

## TECHNOLOGICAL SOLUTIONS FOR ELEVATING EDUCATION MANAGEMENT IN NORTH SUMATRA

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### Article Info

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### Abstract

Education plays a pivotal role in national development, with its quality profoundly impacting both individuals and societies. The challenges faced by the education sector in North Sumatra, Indonesia have resulted in subpar education quality, primarily due to the disconnect between education and technology. This paper delves into the substantial gap between the prevailing low educational quality and the heightened public demand for excellence. Various solutions proposed by education experts focus on leveraging technology for educational management enhancement. Technology's integration in education has gained momentum in recent years, yet many schools still operate with manual systems, especially evident during the pandemic. This study scrutinizes the predicament faced by several schools in Medan, Binjai, and Deli Serdang due to their inadequate information systems.

PT. Engineering Technology Metromatics, a prominent digital enterprise in North Sumatra, emerges as a trailblazer in seamlessly merging technology with education. Their innovative application of information systems stands out as a viable solution. This school management-centric application provides educational institutions with a streamlined platform for efficient and effective learning environment creation and management. By utilizing this system, student progress can be accurately tracked, facilitating targeted interventions to address their challenges in a precise, effective, and efficient manner.

## INTRODUCTION

Education is an important factor for the development of a nation. The quality of education is crucial to the success of individuals and societies. In North Sumatra, Indonesia, the problems of education are complex, leading to low-quality education in the region. These problems and implications arise due to the lack of synergy between the world of education and the world of technology. While the public's interest in getting quality education is very high, the quality of education in North Sumatra is still low. This paper describes the gap between the low quality of the world of education and the very high public interest.

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Many solutions have been offered by education experts to solve the problem of the low quality of education. One of the solutions is to utilize technology in managing education management. In recent years, technology has become an integral part of education. The development of information technology is very rapid, with changes and additions to information systems and technology happening almost every year. The application of computerized and digitized systems plays a role in information management in schools, with the competition for business growth continuing to grow. However, there are still many schools that have not optimized technological developments, such as registration systems and student progress reports that are still being done manually. This is a phenomenon in several schools in Medan, Binjai, and Deli Serdang, where many schools experience problems during the pandemic because they have not accessed a good information system.

One of the leading digital companies in North Sumatra that integrates technology with the world of education is PT. Engineering Technology Metromatics. This company combines insight and strategy to create the best digital products. One of the products of this company that is suitable to solve the problems in the world of education is an application of information systems. This application is a school management-based application that can help educational institutions to create a learning environment and management activities to be more effective and efficient. Through this information system, the track record of students will be identified, so that actions in solving student problems can be carried out correctly, effectively, and efficiently.

The provision of the school management information system application provides the idea to create a school management information system application that can provide information about school activity programs for teachers, students, and parents of students. The management information system can increase the effectiveness and efficiency of school management. The provision of a site is expected to help parents get academic information and the psychological development of their children. So it is hoped that it will not only help make it easier for parents but also to improve the quality of the school itself. Effective and efficient education is a clear goal that must be comprehensive and synergize with other programs. School management is a crucial factor in carrying out education and teaching in schools, measuring the success of students' achievements.

However, many schools in Medan, Binjai, and Deli Serdang still have not optimized technological developments. They continue to carry out registration systems, provide continuous student progress reports manually, and offer ineffective counseling services due to parents' inability to participate. This is a problem that has been exacerbated during the pandemic, as many schools lack good information systems.

To address these issues, the study proposes the creation of a school management information system application that can provide information about school activity programs for teachers, students, and parents of students, increasing effectiveness and efficiency in school management. The system aims to help parents get academic information and the psychological development of their children, improving the quality of the school itself. It will also be designed to be as simple as possible, providing real-time access and immediate notifications for users.

Finally, the study explains that universities have a role in supporting educational activities in schools by contributing ideas related to solutions to problems that develop in school management. One solution is the realization of an education management system capable of meeting the demands of the digital information technology revolution towards the 4.0 education era (cyber system). Universities can mobilize their scientific energy by involving lecturers, students, and professionals such as PT. Engineering Technology Metromatics. The integrated information management system will help limit the spread of student data, both positive and negative, maintaining the confidence of students who commit violations and closing opportunities for other students to imitate or commit the same violation. The program aims to improve the quality of technology in educational institutions.

## **METHODS**

### **2.1. Outcomes and Performance Indicators**

The socialization activity for the Development of Integrated School Management Based on Information Systems was held in October 2020. The target schools to be visited were 10 schools and during the implementation the research team visited 11 schools, namely SMK

Putra Anda Binjai, SMAN 1 Binjai, SMP Al-Fityah Binjai, SMAN 6 Medan, MAS Muallimin, Islamic Center, SMP Al-Hijrah, SD Al-Hijrah, SMA Panca Budi Medan, MAS Al-Washliyah 49 Pasar Lembu Asahan and MTS Al-Washliyah 1 Kisaran.

Before the team visited the school, the team had communicated with the school to hold a socialization activity for the Development of Integrated School Management Based on Information Systems.

The outreach to SMK Putra Anda Binjai was held on October 26, 2020. In this case, the principal and staff welcomed us very warmly so that the socialization event went smoothly. The principal appreciates the edulink information system which is presented to the principal, staff, and teachers. They said that their school needed a system like this to help them, especially in today's digital environment. In addition to describing the information system, the researcher also expressed the desire to establish cooperation between the school and the Panca Budi Development University, and the principal responded with joy in the hope that this collaboration would develop both parties. The signing of the MoU took place on November 26, 2020.

On the same date, October 26, 2020, a visit was also held with SMAN 1 Binjai, where during the visit the principal was not welcomed because he was attending outside activities. We were greeted by the vice-principal, Mr. Ismanda and Mrs. Wita. Greeted warmly and socialization activities went smoothly. The school asked a lot of questions regarding the system that was presented, and their doubts about the system were solved by providing all the solutions to the problems faced by the school. Information systems are not only for students but can be used by finance, governance, libraries, and so on.

Al Fityah Binjai Junior High School became the school we visited on October 26, 2020. The Principal along with his staff and teachers attended the integrated information system socialization activity. The school received very well what was conveyed by the team, but the principal could not be sure to be able to work with the campus because he had to ask for approval from the foundation first. A week after the visit, the school stated that it was willing to cooperate and the signing of the MoU took place on December 15, 2020.

On 27 October 2020, the team visited SMAN 6 Medan, SMA Panca Budi Medan and then MAS Muallimin. These three schools welcomed the team very well in the principal's meeting room. The principal of SMA Panca Budi, SMAN 6 Medan, and the head of the Madrasah MAS Muallimin said that the information system presented was needed by the school. With this system, data may be lost because it has been backed up in the system. Cooperation with the school also continued for the signing of the MoU.

The Islamic Center was visited on October 27, 2020. We were warmly welcomed into the hall which was already attended by the principal, teachers, and deputy director of the Islamic Center. It can be seen that the teacher still does not understand the information system presented, so the team provides further direction regarding the system being presented. At the end of the opportunity, the deputy director expressed interest in the information system but their party had to submit it to the foundation for further approval. The obstacle the team faced was that the Islamic center did not want to cooperate with the university for the development of the field of Pancasila.

Al-Hijrah Middle School and Elementary School were the next schools we visited. The principal of the elementary school and the student body of the Al-Hijrah Middle School welcomed us very well. On this occasion, the Al-Hijrah Junior High School was willing to cooperate, while the Al-Hijrah Elementary School said that it had not been able to establish cooperation because it did not make a big contribution to the SD.

MAS Al-Washliyah 49 Pasar Lembu Asahan and MTS Al-Washliyah 1 Kisaran was the last school visited due to their location outside the city. The team was warmly and enthusiastically welcomed by the school, and all teachers and employees received socialization of the integrated information system. There were no obstacles in explaining the information system, even the team was offered to convey this system to all schools in the range because it had a positive impact on the school.

In this case, all schools that the team visited involved students in the socialization of Information System-Based Integrated School Management Development.

**Tables 3.** Program Beneficiaries Based on the proposed activity plan, it is expected that the beneficiaries of the program implementation

No.	Beneficiary Group	Amount
1	Undergraduate students from the Faculty of Islamic Religion and Humanities in the Islamic Religious Education Study Program and undergraduate students from the Faculty of Science and Technology in the Computer Systems Study Program	20 people
2	Educational Institutions or Schools in North Sumatra	10 Schools
3	PT. Engineering Technology Metromatics	4 people

**Tables 4 – Program Outcomes** Based on the proposed activity plan, it is expected to meet the output targets

No	Outer Type	Achievement Target outside	Achievement	Percentage of Achievement Against Target
1	Final Activity and Financial Report			
2	International Journal	1	1	100%
3	National Journal	1	1	100%
4	UNPAB/Faculty Collaboration with Partners	There is an MoU	Established an MoU	100%
5	UNPAB/Faculty Collaboration with 10 Schools	There are MoUs for 10 Schools	9 MoUs with Schools	90%

6	PATENT, Trademark and Copyright	Legality of Patent, Trademark and Copyright	Patent Intellectual Property Rights (estimated 24 months) and Trademark Intellectual Property Rights (estimated 12 months) have been filed Copyright has been published	100%
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## 2.2. Implementation of Programs and Activities.

In the world of education in schools today, the application of computerized and digitized systems plays a role in information management in schools with business competition that continues to grow. It is undeniable that the role of technology in providing information services is an important factor for various institutions and individuals. The current problem is that there are still many schools that have not optimized technological developments, such as there are still many registration systems that are carried out manually; provide continuous student progress reports manually; ineffective counseling services due to the condition of parents who cannot participate. This is a phenomenon in several schools in Medan, Binjai and Deli Serdang, where there are many schools experiencing problems during this pandemic because they have not accessed a good information system.

The school management information system that can be accessed by everyone via smart phones provides the idea to create a school management information system application that can provide information about school activity programs for teachers, students and parents of students which in the end the management information system can increase effectiveness and efficiency. school management. The provision of a site is expected to help parents get academic information and the psychological development of their children. So it is hoped that it will not only help make it easier for parents but also to improve the quality of the school itself.

Through this edulink information system, it is hoped that it will also make it easier for schools to manage student data, finance, governance and so on. And through this system minimize data loss because everything is backed up on the system. Schools will be given training in using the system. Training is provided for all School Operators. The available information system can be adapted to the needs of the school.

The objectives of the Development of Integrated School Management Based on Information Systems are as follows:

1. Development of an integrated school management information system that is used on an ongoing basis.
2. Utilization of information systems as a more efficient means of communication in school management.
3. Implementation of an integrated information system for educational institutions and related agencies.
4. Opening business opportunities for lecturers, students and university graduates.
5. Generating new start-ups for UNPAB graduates

Universities, both public and private, have a big role and responsibility in developing and producing quality and superior human resources, so that they can affect the level of success of educational goals in the 4.0 era as it is today. For universities, superior and quality human resources can not only be produced in an easy way, but

superior human resources can be produced through good processes and management in an educational institution as well. Superior processes must be supported by systems and tools that can provide appropriate guidelines and information as well as good management.

The socialization activity for the Development of Integrated School Management Based on Information Systems was carried out in several schools spread across 4 (four) districts/cities of North Sumatra, namely Medan City, Binjai City, Deli Serdang Regency and Asahan Regency, namely: Putra Anda Foundation Vocational School, Binjai City, SMA Negeri 1 Binjai City, SD, SMP, SMA - IT Al-Fityah Foundation, Binjai City, MAS Al-Washliyah Muallimin Medan, SMA Negeri 6 Medan, Madrasah Aliyah and MTs Islamic Center North Sumatra, SD and SMP IT Al Hijrah Deli Serdang Regency, SMA, SMP and SMK Panca Budi, MAS Al Washliyah 49 Pasar Lembu, MTs Al-Washliyah Kisaran, Asahan district. This research was carried out for approximately 4 (four) months starting from September to December 2021.

### **ANALYZE AND RESULT OF INTEGRATED INFORMATION SYSTEMS FOR EDUCATIONAL INSTITUTIONS**

The socialization of Information System-Based Integrated School Management Development began through communication to the school regarding the planned visit to disseminate the information system. During the visit, the team conveyed the goals and objectives of carrying out socialization and establishing cooperation with the school. The school provides a room to welcome the team. Then the team began to socialize the system that was created. The audience consisted of the principal, staff and teachers.

Integrated system to be built at a school called Edulink. Edulink is a web-based learning information system specifically designed for students and teachers in schools aimed at supporting the teaching and learning process. This system will later help teachers to facilitate various student academic activities that are usually carried out directly at school, such as sharing subject matter, giving assignments and sending messages between teachers and students. The description of the characteristics of the three users is described as follows:

- a. Admin is responsible for managing all data for students, teachers, and lessons at school. The Admin as the superuser has full control over the system. All data to be entered in the system must be verified by the Admin. The admin itself is owned by the coordinator in the school principal's duties.
- b. Teachers as educators in schools, are responsible for distributing teaching materials according to the level of education and students of the teacher concerned. Every teacher who wants to use the system must be active and the data has been verified by the admin.
- c. Responsible for following the learning process that has been loaded by the teacher in the system. Every student who wants to use the system must also have an active status and the data they have has been verified by the admin.

The Edulink information system becomes a School Management Information System which includes Academics, PPDB, online learning, online exams, PPDB, school finances, to information services for parents. The principal views Sidikmu as a medium, a media that must be utilized as best as possible, if the human resources are not able to use the media it will be in vain. Principals who act as managers of educational institutions whose duties include: Planning, Organizing, Actuating and Evaluating which are manifested in policies and programs made. In this case the Principal in an effort to run Sidikmu has made several programs for school admins, teachers, and guardians of students.

Along with the times and the advancement of world civilization and the dynamics of the life of the earth's inhabitants, which often causes turmoil in social life. And where social problems always arise at any time due to the very fast flow of globalization that is happening. Sarlito W. Sarwono states that the progress and development of world civilization also affects its supporting tools, including communication technology which is used as a tool to process and transfer the required information data devices, communication technology is also the cause of the



entry of new norms and values from outside which in turn are norms. and these new values enter into the environment of family and community life.

Management information system is an operational system that implements or carry out various functions to produce useful outputs for the operation and management of the organization concerned. The application of management information systems in everyday life is very common. In the world of education, education management information systems and information technology are very supportive to improve the quality of learning.

The application or implementation of education in the future will experience fundamental changes, especially those caused by the application of information technology that accelerates the transfer of knowledge. The types of technology that directly have a strong influence on the implementation of education are computers, internet networks that can be constructed for a learning process. In the world of education, there are many educational institutions that have succeeded in developing information technology to support the learning process, both at home and abroad so that they can adopt learning patterns that are easier, faster, have added value and are innovative in finding new formulations to provide additional knowledge and skills. knowledge and skills for students.

The school management information system can be said to be running if all school components can use and utilize the system itself, for example the existence of integrated or integrated facilities starting from a database of students, teachers, guidance and counseling, student cards with barcodes, student attendance lists, teachers or employees, grades (tests, UTS, UAS, try outs and others) where report cards are automatically programmed. And also in the school, there is also an SMS gateway system application or commonly called SMS Smart School. This is also easy because it is managed by the school itself, so access costs are cheaper and easy to monitor. With Smart School SMS, student guardians can receive automatic reports from the school, such as student grades, disciplinary violations, tuition payments, teacher data and other transparent school information.

Integrated information system The results of the interaction between elements in the academic environment to produce information that is used as the basis for making decisions, carrying out actions, either by the perpetrators of the process itself or from parties outside the school. Implementation of an academic management information system at the SMA/SMK/MA level has complete data management such as: school year management, data on types of student violations at school, extracurricular data, subject data, department data, teacher data, student data, class data or study groups, extracurricular value data, student violation data, student attendance data and teacher attendance data.

Utilization of management information systems, especially in the field of education, is indispensable in management, both in terms of managing academic administration, reporting and personnel administration and many other fields that require this education management information system service. The need for a database application that can manage school data and information, school management and learning committees, also concerns the need to make reports from schools quickly and validly to relevant agencies such as reports to the district or city education office, province or ministry of education national.

Information Technology is also a competitor's weapon. It can be seen that information technology is one of the tools to increase efficiency in the operational activities of educational institutions, even to become the choice of today's society, educational institutions must have an adequate set of information technology.

To see to what extent the process of implementing the management of education management information systems, as a school principal has several criteria in running an education management information system, including the following:

- a. Can determine the right approach in planning education management information systems in his school.

b. Effective and efficient application of education management information systems by school principals is demonstrated by the ability to: collect data comprehensively according to needs, able to process data into accurate information, able to use education management information systems as processed results in making decisions. In the implementation of system administration Information is used several kinds of administration, namely administrative administration, teacher administration and teaching. The management and implementation of SIMDIK has helped, facilitated and facilitated the process of running education management in schools.

## CONCLUSION

Based on the explanation above, it can be concluded that to implement an integrated education management information system in supporting significant success in the world of education, a balance of available resources is needed between the availability of human resources who have skills in operating technology such as computers and the availability of funds for the procurement of computer equipment. which has become more sophisticated. Therefore, in the application of integrated school management based on information systems that have added value, really have very mature preparations so that hopes to apply can be realized in accordance with the development of the world of education that is demanded in this modern era.

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