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Implementation of Web-Based Student Management Information System in SDI Taman An-Nahl Sidoarjo

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ABSTRACT

SDI Taman An-Nahl Sidoarjo is an educational institution that plays an active role in developing the potential of students. However, in this digitalization era, there are limitations in accelerating performance in managing student data so that it has the impact of not having a database for students, not having a database of student scores, and not reporting student activities to parents. This situation is due to the fact that an integrated management information system (MIS) has not been implemented. The focus of this research is to develop a web-based Student Management Information System that can help teachers manage student learning outcomes data and help parents monitor the progress of their children's learning outcomes. The development of this system has a scope consisting of valid student data and student identification numbers, monitoring of student activities, and reporting of student activities to parents. The system test results show that the system can run well, although there are minor errors. The implementation of the Student Management Information System has been successfully carried out, so that users can access the system in real time through the website.

Keywords: School, management Information System, Web-based, Student Data Management

Introduction

During the pandemic, digital services, such as e-learning or academic information system, have become a service needed by educational institutions. SDI Taman An-Nahl Sidoarjo is an educational institution that plays an active role in developing the potential of students. However, digital information service has not been implemented properly by this institution. This situation resulted in the school is not having student academic database and student activity reporting. Therefore, web-based student management information system was developed to support the school in managing student data and student grades data systematically.

In previous studies, a management information system was developed to calculate the points of violation for students (Nufus, 2019) and design e-learning for schools (Falah et al., 2020). Research on the calculation of student violations points discuss about the monitoring of student violation records using a point system and the report will be sent automatically to the student's parents via sms gateway. E-learning system for schools was built to help teachers and students in teaching and learning activities, where this system includes managing student grade data, teacher data, downloading files or uploading learning material files, question activation processes and online exam simulations.

Other research discusses the Parent Guardian Information System (SIORTU) which was developed to facilitate parents/guardians of students to monitor their children's academic activities (Bashir, 2020; Bashir & Dirgahayu, 2020). The academic activities referred to include

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monitoring grades, attendance, study concentration, class schedules and several financial bills. The implementation of SIORTU is generally through the media website, to make it easier for parents to access their children's academic data in real time (Setiawan, 2016). SIORTU has been widely implemented in universities and within schools, generally this system is called the student monitoring system (Firmansyah & Maulana, 2021).

Student management information system was build using prototyping method. Prototypes can be used in the software development process to help anticipate changes that may be required, such as assisting elicitation and validation of system requirements in the requirements analysis process, and used to explore specific software solutions and to support user interface design (Purnomo, 2017). The prototyping method is widely used in building an application or information system because it can bridge the ignorance between users and system developers (Sujono et al., 2019; Syarifudin, 2019).

Material and Methods

The method used to build a web-based Student Management Information System is prototyping. A prototype is an early version of a software system that is used to demonstrate concepts, try out design options and find possible problems and solutions. The process of developing a student Management Information System is shown in Figure 1.

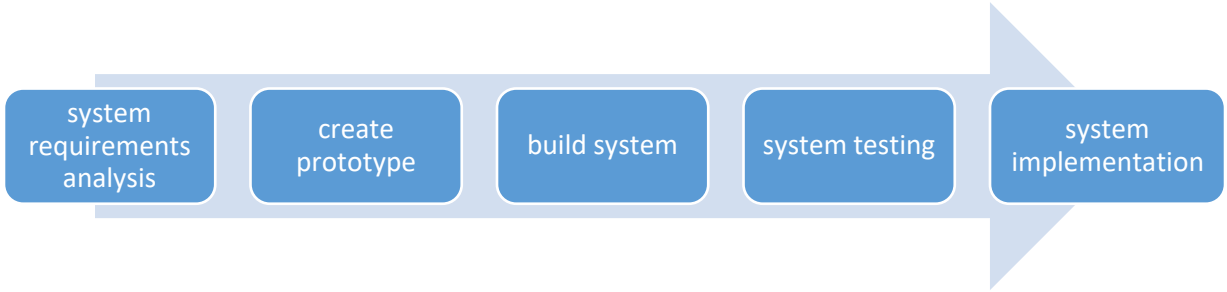

Figure 1. Development process of student management information system

System requirements analysis

The first step in this research is to analyze the system requirements. To determine the system requirements, problem identification and data collection were carried out through interviews and observations at SDI Taman An-Nahl. The results of interviews and observations will be used as a basis in determining the functional requirements of the system.

Create prototype

At this stage, the prototype design is carried out according to the functional requirements that have been concluded from the needs analysis. The prototype design will be shown to the school to determine the suitability between the design and functional requirements. If the system design is not in accordance with the user's requirements, it will be fixed.

Build system

At this stage the system is built based on the prototype that has been agreed upon by the school. The system is built using Javascript, PHP, HTML, CSS programming languages and MySQL database.

System testing

The next step is to test the system to ensure the suitability of the system with the user's requirements. If the results of system testing are not valid, it is necessary to make improvements so that they can meet the requirements that have been previously determined. The method used for system testing is black box and white box testing.

System implementation

After the system testing phase is complete, the system is repaired based on the system testing results that have been done previously. This improvement stage is carried out until the system really fits the user's needs. After the repair is complete, the system will be installed and ready for use. The system will be monitored and maintained on a regular basis.

Results and Discussion

The functional requirements of student management information systems consist of three users: admin, teacher, and parents. Table 1 describes the user requirements for each user system.

Tabel 1. User requirements of student management information systems

	Manage users and their access right	Manage students data	Manage students score	Manage courses	Manage Students grades	Manage parents data	View students score
Admin	✓	✓	✓	✓	✓	✓	✓
parents							✓
teacher			✓				✓

Figure 2 illustrates the design of the database scheme for student management information systems. There are three master tables in the database scheme, student table, course table, and teacher table. Also, there are transactional table to record students score of each course.

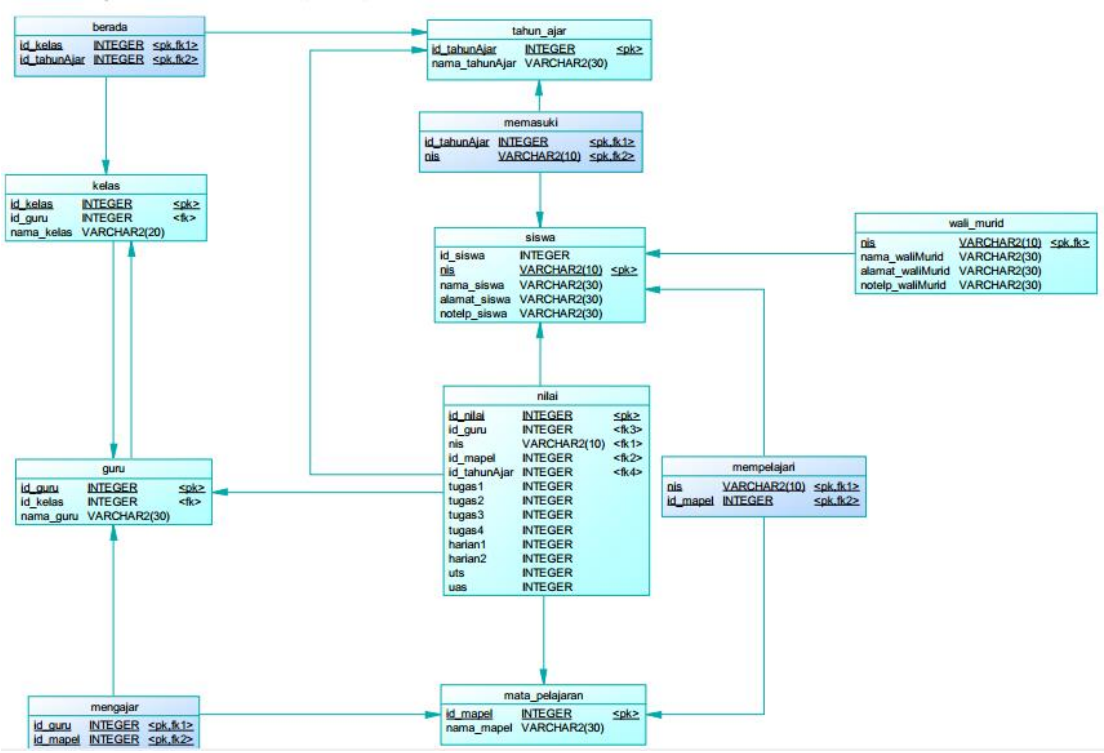

Figure 2. Database scheme of student management information system

This system testing was executed using Blackbox Testing and WhiteBox Testing. Blackbox testing is executed after implementing the design stage of student management information systems, then WhiteBox Testing is executed after Blackbox Testing. The result of system testing shows that some of the functionality shows that there are some functional requirement of the system is not running properly so it must be fixed (Kurniawan et al., 2022). After the system improves, it is ready to deliver to the client and implemented.

Implementation of student management information systems is using Javascript, PHP, HTML and CSS programming languages and MySQL system management database as database storage. Graphical user interface of student management information systems is shown in Figure 3.

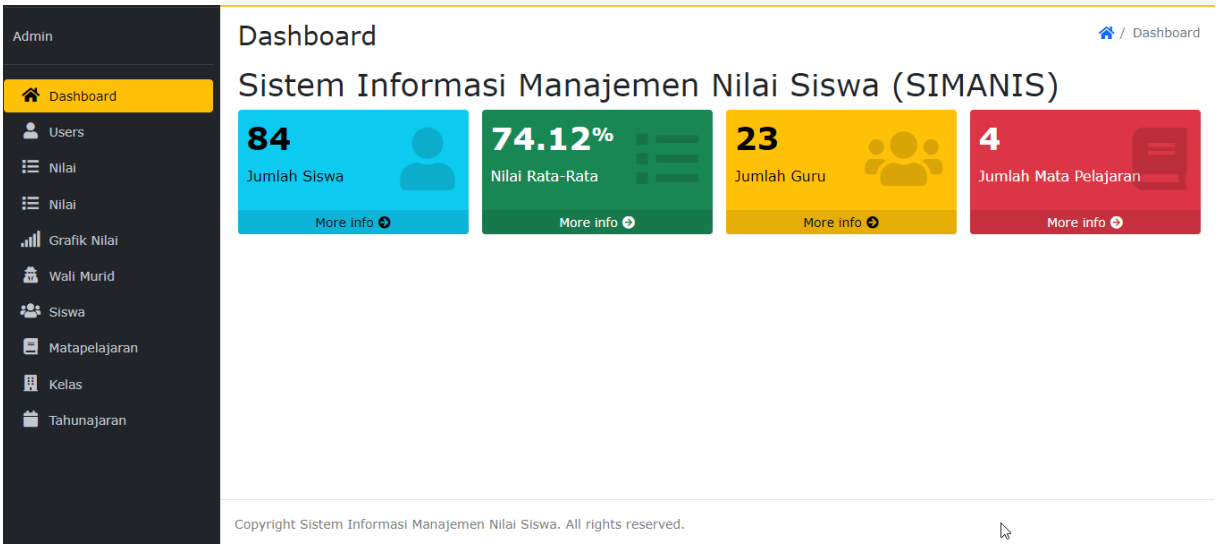

Figure 3. Graphical user interface of student management information systems

Conclusion

The results of research that have been conducted on student management information systems in the form of system implementation are in accordance with the predetermined requirements. This system is expected to support in terms of efficiency and student database management, student grades and supervision from parents to students. Suggestions for further research, this system can be added features to generate online report cards automatically based on the value that has been entered.

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References

Bashir, N. A. A. (2020). Penerapan model UTAUT 2 untuk *mengetahui faktor-faktor yang memengaruhi penggunaan SIORTU. Elinvo* (Electronics, Informatics, and Vocational Education), 5(1), 1-5. Article 1. https://doi.org/10.21831/elinvo.v5i1.30636

Bashir, N. A. A., & Dirgahayu, T. (2020). Analisis faktor-faktor yang memengaruhi penggunaan sistem informasi akademik khusus orang tua. *Jurnal Teknologi Technoscientia, 12*(2), 114–124. https://doi.org/10.34151/technoscientia.v12i2.2389

Falah, N., Hadiwiyanti, R., & Pratama, A. (2020). Rancang bangun E-learning Madrasah Aliyah Ihyaul Ulum. *Jurnal Informatika Dan Sistem Informasi, 1*(3). https://doi.org/10.33005/jifosi.v1i3.201

Firmansyah, Y., & Maulana, R. (2021). Sistem informasi monitoring siswa sebagai media pengawasan orang tua berbasis website. *Jurnal Informatika Kaputama (JIK), 5*(1), 28-37. https://doi.org/10.1234/jik.v5i1.393

Kurniawan, F., Khrisnawati, E. A., Hadiwiyanti, R., & Fitri, A. S. (2022). Pengujian sistem informasi manajemen siswa berbasis website menggunakan metode Black Box dan White Box. *Prosiding Seminar Nasional Teknologi Dan Sistem Informasi, 2*(1),

Nufus, A. M. (2019). *Sistem informasi perhitungan nilai poin pelanggaran tata tertib siswa di Madrasah Tsanawiyah Manbaul Ulum Gresik. UPN "Veteran" Jawa Timur.*

Purnomo, D. (2017). Model Prototyping Pada Pengembangan Sistem Informasi. *J I M P - Jurnal Informatika Merdeka Pasuruan, 2*(2), 54-61. https://doi.org/10.37438/jimp.v2i2.67

Setiawan, A. (2016). Analisis sistem informasi orang tua wali mahasiswa berbasis website studi kasus Universitas Muhammadiyah Magelang. *Jurnal Informatika Upgris,* 2(1), 8-17. https://doi.org/10.26877/jiu.v2i1.1063

Sujono, S., Mayasari, M. S., & Koloniawan, K. (2019). Prototipe aplikasi simpan pinjam pada Koperasi Darma Karya Pangkalpinang Babel. *Jurnal Sisfokom (Sistem Informasi Dan Komputer),* 8(1), 145-120. https://doi.org/10.32736/sisfokom.v8i1.609

Syarifudin, A. (2019). Perancangan sistem informasi pengajuan dan pelaporan pembayaran tunjangan Kinerja Kementerian Keuangan menggunakan metode prototype. *Jurnal Sisfokom (Sistem Informasi dan Komputer), 8*(2), https://doi.org/10.32736/sisfokom.v8i2.641