

DEVELOPMENT OF A SYSTEM TRANSFORMATION OF NEW STUDENT ADMISSION SERVICES AND VALUE MANAGEMENT

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Abstract— Service activities at Tegal Dinamika Vocational School still use a manual system which has a high risk of data being lost and the authenticity of its value is doubtful. Based on these conditions, it is necessary to create a web-based grade processing information system to help convey information on student grades and attendance, as well as online registration data. The aim of this research is to provide a breakthrough in the transformation of services at Vocational School Dinamika Tegal in terms of registering new students, conveying information on exam results and attendance recaps to students and parents, which can be accessed online via the website, so that all users, even people with physical limitations, can access the website. that easily. The research method for web design uses the SDLC waterfall method. Apart from that, to determine website performance, researchers conducted sample usability testing to find out whether the website was user friendly. The results of this research with the creation of this application, the process of conveying value information from teachers to students has become more effective and efficient, this evidence can be seen from the distribution of questionnaires in the school environment which shows that 97% agree with this research, increasing the success of data processing and making it easier for the administrative side to be more organized and no more data errors. The uniqueness of this research focuses on more disability-friendly web design and user experiences that are accessible to all individuals including those with disabilities. The conclusion of this research is that the website is able to manage grade data and student attendance recaps that have been input by the teacher, making it easier for prospective new students to obtain registration information and register online and can be accessed anywhere and at any time through the system.

Keywords: Grades, information systems, registration, waterfall, web.

Intisari— Kegiatan pelayanan di SMK Dinamika Tegal masih menggunakan sistem manual yang tinggi resiko data hilang serta diragukan keaslian nilainya. Berdasarkan kondisi tersebut perlu kiranya untuk membuat sebuah sistem informasi pengolahan nilai berbasis web untuk membantu menyampaikan informasi nilai dan kehadiran siswa, serta data pendaftaran secara online. Tujuan penelitian ini yaitu memberikan trobosan transformasi pelayanan di SMK Dinamika Tegal dalam hal pendaftaran siswa baru, penyampaian informasi nilai hasil ujian dan rekap kehadiran kepada siswa maupun wali murid dapat diakses secara online melalui website, sehingga seluruh pengguna bahkan orang yang memiliki keterbatasan fisik dapat mengakses website tersebut dengan mudah. Metode penelitian pada perancangan web ini menggunakan metode SDLC waterfall. Selain itu untuk mengetahui performa website, peneliti melakukan sample usability testing untuk mengetahui apakah website user friendly. Hasil dari penelitian ini dengan terciptanya aplikasi ini, proses penyampaian informasi nilai dari guru kepada siswa menjadi lebih efektif dan efisien, bukti ini dapat dilihat dari sebaran kuesioner dilingkungan sekolah yang menunjukkan 97% menyetujui penelitian ini meningkatkan keberhasilan pengolahan data dan mempermudah pihak administratif menjadi lebih tertata dan tidak ada lagi kesalahan data. Keunikan penelitian ini berfokus pada desain web yang lebih ramah disabilitas dan pengalaman pengguna yang dapat diakses oleh semua individu termasuk mereka yang memiliki keterbatasan. Kesimpulan dari penelitian ini, website mampu mengelola data nilai dan rekap kehadiran siswa yang telah diinput oleh guru, memudahkan calon siswa baru mendapatkan informasi pendaftaran dan mendaftar secara online dapat diakses dimana saja dan kapan saja melalui sistem

Kata Kunci: Nilai, sistem informasi, registrasi, waterfall, web.

INTRODUCTION

The increasingly rapid development of information and communication technology also influences the development of information systems, one of which is in the world of education (Fitri, Mahdiawan, 2023). In the education sector we can find developments in information systems such as online libraries, academic information systems and new student registration, but not many schools still implement or use information systems in this process (Zen, Rahman, Dafitri, Liza, & Aulia, 2023). In this digital era, online registration of new students or acceptance of new students (PSB) is one form of solution so that the implementation of new student registration is more transparent, easy to collect data, and informative (Zen et al., 2023). In fact, having online registration will really help schools in registering new prospective students, with data that is neater and easier to process compared to using manual registration (Harry Saptarini, Hidayat, & Ciptayani, 2019), besides this system will make it easier to collect data and the administration process is easier and faster, the implementation of student registration will be more efficient in terms of time, space costs and energy (Pratiwi, Jubaidah, Julieta, & Putri, 2023).

Apart from registering new students, the information system can also be used to assist the process of inputting student grades carried out by teachers or teaching staff (Limbong & Sriadhi, 2021). The existence of this information system will make it easier for teachers in the process of inputting grades, data collection and transparency in giving grades, as well as in teacher reporting in providing recaps. Student grades will be easier (Sari, Azzahrah, Qathrunada, Lubis, & Anggraini, 2022).

This research needs to be carried out because in today's sophisticated era, most of the service conditions at Dinamika Tegal Vocational School are still carried out manually in various important services such as the delivery of exam results and attendance recapitulation which still have to be delivered directly by teachers in class as well as student registration services. The new policy requires prospective students to come directly to school to process registration and have to return to school when there is information regarding new student registration, so this is considered less efficient.

With the idea of building a web-based information system for new student admissions and inputting student grades using PHP and HTML programming languages and using a SQL database (Noviantoro, Silviana, Fitriani, & Permatasari, 2022). Hypertext Markup Language (HTML) is used to regulate the way we present information on the

internet and how that information takes us from one place to another, while PHP is used to develop the web (Rina Noviana, 2022). MySQL has good enough capabilities to support the work of developers, both users who have experience with databases and beginners. MySQL uses the SQL language to access its database (Raharjo, Napiah, & Anwar, 2022). With this system, it is hoped that it will make it easier for the school or committee to manage the implementation of new student admissions, and with the existence of a web-based value input system (Mayasari, Supriani, & Arifudin, 2021) it will make it easier for teachers to record and provide grades for their students anywhere, because it is systemized and web-based so it can be accessed anywhere and at any time.

In research conducted by (Jamaludin, Firmansyah, & Romli, 2023) the design of a special PPDB website (admission of new students) can record every PPDB process starting from PPDB information, registration, viewing student statistics, and viewing information about the school. And finally, the process of accepting new students is more effective and efficient because the entire process has been computerized so that the process of accepting new students, the incoming data is more organized and easy to access if needed, without using conventional data in the form of paper anymore, and also from a security perspective. safer because the data is stored in a database that can only be accessed by the school admin.

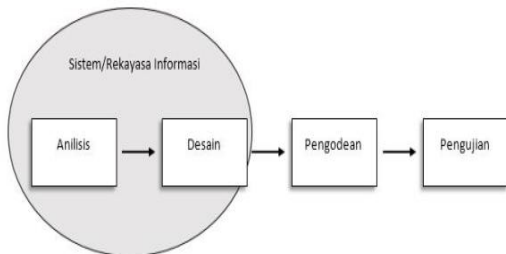
Based on these problems, the researchers proposed a new breakthrough by designing a user friendly website using the SDLC waterfall method with a sequential approach. Where is the uniqueness of this research compared to other research conducted by (Jamaludin et al., 2023) which focuses more on the student registration system with the same method, namely the waterfall method, in this research even though the website designed is a website that has 3 main features, because not only focuses on the new student registration website but also includes features for informing exam results and recapitulating student attendance, but based on the results of sample usability testing or filling out questionnaires filled out by students at SMK Dinamika Tegal, it shows that 97% agree that this research increases the success of data processing and makes things easier for the administrative side. organized and no more data errors. Apart from that, this website is also equipped with a new breakthrough where this website is set to be user friendly not only for ordinary people but also friendly for people with special needs because it is equipped with disability access where in the website usage guide there are voice steps to make it easier to access the website.

MATERIALS AND METHODS

The data collection techniques that will be used to obtain data appropriate to the problem being studied are:

1. Observation
By seeing and observing directly sales as a problem object for the writer (Fachri & Surbakti, 2021).
2. Interview
By asking questions or providing a list of questions to the resource person, the public usually relates to purchasing needs related to the problem being discussed and the resource person immediately answers.
3. Literature Study
This is a search for literature sourced from books, media, experts or the results of other people's research which aims to develop the theoretical basis that we use in conducting research (Fadli & Pardiyansyah, 2022). One reference source that researchers can use as information guides in searching for reading material is by using reference books.

SDLC has several models for implementing the process stages, one of the models used in this final project is the waterfall model. According to Rosa and Shalahudin in "The waterfall SDLC model is often also called the linear sequential model or classic life cycle" (Okesola et al., 2020).



Source: (Okesola et al., 2020)

Figure 1: illustrates the Waterfall Model

The waterfall model provides a sequential or ordered software life flow approach starting from analysis, design, coding, testing and support stages (Putra & Ridoh, 2021). Here is the explanation:

1. Analysis of software requirements
The requirements gathering process is carried out intensively to specify software requirements so that it can be understood what kind of software is needed by users.
2. Design
Software design is a multi-step process that focuses on software program creation design, interface representation and coding procedures (Mersita et al., 2022). This stage

translates software requirements from the requirements analysis stage to a design representation so that it can be implemented as a program at the next stage.

3. Creation of program code
The design must be translated into a software program. The result of this stage is a computer program according to the design that was created at the design stage (Hidayat et al., 2020).
4. Testing
According to (Firdaus, Silvy Amelia, Ani Yoraeni 2021) "Black Box Testing is testing software in terms of functional specifications without testing the design and program code." Testing focuses on the software from a logical and functional perspective and ensures that all parts have been tested. This is used to minimize errors and ensure the output produced is as desired.
5. Support or maintenance
It does not rule out the possibility that software will experience changes when it is sent to the user. Changes occur due to errors that appear and are not detected during testing or the software must adapt to a new environment (Maulidda & Jaya, 2021).

RESULTS AND DISCUSSION

1. Analysis of software requirements

At this stage, the process of using the new student admission system and inputting student grades is web-based and contains data that can be seen by the admin, in the form of student data, teacher data, grade data, prospective new student data. The following are the results of a questionnaire issued to measure the effectiveness of the system:



Figure 2: Questionnaire Results

Based on Figure 2 above, it can be seen that the results of distributing questionnaires or filling in usability testing samples carried out by users from the Tegal Dinamika Vocational School environment show that 97% agree that this research increases the success of data processing and makes it easier for administrative parties to be more organized and there are no more data errors.

2. System Design

After analyzing the system requirements for the new student registration system and value input at SMK DInamika Tegal, the next step is to design the system, which has the aim of how the system will be formed.

a. Process Design

1) Entity Relationship Diagram

ER diagrams help visualize how data is connected and are useful for constructing the relational databases used in these systems:

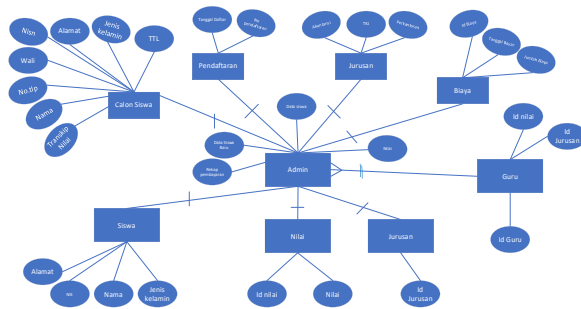


Figure 3: Entity Relationship Diagram

Figure 3 is the ERD design of the system proposed by the researcher, where it can be explained that in the ERD:

- First, participants choose to register using the system and re-register to get a user and password
- Then the admin will send the user and password results to prospective students who will register
- Participants log in to the new student admissions system and the admin receives detailed data
- Superadmin accesses the system to filter and cross-check detailed registration data

2) Data Flow Diagram (DFD)

This data flow diagram documents the processes of a system that determine the function of the system. By providing information, either storing or transferring information to the system. The following is a picture of this DFD system.

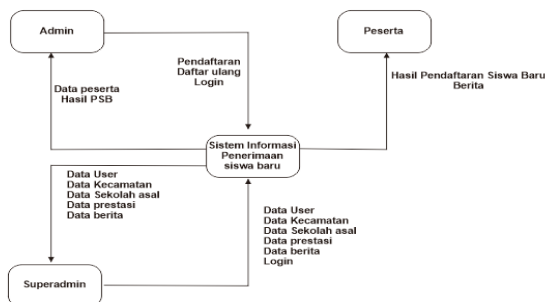


Figure 4: Data Flow Diagram (DFD)

Figure 4 is a DFD design of the system proposed by the author. Based on the DFD display above, it

can be explained that the information system for new student admissions has the following flow:

- First, participants choose to register using the system and re-register to get a user and password
- Then the admin will send the user and password results to prospective students who will register
- Participants log in to the new student admissions system and the admin receives detailed data
- Superadmin accesses the system to filter and cross-check detailed registration data

3. Creation of program code

The interface model design for the new student registration system and input of student grades is as follows:

a) Login Page

On this page the user inputs the username and password in the username and password columns so that they can enter the system:

The login form has a header with a user icon. It contains three input fields: 'Username *', 'Password *', and a dropdown menu labeled 'Masuk Sebagai'. Below the fields is a green 'Masuk' button. At the bottom, there is a link: 'Belum memiliki akun? Daftar disini.'

Figure 5: Login Form

In the Login Form from figure 5, there is a Username and Password as well as account categories such as student, prospective student, teacher, admin. In the login form there are also instructions, if you don't have an account, you can register, especially for prospective new students

b) Student Registration Page

On this page, prospective new students input their personal data to register as prospective students:

The registration form has a header with a student icon and the title 'Pendaftaran Siswa'. It contains several input fields: 'Nama Siswa *', 'Nama Lengkap', 'Nama Wali *', 'Nama Wali', 'Nomor Telepon Wali *', 'Nomor Telepon Wali', 'Jenis Kelamin *', 'Agama *', 'NISN *', and 'Nomor Induk Siswa Nasional'.

Figure 6: Student Registration Form

The registration form for prospective new students contains several pieces of information that need to be completed, such as name, name of the student's guardian, guardian's telephone number, gender, religion and NISN.

c) Admin Dashboard Page

This display is the initial display after the admin logs in to the system:

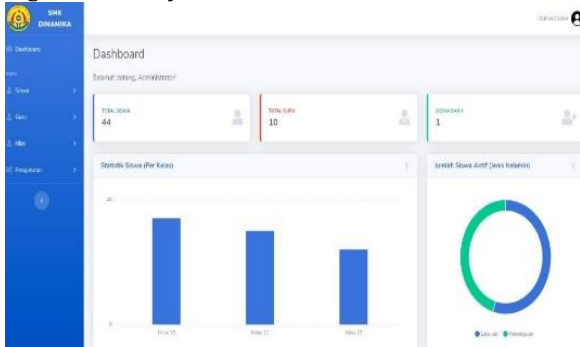


Figure 7: Admin Page Dashboard

The admin dashboard form contains data on students, teachers, grades, registration. Admin access rights in this system are very comprehensive.

d) Teacher data page in admin

This page displays teacher data that has been stored in this system database, and you can edit this data or add new data:

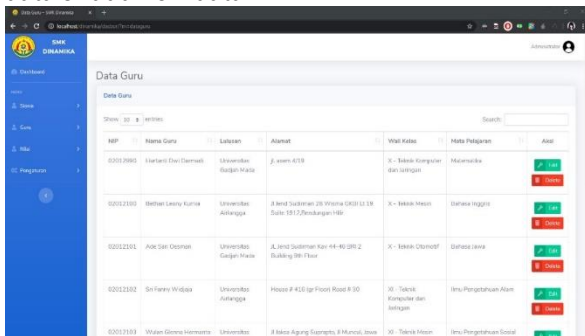


Figure 8 :Teacher Data Admin Page

The teacher dashboard form has menus for students, teachers, grades and settings where the teacher's access rights here only extend to inputting grades and reporting on classroom learning.

d) Student page

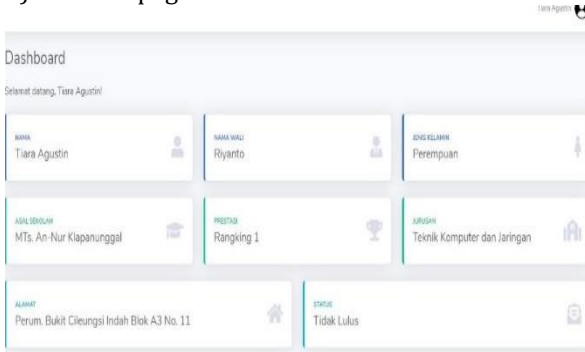


Figure 9: New student dashboard page

The student dashboard contains identity, guardian, major, achievements, graduation status, grades. This display aims to enable students and parents to monitor learning outcomes in class.

4. Testing

Testing is intended to determine whether the functions, input and output of the software comply with the required specifications.

Table 1. Validation on the Login Form

No	Test scenarios	Expected results	Result
1	Enter the correct login data then click the login button.	The system receives login access and then displays the main menu display	Valid
2	Just fill in the username and empty the password and immediately click the login button	The system will deny login access and display the message "Data cannot be empty".	Valid
3	Just fill in the password and empty the username directly to the login button	The system will deny login access and display the message "Data cannot be empty".	Valid

Table 2. Validation Student Registration Form

No	Test scenarios	Expected results	Result
1	Enter data on the new student registration form	The system stores the input results for new student registration	Valid

Table 3. Validation Admin Page Dashboard

No	Test scenarios	Expected results	Result
1	Enter new teacher data on the Add teacher page	The system receives and stores teacher data and displays it on the teacher data page	Valid
2	Enter new student data on the add student page	The system receives and stores student data and displays it on the student data page	Valid
3	Edit/update Teacher Data	The system stores the results of updating/editing teacher data	Valid
4	Edit/update Student Data	The system stores the results of updating/editing student data	Valid
5	Edit/update Password	The system saves the results of updating/editing the password	Valid

No	Test scenarios	Expected results	Result
6	Erase Data	System Delete the results of updating/editing data	Valid

Table 4. Validation Teacher Data Admin Page

No	Test scenarios	Expected results	Result
1	System Delete the results of updating/editing data	The system stores the results of updating/editing data	Valid
2	Edit/update Password	The system saves the results of updating/editing the password	Valid
3	Delete Value Data	System Delete update/edit results	Valid

Table 5. Validation Page of Student Value Data on Teachers

No	Test scenarios	Expected results	Result
1	System Delete the results of updating/editing data	The system stores the results of updating/editing data	Valid
2	Edit/update Password	The system saves the results of updating/editing the password	Valid
3	Delete Value Data	System Delete update/edit results	Valid

5. Support or maintenance

Improved display adjustments to the conditions for implementing New Student Admissions, such as real-time information/data.

CONCLUSION

Based on the results of the research and discussion, conclusion the web-based Information System for Admission of New Students and Inputting Student Grades at Dinamika Tegal Vocational School with PHP and SQL programming languages has been successfully developed. This system is able to manage the implementation of New Student Admissions, namely registration, and the system is able to manage student grade data that has been input by the teacher, Make it easy for prospective new students to obtain registration information and register online through this system.

REFERENCE

- Fachri, B., & Surbakti, R. W. (2021). Perancangan Sistem Dan Desain Undangan Digital Menggunakan Metode Waterfall Berbasis Website (Studi Kasus: Asco Jaya). *Journal of Science and Social Research*, 4(3), 263. <https://doi.org/10.54314/jssr.v4i3.692>
- Fadli, S., & Pardiyansyah, A. S. (2022). Sistem Informasi Sekolah Dalam Penerapan Smart School Untuk Meningkatkan Pelayanan Sekolah. *Jurnal Manajemen Informatika & Sistem Informasi (MISI)*, 5(1), 95–108. <https://doi.org/10.36595/misi.v5i1>
- Firdaus, B. S., & 1) , Silvy Amelia 2) , Ani Yoraeni 3), I. E. 4. (2021). Perancangan Program Penyewaan Lapangan Badminton Berbasis Web. *Ijns.Org Indonesian Journal on Networking and Security - Volume 11 No 3 – 2022*, 10(3), 14–19.
- Fitri, Mahdiawan, A. (2023). *Praktik Pemrograman Web*. (muhamad irsadul Ngibad, Ed.). CV. Kireinara.
- Harry Saptarini, N. G. A. P., Hidayat, R. A., & Ciptayani, P. I. (2019). Ajarincode : Aplikasi Pembelajaran Bahasa Pemrograman Berbasis Web. *Just TI (Jurnal Sains Terapan Teknologi Informasi)*, 10(2), 21. <https://doi.org/10.46964/justti.v10i2.106>
- Hidayat, T., Muttaqin, M., & Djamaludin, D. (2020). Sistem Informasi Penerimaan Peserta Didik Baru Online Berbasis Website di Yayasan Pendidikan Arya Jaya Sentika. *Komputika : Jurnal Sistem Komputer*, 9(1), 7–14. <https://doi.org/10.34010/komputika.v9i1.2750>
- Jamaludin, Z. I., Firmansyah, A., & Romli, I. (2023). Sistem Pendaftaran Peserta Didik Baru pada SMK Berbasis Web Menggunakan Metode Waterfall. *Media Online*, 4(2), 1089–1099. <https://doi.org/10.30865/klik.v4i2.1314>
- Limbong, T., & Sriadhi. (2021). *Pemograman Web Dasar. Yayasan Kita Menulis*. Yayasan Kita Menulis. Retrieved from <http://digilib.unimed.ac.id/48203/1/Book.pdf>
- Maulidda, T. S., & Jaya, S. M. (2021). Perancangan Sistem Informasi Berbasis Web Melalui Whatsapp Gateway Studi Kasus Sekolah Luar Biasa-Bc Nurani. *Jurnal Teknologi Informasi Dan Komunikasi*, 11(1), 38–44. <https://doi.org/10.56244/fiki.v11i1.421>
- Mayasari, A., Supriani, Y., & Arifudin, O. (2021). Implementasi Sistem Informasi Manajemen Akademik Berbasis Teknologi Informasi dalam Meningkatkan Mutu Pelayanan Pembelajaran di SMK. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, 4(5), 340–345.

- <https://doi.org/10.54371/jiip.v4i5.277>
- Mersita, R., Darwis, D., & Surahman, A. (2022). Sistem Informasi Pembayaran SPP pada Sekolah di Kecamatan Gedung Tataan dengan Metode Extreme Programming. *Jurnal Ilmiah Sistem Informasi Akuntansi*, 2(2), 45–53. <https://doi.org/10.33365/jimasia.v2i2.1872>
- Noviantoro, A., Silviana, A. B., Fitriani, R. R., & Permatasari, H. P. (2022). Rancangan Dan Implementasi Aplikasi Sewa Lapangan Badminton Wilayah Depok Berbasis Web. *Jurnal Teknik Dan Science*, 1(2), 88–103. <https://doi.org/10.56127/jts.v1i2.108>
- Okesola, O. J., Adebiyi, A. A., Owoade, A. A., Adeaga, O., Adeyemi, O., & Odun-Ayo, I. (2020). *Software Requirement in Iterative SDLC Model. Advances in Intelligent Systems and Computing* (Vol. 1224 AISC). Springer International Publishing. https://doi.org/10.1007/978-3-030-51965-0_2
- Pratiwi, D., Jubaidah, I., Julieta, D., & Putri, F. N. (2023). Pelatihan Pemrograman Web Blog dalam Meningkatkan Kualitas Hidup untuk Masyarakat Kelurahan Pekojan Jakarta Barat. *Jurnal Pengabdian Kepada Masyarakat Nusantara (JPkMN)*, 4(2), 695–702.
- Putra, Y. I., & Ridoh, A. (2021). Pengembangan Media Pembelajaran Berbasis Web untuk Meningkatkan Keterampilan Mahasiswa pada Mata Kuliah Pemrograman Web Dasar di STKIP Muhammadiyah Muara Bungo. *Jurnal Basicedu*, 5(5), 4026–4036. <https://doi.org/10.31004/basicedu.v5i5.1484>
- Raharjo, M., Napiah, M., & Anwar, R. S. (2022). Perancangan Sistem Informasi Dengan PHP Dan MYSQL Untuk Pendaftaran Sekolah Di Masa Pandemi. *Computer Science (CO-SCIENCE)*, 2(1), 50–58. <https://doi.org/10.31294/coscience.v2i1.689>
- Sari, I. P., Azzahrah, A., Qathrunada, I. F., Lubis, N., & Anggraini, T. (2022). Perancangan Sistem Absensi Pegawai Kantoran Secara Online pada Website Berbasis HTML dan CSS. *Blend Sains Jurnal Teknik*, 1(1), 8–15. <https://doi.org/10.56211/blendsains.v1i1.66>
- Zen, M., Rahman, S., Dafitri, H., Liza, R., & Aulia, R. (2023). *Pemrograman Web Untuk Pemula Hingga Mahir*. Jakarta: Tahta Media Group.