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Use of Internet-Based Academic Information Systems Web in the Development of Quality of Education Administration

Marantika[1*], Khojir[2], Siti Nor Asiah[3]

Abstract

This study aims to design a WEB-based AIS in quality development. Web-Based Academic Information System is a system that informs online student active reports and web-based education quality improvement to accelerate the quality of information delivery. The menu can only be accessed by students, teachers, and administrators. The research method uses a qualitative approach that describes research based on a philosophical explanation of postpositivism. In addition, this research method was chosen as a tool for conducting more profound observations of natural objects. The procedure for collecting data was obtained from the literature study by taking theory from supporting books and the internet as an additional reference and comparison for library research. Data analysis procedures by developing systems and designing or designing systems for presenting information. This research also requires hardware, software, user interface, input, and output. The results of a study in building this system using DFD tools, Context Diagrams, ERD, Flowcharts, and programming languages PHP, HTML, and MySQL as databases.

Keywords: *Academic Information Systems, Web, Education*

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[1,2,3] *Universitas Islam Negeri Sultan Aji Muhammad Idris Samarinda*
**Author Correspondent: tikamaran56@gmail.com*

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Introduction

Through an era that has developed with a myriad of technologies today, of course, new innovations occur in the community, starting from those that can be felt directly or through intermediaries (Rais, 2021). Given the law of cause and effect, this phenomenon certainly impacts the field sector, one of which is the field of Education (Ija & Susanto, 2021). In the education sector, of course, it must follow technological developments that are human needs today (Fania et al., 2021; Maritsa et al., 2021; Ngafifi, 2014; Rayhan et al., 2021).

Education is a sector with a unique position in society or human life. After all, it is considered the most important and significant because it is a provision of human science to carry out roles in the future (Alfiyanto et al., 2022; Ibrahim et al., 2022; Ikhwan et al., 2023; Susanti et al., 2022). The development of Education itself begins with a learning system that is dominated by computerization (Yani et al., 2019). Computerization is expected to support learning needs that are increasingly rapidly undergoing renewal (Mursid & Yulia, 2019).

Education is also the nation's principal capital in improving human resources (Laugi, 2018). To realize this, it is necessary to improve the quality of Education to support student learning activities and the teaching and learning process (Suranto et al., 2022; Susanti et al., 2022). This is the goal of the Indonesian nation to improve the quality of Education in learning in schools. According to Paramita, the learning process with high quality must be met by professional educators. Improving the quality of Education and learning aims to make Indonesia have strong competitiveness in international trade (Paramita, 2019).

The quality of higher education is essential because it is directly related to students (Sonia, 2020). Based on this explanation based on the International Global Institute study results. Through his research, it can be stated straightforwardly that the percentage of 5% illustrates the number of

students in Indonesia who successfully solve reasoning questions and is considered the highest classification category compared to other countries. As additional information, Indonesia also managed to be in the top ten underdeveloped out of 65 countries as participants of the *Program for International Students Assessment* (PISA).

Most of the population of participants taught in Indonesia can only be skilled and master half of the total or three of the six levels that are the benchmark for success. Based on these facts, we can illustrate field actions that are still far behind in the achievements that students in Indonesia can achieve. For this reason, because there have been temporary results related to the ability of students in Indonesia with the academic level that is the target, it is undoubtedly necessary to evaluate and improve the quality, quality, and quantity in the development of education-based administration where it is usually in the form of using an internet-based academic information system.

Academic information is needed by students, parents, educators, and the community. According to Hutahaean, information systems connect the needs of those in need (Jeperson Hutahean, 2015). Academic information systems are applications that integrate business processes into information systems with the help of technology. Educational information systems can be applied using DFD, *Context Diagram*, ERD and *Flowchart,* and PHP, HTML, and MySQL programming languages as databases (Novianti et al., 2016). WEB-based SIA is a system that informs online student active reports and improves the quality of Education with a web-based to accelerate the information delivery rate.

The problem faced by educational institutions in Indonesia is that the limited academic information system in educational institutions is a substantial problem encountered today. Academic information systems can only be accessed by school leaders and teachers. The purpose of holding and conducting a deeper review of this research is to implement a web-based academic information system strategy to improve the quality of Education (Sulistiyarini & Sabirin, 2018). WEB-based SIA is a system that informs online student active reports and improves the quality of Education with a web-based to accelerate the information delivery rate.

This research also has an achievement target in the form of goals to be achieved, and this is explained in the form of ability and skill through academic information that all related parties or stakeholders can later access. But this indeed cannot be separated from the preparation of strategies and patterns of achieving goals to be performed together with both educators and students. In definition and brief explanation, the impact on the broader community through this research is clear evidence of the development of management science that can be maximized in its use in the welfare of the wider community, especially in Education. In addition, based on its field actions, this research is expected to be used as a reference or benchmark in developing an academic information system, especially in educational institutions.

Method

Judging from the aspects to be encountered and the formulation of the problem that wants to be analyzed more deeply, this research will use a qualitative approach method where it explains research based on an explanation of *postpositivism philosophy.* In addition, this research method was chosen to make more profound observations of natural objects. Data collection procedures are obtained from literature studies by taking theories from supporting books and the internet as reference additions and comparisons for literature research. The method of data analysis is developing systems and designing or designing systems for the presentation of information. This research also requires *hardware, software, user interface,* input, and output.

Results and Discussion

Results of Needs Analysis

In the field action for this system, the formulation of the problem is focused on improving both quality and facilities in the scope of facilities and infrastructure and academics, where these things are the main focus of his research. Facilities and infrastructure can enter into a scale that is

considered a qualified facility and successfully supports many aspects based on the categories carried out by educational institutions. This can be seen more closely through the development and innovation of information systems in the Education or academic sector to raise the scope of achievement in terms of quality in the world of Education. This system also focuses on information on student value and attendance data reports, which certainly does not escape in the aspect of research focus.

WEB-based SIA is a system that informs online student active reports and improves the quality of Education by being web-based to accelerate the information delivery rate (Puspita et al., 2021). SMK Plus Melati Samarinda has implemented a web-based Academic Information System (SIA), which aims to present active student reports and improve the quality of Education online. SIA is designed as a tool to accelerate information delivery and enhance the quality of services in schools. Through a complete main page, SIA presents various menus covering academic, student, financial, and curriculum aspects. The curriculum page provides information about report cards, free assignments, ip/ib, journals & curriculum, extracurricular activities, and compensation. At the same time, the student page focuses on student data such as PPDB, report cards, free assignments, IP / IB, journals, and extracurricular activities.

Meanwhile, the finance page provides information about student payments and types of payment rates. For teachers, a page presents report card data, free assignments, IP / IB, journals, extracurriculars, and compensation. In addition, the homeroom page provides report card information, free jobs, ip/ib, journals, extracurriculars, and class compensation. There is a page with various information for students, including announcements, personal data, report cards, payments, letter submissions, library services, student compensation, activity participants, achievements, journals, and points. This web-based SIA allows all parties involved in the world of Education to access information transparently and efficiently, so it is expected to improve the quality of Education at SMK Plus Melati Samarinda.

This research confirms the need for qualified human resources such as programmers, analysts, operators, and database managers to support the development of Academic Information Systems. In addition, strategies implemented to achieve the development and improvement of education quality must be faced with careful handling of academic information systems that were previously unsatisfactory (Susilo, 2019). To overcome this, it is necessary to conduct more intense and comprehensive supervision of educational information systems to achieve the goals of developing the quality of Education. Routine evaluation must also be carried out as a benchmark in developing this system (Talompo & Setiawan, 2021). With the design of this information system, schools can be more efficient in conveying information to related parties and improve the quality of Education significantly.

It should be realized that the success of the development of this academic information system depends on the qualifications and abilities of the human resources involved, such as programmers, analysts, operators, and database managers. Without a qualified team, achieving goals in improving the quality of Education will be challenging to achieve. Therefore, the strategy must be mature and focus on improving the quality of academic information systems. Intense and thorough supervision must also be emphasized, ensuring the information system runs well and by expectations. Regular evaluations are inevitable, as they provide an objective view of the system's progress and help identify areas for improvement.

This academic information system is not just a tool but an essential foundation for creating a more effective and efficient educational process (Widiantari & Martha, 2018). With an integrated and easily accessible information system, schools can improve communication with related parties, optimize academic data management, and provide timely information to students, teachers, and parents. Thus, the development of this educational information system will positively impact improving the quality of Education as a whole.

System Plan Results

WEB-based SIA is a system that informs online student active reports and improves the quality of Education with a web-based to accelerate the information delivery rate. The system design method in this research is carried out in several stages, namely:

1. Context Diagram

Describe the documentation process analyzed through a transformation loop, data *sources, and data* destinations for the recipient and sender of data. The Context Diagram in this study is designed with an explanation based on Figure 1 as follows:

a. Administrators perform data input, *update* data, and report related information.
b. Teachers input grades and absences and then report them online to students.
c. Students can see the grades and attendance of each subject that has been processed before.

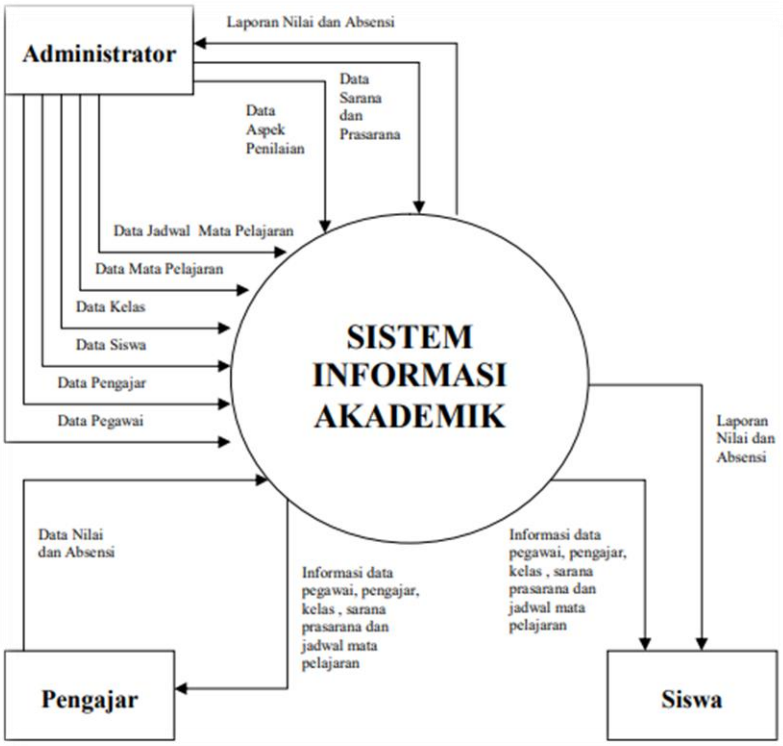

Figure 1. Context Diagram of Academic Information System

2. Data Flow Diagram

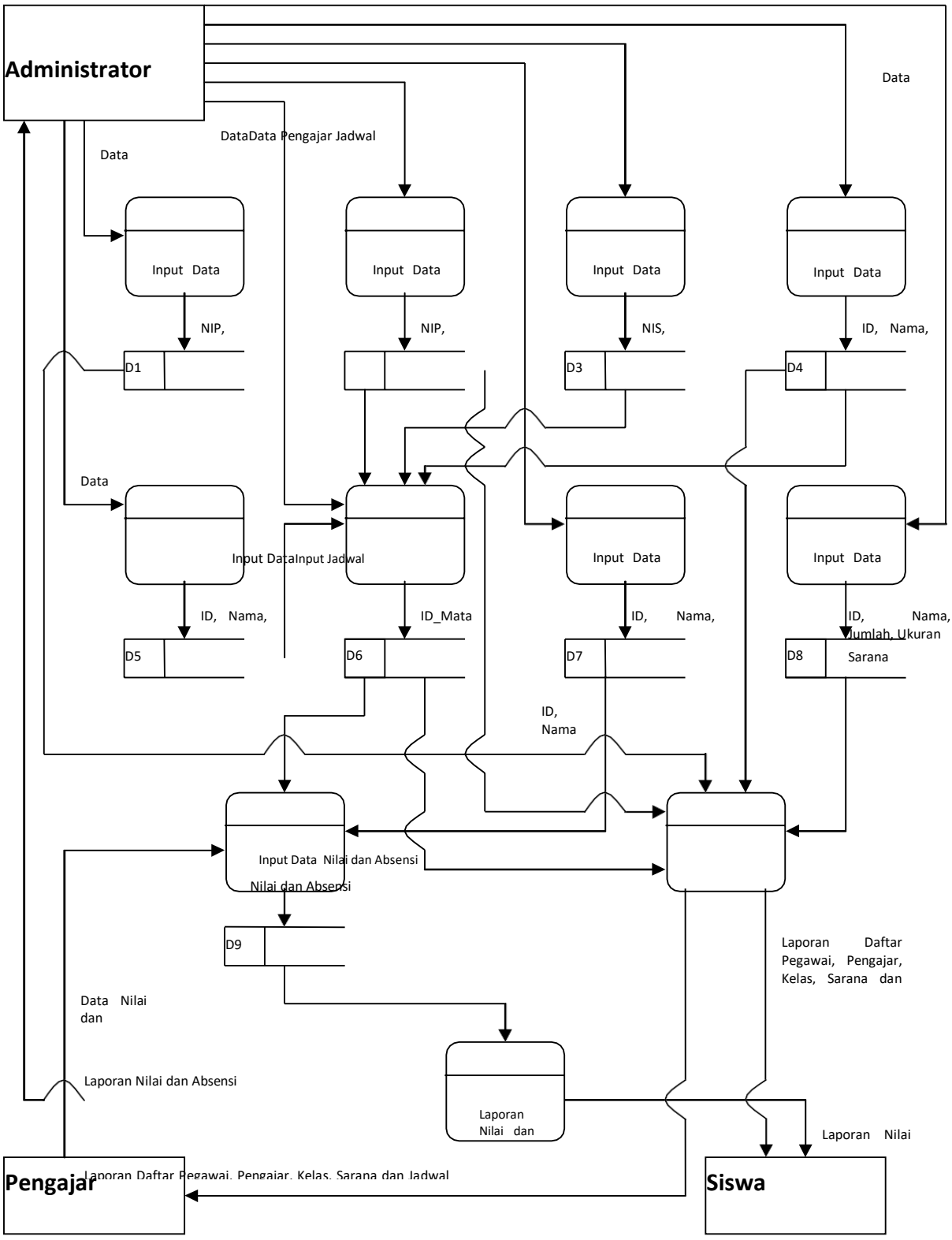

Figure 2. Level 0 Data Flow Diagram of Academic Information System

Administrators have an essential role in running this information system with the following explanation:

1) Input Data Pegawai
   The administrator inputs employee data and updates when new employees are added.
2) Instructor Data Input
   The administrator inputs teacher data and *updates* the teacher data. Teachers can also input grade and attendance data.
3) Student Data Input
   Administrators input, *update,* or *delete* student data.
4) Class Data Input
   The administrator inputs active class data. The table shows student data from each class.
5) Subject Data Input
   The administrator inputs subject data that teachers can use to check.
6) Subject Schedule Data Input
   Administrators input, *update,* and *delete* course schedules.
7) Evaluation Aspect Data Input
   Administrators input and display student grades.
8) Input Data on School Facilities and Infrastructure
   The administrator inputs school facilities and infrastructure to teachers or students.
9) Value and Attendance Data Input Process
   The teacher inputs students' grades and attendance after processing the previous data.
10) Report List Data Input Process
   Displays information reports on employee lists, class lists, teacher lists, infrastructure lists, and grade and attendance lists from *related databases.*
11) Value and Attendance Report Data Input Process
   View reports of grade and attendance data according to subjects and teachers in a certain period.

3. Flowchart

a. Student Flowchart

The flowchart will illustrate that students must log in through the login form using a user ID and password. If it fails, students can double-check the accuracy of the relevant user ID and password. However, if successful, students can see the student page's grade and attendance data report. When finished, students can *log out* to leave. The explanation will be illustrated through flowchart *three* as follows:

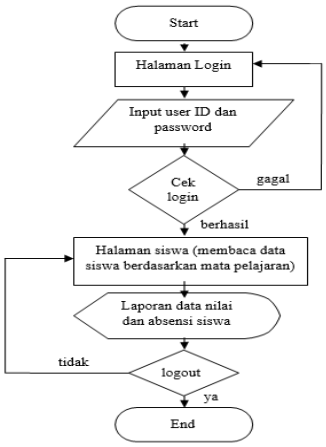

Figure 3. Student Flowchart View Grade and Attendance Reports

4. Teacher Flowchart

The flowchart will illustrate that the teacher must log in through the login page using a name and password. If that fails, the teacher can double-check the name and password's accuracy. However, if successful, the teacher can see the data of students who took the related lesson. The page will show a link to student grade data and student attendance. When you're done, your teacher can *sign out* to leave. The explanation will be described through flowchart *four* as follows:

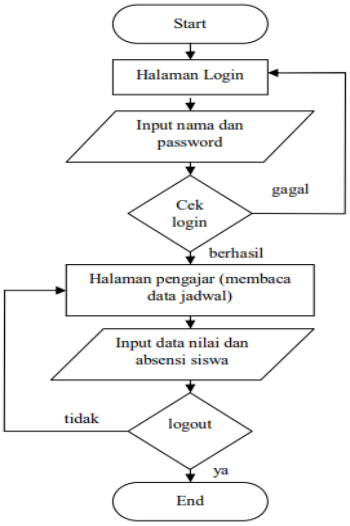

Figure 4. Teacher Flowchart Input Student Grade and Attendance Data

5. Flowchart Administrator

The flowchart will illustrate that the administrator must log in through the login page using a name and password. If that fails, the *administrator* can double-check the accuracy of the word and password concerned. But if successful, *the administrator* will be redirected to the admin page. The explanation will be illustrated through flowchart *five* as follows:

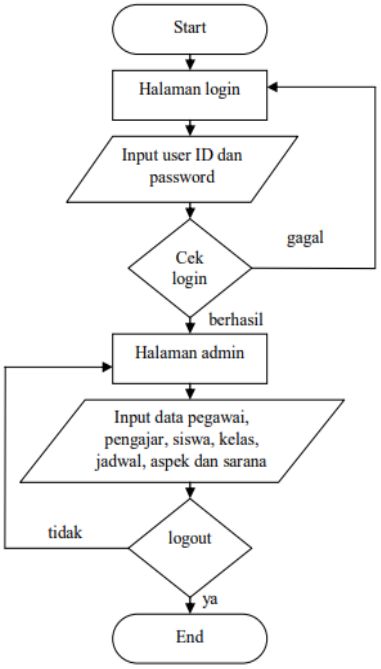

Figure 5. Flowchart Administrator

6. Database Implementation

Database Management System (DBMS) in SIA uses MySQL, which requires a database named academic and related tables, such as teachers, students, classes, kelas_n, schedules, subjects, aspects, employees, facilities, and administrators.

7. Implementation of Academic Information System

WEB-based SIA is a system that informs online student active reports and improves the quality of Education with a web-based to accelerate the information delivery rate. Some pages have access rights, such as the main page containing links to other pages, profiles about the information needed, and lists of information related to students and teachers. These floor plans display educational institutions' floor plans, students containing grade and attendance data, teachers to edit student grades and student attendance, and administrators with the most extensive access.

8. Implementation Limitations

Reviewed so that website users can access *software* with the following restrictions: 1) PC with a processor speed of 400 MHZ and at least 64 MB RAM, 2) Browser. Reviewed so that server users can access software with limitations: a) PCs with a processor speed of 1.8 GHZ and at least 128 MB RAM; and b) *Microsoft Windows XP, Apache* as *a web server* and programming *scripts* using PHP and HTML.

Conclusion

Based on the overall explanation before, it can be concluded that the results of the research, design, and implementation that have been carried out there are several conclusions that can be stated as follows: 1) The web-based Academic Information System (SIA) is a platform that allows the delivery of student active report information and improving the quality of Education online. The web-based approach was chosen to increase efficiency and speed in conveying relevant information; 2) The design of web-based SIA aims to overcome various challenges in managing the academic section of the school, especially in terms of presenting grade reports and monitoring student activity. It is hoped that this system can help improve the effectiveness of academic management. 3) Web-based SIAs are designed to be accessible to three main user groups: administrators, students, and teachers. Thus, all parties can access and obtain relevant information according to their respective roles. 4) Looking at the results of the design and implementation that has been done, the next step is to implement this web-based SIA as a whole in the school environment. With proper implementation, school performance in managing academic data and student information is expected to reach the maximum level. These conclusions provide a positive picture of the potential of web-based SIA as an effective tool in improving the quality of Education and providing benefits to all parties involved in the educational process. With growing technology, web-based SIA is expected to be a more efficient and effective means of supporting school academic activities.

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