Digital Signature Algorithm (ECDSA) in Blockchain," *CommIT J.*, vol. 16, no. 1, pp. 87–96, 2022, doi: 10.21512/COMMIT.V16I1.7958.
- [3] M. D. Firmansyah and H. Herman, "Perancangan Web E- Commerce Berbasis Website pada Toko Ida Shoes," *J. Inf. Syst. Technol.*, vol. 4, no. 1, pp. 361–372, 2023, doi: 10.37253/joint.v4i1.6330.
- [4] M. Utami, E. Dwika Putra, V. Handoyo, R. Arif Ma'ruf, F. Agnesa Putra, and Herianto, "Perancangan Sistem Informasi Profil Sekolah Berbasis Website Pada Sdn 4 Kota Bengkulu," *JPMIT (Jurnal Pengabdian Masyarakat, Teknol. Terbarukan)*, vol. 3, no. 1, pp. 1–5, 2023.
- [5] J. H. Sitorus and W. Yusnaeni, "Perancangan User Interface Sistem Informasi Akademik Sekolah Dasar (Siakad) Menggunakan Metode Waterfall," *Simpatik J. Sist. Inf. dan Inform.*, vol. 1, no. 2, pp. 98–107, 2021, doi: 10.31294/simpatik.v1i2.671.
- [6] R. Y. Pratama, "Analisa Dan Perancangan Sistem Informasi Akademik," *OKTAL J. Ilmu Komput. dan Sci.*, vol. 3, no. 18, pp. 1–10, 2024, [Online]. Available: <https://journal.mediapublikasi.id/index.php/oktal/article/view/3299>.
- [7] K. Umar, O. Novalinda, and I. S. Widiati, "Perancangan Sistem Informasi Akademik Digital Berbasis Web di SD Naya Barat II Surakarta," *J. Penelit. Sist. Inf.*, vol. 2, no. 3, pp. 199–210, 2024.
- [8] F. Hasanah and R. Untari, *Buku Ajar Rekayasa Perangkat Lunak*. Sidoarjo: UMSIDA Press, 2020.
- [9] L. W. Widiyanti and M. I. Darussalam, "Penerapan Metode WaterFall dalam Digitalisasi Sistem Pelayanan Publik Pemerintah Kantor Kecamatan Pamulang," *J. Ilm. Komputasi*, vol. 22, no. 1, pp. 57–70, 2023, doi: 10.32409/jikstik.22.1.3329.
- [10] L. P. Sumirat, D. Cahyono, Y. Kristyawan, and S. Kacung, *Dasar-Dasar Rekayasa Perangkat Lunak*. Malang: Madza Media, 2023.