

IMPLEMENTATION OF SCHOOL INFORMATION SYSTEM MANAGEMENT IN THE USE OF DIGITAL RESOURCES

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ABSTRACT

In the current digital era, many schools have turned to information system management. Although digital resources and information technology are growing, there are still shortcomings in their utilization. Many schools are limited in managing information systems, as well as limited in their understanding of technology. This paper aims to explore the implementation of school information systems and digital resources. The research method used in the study was descriptive qualitative. Data collection techniques were conducted through interviews and observations. Data validity was tested using triangulation. The results showed that the implementation of information system management in the use of digital resources in one of the KCD VII schools in Bandung City has utilized the use of digital applications, namely ARKAS (School Activity and Budget Plan Application) and SIPD (Regional Development Information System). These applications facilitate planning, monitoring and help manage the use of resources. The role of teachers in using these digital applications is when entering grades. But in the context of teaching, the application of digital resources is still not running optimally. The information system in terms of communication between teachers, students, schools and parents shows inefficiency because there is no specific application that serves as a communication platform.

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1. INTRODUCTION

Education is the main pillar in the development of society and the progress of a nation (Syafii et al., 2023). Education plays an increasingly important role in preparing future generations to face the complexities of an increasingly developing world (Manalu et al., 2023). In addition, education can contribute to social and economic progress through knowledge, understanding and skills.

In the midst of the ever-changing dynamics of education, schools have an important role to play in shaping the future of quality young people. Thus, as an educational institution focused on knowledge and character development, schools have a great responsibility in providing the foundation of education to their students (Wardhani & Krisnani, 2020).

Various innovations and changes in education have influenced the way schools operate, one such development is the role of information technology in school management and teaching (Saskya & Aslami, 2023). However, often this understanding of school information systems has not been optimally implemented, which has a negative impact on the quality of education (Smith, 2020).

School information systems are tools that can provide timely and accurate information to all school stakeholders, from education staff to students and parents (Patriansyah et al., 2023). This helps schools to improve their administrative performance (Saputra et al., 2021).

In order to optimally implement a school information system, management is needed to manage it regularly. This information system management has become the core in the development of educational institutions (Wijaya et al., 2023). Information system management refers to the management and utilization of information technology resources to improve school operations (Suroto, 2023). In education, information system management involves information technology to improve administrative efficiency and strengthen teaching.

According to Wibowo et. al. (2019), in an effort to optimize education in the digital era, many schools and educational institutions have turned to information systems management, integrating digital resources into their learning and administrative processes. This approach has brought about significant changes in the way education is managed, which has become increasingly sophisticated and digitized.

The implementation of school information system management is one of the strategic steps taken to facilitate the use of digital resources to improve the efficiency, transparency and quality of educational services. The implementation of good information system management in schools is an important foundation for the use of digital resources. Fitri (2020) states that school information system management includes the management of student data, school administration, and internal and external communication. It is an important component of planning, organizing, and monitoring the use of digital resources so that they are fit for purpose.

Information systems in schools play a fundamental role in data management, administration, and curriculum development (Kurniawan et al., 2022). However, there are still many challenges to their implementation. One of the main issues is the limited accessibility of data. Often, the information needed cannot be accessed quickly, and there is often duplication of data as well as imperfect data integrity across the different systems used at school. At the same time, while digital resources and information technologies are growing, there are still shortcomings in their use. Many schools have limited human resources to manage complex information systems, as well as limited understanding of the potential of these technologies to improve education (Safitri et al., 2019).

In the face of increasingly complex and changing educational challenges, progressive steps should be taken by implementing school information system management through the optimal use of digital resources to improve the quality of education. This article explores how school information systems and digital resources are implemented in one of the KCD (Dinas Branch Office) VII senior high schools in Bandung City, and the impact on administrative efficiency, students' learning experience, academic achievement, and improvement of educational quality.

This study contributes to the identification of key barriers and opportunities for optimizing the use of digital technologies in education. The findings have the potential to inform strategies for effective school information system management, ensuring a more comprehensive and tailored approach to improving the quality of education in the digital era.

2. METHOD

The research method used in this study is descriptive qualitative. Qualitative research is a type of research that produces descriptive data in the form of statements that come from the respondents involved. This research was conducted in one of the high schools of KCD (Office Branch Office) VII Bandung City. The sources in this research are the parties related to the implementation of school management information system management, including: 2 school operators, 1 administrative staff, and 3 students.

Data collection techniques were conducted through: (1) Interview, conducted by collecting data from informants through questions from the proposed research instrument. Informants are parties involved in the research, consisting of: school operators, administrative staff, and students, (2) Observation, making in-depth and systematic observations of the object of research. In this study, observation was carried out by making direct observations in the school.

The instruments used in this research are interview questions related to the implementation of school information system management in the use of digital resources. The questions asked to the respondents can be seen in Table 1.

Table 1. Research instruments

NO.	QUESTIONS	DATA SOURCES	DESCRIPTION
1.	How can school information systems be optimized to improve administrative efficiency and digital resource management?	School Operator and Administrative Staff	Interview
2.	How does the school ensure the security of student data and information in an era of digital resources that are vulnerable to cyber threats?	School Operator	Interview
3.	What are the main challenges faced by schools in implementing information system management in a digital resource environment?	School Operator and Administrative Staff	Interview
4.	What is the role of teachers and school staff in using information systems to improve teaching and learning in the digital era?	School Operator and Administrative Staff	Interview
5.	How can parents' participation in school information systems be enhanced to increase their involvement in their children's education?	School operator, administrative staff and students	Interview
6.	How do schools measure the successful implementation of information system management in achieving their educational and administrative goals in the context of digital resources?	School Operator and Administrative Staff	Interview and Observation

The analysis procedure used in this research is an interactive model of analysis, this model is described in (Bungin, 2007) developed by Miles & Huberman. The components of analysis are: (1) reviewing data obtained from various sources; (2) data reduction, conducting a process of selecting, summarizing, classifying, collecting and simplifying rough data from written notes that appear in the field; (3) presentation, data is displayed with the aim of making it easier for researchers to see a picture of certain parts of the research; (4) drawing conclusions / verification, carried out after the data is analyzed from various aspects.

The validity of the data was tested using triangulation, which is a data analysis method that aims to clarify or convince the validity of the data so that the truth is guaranteed. Triangulation is done by comparing the results of the interviews with the research objects (Sugiyono, 2014: 273). Triangulation consists of four types, which include: (1) Source, which is done by selecting different informants to search for data and cross-checking each informant. (2) Combination, namely by combining the interview method with direct observation. (3) Investigator, by asking for information about the observer's opinion. (4) Theory, used to ensure that the collection of data collected can meet the research requirements. In this study, researchers made the triangulation technique in the implementation of school information system management by conducting in-depth interviews with several data sources (informants), which were still related and related to each other, this was done with the aim that the research results were more guaranteed in validity, then a member check would be carried out to ensure consistency between the statements that appeared.

3. RESULT AND DISCUSSION

3.1. Digital applications that are used by schools for the management of information systems

The application used by the school plays an important role in the planning, use and implementation of the RAKS (Principal's Action Plan). As stated by respondents T and J below: "The application is used to plan, use and implement the RAKS. The application used is the latest version of the application, which is version 4.0.8".

The use of the application to create the RAKS illustrates how technology has penetrated various aspects of management in the world of education. The application allows stakeholders such as principals, administrators and teachers to efficiently plan and document the actions to be taken. This facilitates the implementation of the RAKS and allows for better monitoring of progress and results.

The use of apps in the creation, use, and implementation of RAKS is a concrete example of how technology can improve the efficiency, accuracy, and transparency of school management. This helps the school meet its goals of improving the quality of education and achieving the goals set out in the school action plan. The following is a view of the digital application used by the school to manage the information system.

On the other hand, SIPD (Regional Development Information System) is a medium that focuses on the physical development of schools. This application helps schools collect data related to development, including building construction, infrastructure improvements, and educational facility upgrades. With SIPD, schools can monitor construction progress in real time, ensuring that allocated funds are used efficiently and reducing the potential for waste.

The use of these two applications reflects how the world of education is increasingly adopting digital technology to improve the management of information systems. The benefits include streamlining the process of planning, budgeting, monitoring and reporting on school activities and development. More than just administrative tools, these applications help schools move toward more efficient, targeted, and transparent management, and then also plays an important role in the planning, use and implementation of the RAKS (Principal's Action Plan). As stated by respondents T and J below: "The application is used to plan, use and implement the RAKS. The application used is the latest version of the application, which is version 4.0.8".

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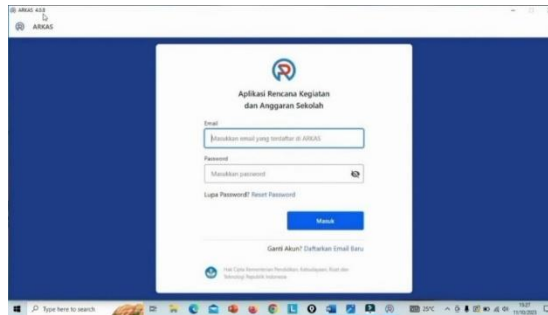


Figure 1. Display of the ARKAS application

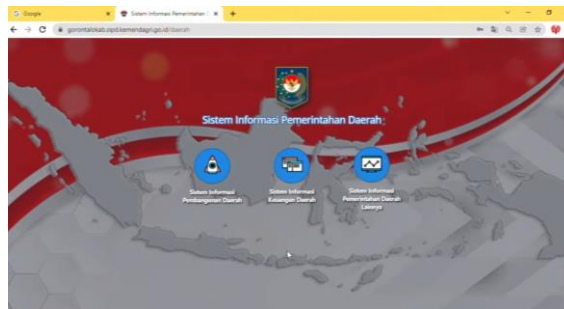


Figure 2. Display of the SIPD application

Then, subject T also stated that “The software or technology in information systems management used by schools can vary from year to year. For the current year, schools use ARKAS more often, while a year ago, schools used SIPD more often”. Based on the results of this interview, it was revealed that the use of software or technology in school information system management can change from year to year. This reflects the school’s changes in technology and evolving administrative needs.

Currently, the school uses ARKAS as the main software for its information system management. In the previous year, the school used SIPD more often. This change illustrates the school’s flexibility in adopting the software or technology that best suits its needs at any given time. It also reflects an evolution in the school’s approach to information systems management. The software used may change in response to changing administrative needs, technological developments, or school policies.

It is important to note that the use of technology in information systems management can help schools improve the efficiency, transparency, and accuracy of their administrative processes. Therefore, the selection of software that meets the current needs of the school is crucial to support smooth and effective operations. This underscores the need for schools to be able to evaluate and adapt to change and to continually seek out appropriate software solutions. The decision to select software should be based on an analysis of the school’s current needs and goals. It also emphasizes the importance of having access to a wide range of software that supports information systems management to enable schools to operate effectively and respond to the ever-changing developments in education.

3.2. The role of the teacher in the use of digital resource management

The interview results reflect that the role of teachers in the use of digital applications in school, especially in the context of grade entry, tends to focus more on administrative tasks. Grade recording is an important part of managing student data and recording academic progress or development. The use of digital applications in this case allows teachers to be more efficient in managing grade data, calculating averages, and producing student progress reports. As interviewee T put it below: “The teacher’s role in using this digital application is to enter grades”.

However, it is important to remember that the role of teachers in using digital applications is not limited to administrative tasks. Digital applications can also be used as media or tools in the

learning process, either to facilitate the presentation of material or to provide visual support. Although the use of digital applications in learning was not specifically discussed in the interviews, technology can be a very useful resource to make learning more interactive and engaging.

Then, respondent A also said, “As for learning, from then until now, most teachers use PowerPoint and books”. This is supported by the results of an interview with one of the students: “For collecting assignments, it depends on the teacher, and there is no special application for collecting them”.

The development of learning methods described in the interview, namely the use of PowerPoint and books, is a method that has been used in education for a long time. However, as technology advances, there are many digital tools and resources that can support variations in teaching methods. For example, the use of online learning platforms, interactive software or multimedia can help teachers provide more engaging learning and interact with students.

Schools and teachers should be able to harness the positive potential of digital applications and technology in the classroom. This can help students become more engaged and involved in the learning process, which in turn can improve their understanding and academic performance. In addition, teachers can use technology to simplify administrative tasks, allowing them to focus more on the process of teaching and mentoring students.

From the results of these interviews, it can be concluded that in the context of the use of digital resources in the management of information systems in schools, it seems that the application of technology is still not optimal. This is due to the unavailability of specialized applications or systems, such as the Learning Management System (LMS). In the management of educational information systems, LMS plays a key role in facilitating online learning, distribution of learning materials, management of student assignments, and interaction between teachers and students. In the absence of an LMS or similar system, schools tend to rely on conventional learning methods, such as using PowerPoint and books as the main tools for delivering materials to students. While these methods are effective in many situations, the lack of accessibility, use of interactive media, and more in-depth monitoring of student progress can be a hindrance. Therefore, there is a great opportunity to increase the use of digital resources in schools by integrating LMS or similar technologies to enrich the learning experience and manage information more efficiently.

3.3. The use of digital resources in the grade information system

Respondent J made the following statement: “Parents see their children’s progress on the report card. The report card is digital, each student is given a different token, so students can only open or view their own report card.” This is in line with the statement of Student X, who also stated that “The report card uses a file and is accessed by each student.

From the results of these interviews, it can be seen that parents monitor their children’s development through digital report cards. The use of digital report cards provides easy access for parents, allowing them to quickly view children’s grades and academic progress without having to wait for the release of physical report cards.

A good aspect of this is the concept of assigning different tokens to each student, so that the privacy and security of student information is maintained by ensuring that only that student has the right to see his or her own report card. This also makes it easier for parents to monitor each child’s progress.

The shift from physical report cards to digital report cards reflects the evolution of technology in education and creates opportunities for schools to make the most of technology. The following is a view of the digital report card menu used by the school.



Figure 3. Display of the digital report card

3.4. Teacher-student-parent communication platform

From the results of this interview it can be seen that there is no specific application that serves as a communication platform between teachers, students, schools and parents. As the following statement from respondent T: “There is no specific application as a forum for communication between teachers, students, schools and parents. Mostly we just use the WhatsApp application, each class teacher has his own group”.

Current practices tend to rely on the WhatsApp application, with each classroom teacher having their own group. This illustrates the unmet need for communication management in the school environment.

Moreover, in the context of the implementation of school information system management and the use of digital resources, this situation highlights possible inefficiencies. Ideally, schools could use an integrated information system to manage communication between teachers, students, and parents. Not only will this save time and effort, but it will also provide a more secure and structured platform for information exchange. With a good school information system in place, academic data and other information can be more easily accessed, shared and managed by all parties involved in education. Thus, the implementation of school information system management can better support the efficient use of digital resources for school communication and administration.

3.5. Data Security, constraints, threats, and digital resource updates

“The data security is done by a third party, which in this case is the education center (Kemdikbudristek). The software application or software automatically performs the security of the application” (Respondents A and J).

The interviews revealed that data security is implemented by a third party, which in this context is an education center, such as Kemdikbudristek. The education center is responsible for data management and security, which indicates an effort to maintain the integrity of educational information. In addition, it is shown that the software application also has an automated security mechanism, which is a positive aspect in maintaining data security.

However, it is inevitable that there are potential challenges and limitations in using this application, such as errors and system failures. “There are certainly challenges and obstacles in using this application, such as errors and failures. Because it is like this information system must have its advantages and disadvantages” (Respondent T).

This is normal in information system management, as each system has its own advantages and disadvantages. In this context, it is important for relevant parties to identify and address such issues quickly and efficiently so that the educational information system can continue to operate optimally. Thus, the successful implementation of this software application depends on the ability to

overcome challenges and obstacles that may arise, while still prioritizing data security, which is crucial in an educational context.

Corrective actions for errors in the educational information system are taken automatically by the education office, and any updates to the information system application are initiated directly by the center. Interviewees T and J explained this as follows: “To solve or correct the error, it is done automatically by the office, and any updates to the information system application are done directly by the center. As for the score information system, the third party is responsible for the challenges and obstacles”.

This effort demonstrates sustainability in maintaining the quality of the information system and efficiently overcoming potential errors. In this context, the role of the Education Office as a controller of updates and improvements is crucial to ensure that the system works well.

On the other hand, in the case of the value information system, responsibility for challenges and constraints is placed on a third party. This reflects external cooperation in the management of the value information system. While cooperation with a third party can bring many benefits, such as specialized experience in technology, it is important for the relevant parties to ensure that the third party can effectively and efficiently address challenges that may arise.

In both situations, good coordination and communication between the education authority, the third party and the centre are key factors in maintaining the quality and reliability of the education information system. Awareness of continuous improvement and renewal is necessary to ensure that the information system provides maximum benefit in the educational context.

In essence, the implementation of information system management in schools is one of the solutions for schools to improve the quality of educational services, which is in line with the research of Habiby & Yamasari (2017), which shows that school information systems can facilitate data processing and reporting to minimize errors that may occur compared to manual data processing.

The use of digital resources in the management of school information systems also shows positive results. As research on web-based information systems conducted by Darmansah & Suhendro in 2020, the results state that the use of school information systems can overcome school management problems so that schools can improve the quality of excellent education in the community.

4. CONCLUSION

The implementation of information system management in the use of digital resources in one of the KCD VII schools in Bandung City has utilized the use of digital applications, namely ARKAS (Aplikasi Rencana Kegiatan dan Anggaran Sekolah) and SIPD (Sistem Informasi Pembangunan Daerah). These applications facilitate planning, monitoring, and help manage the use of resources, including budget allocations. The use of these applications improves efficiency, accuracy and transparency in school management.

The role of teachers in the use of this digital application is to enter grades. However, in the context of teaching, it seems that the use of digital resources is still not optimal. This is due to the unavailability of specialized applications or systems, such as the Learning Management System (LMS). Although the use of the grade information system (report card) is already digital, with the use of different tokens given to each student.

The information system in terms of communication between teachers, students, schools and parents shows inefficiency due to the lack of a special application that functions as a communication platform. In the context of data security, it is carried out by a third party, namely the Education Center (Kemdikbudristek). Overcoming or correcting the error is done automatically from the office, and every update of the information system application is done directly from the center.

Integrate a Learning Management System (LMS) to optimize teaching in KCD VII schools, complementing ARKAS and SIPD. Enhance communication efficiency among teachers, students, schools, and parents with an in-house platform, addressing current shortcomings. This comprehensive approach ensures better coordination, improving overall digital resource management and data security.

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