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Android-Based Management Information System at Bandar Lampung Technology High School

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Abstrak: Sistem Informasi Manajemen Berbasis Adroid Pada Sekolah Menengah Teknologi Industri Bandar Lampung. Penelitian ini bertujuan untuk menganalisis dan mendeskripsikan SIM berbasis Android di SMK SMTI (Sekolah Menengah Teknologi Industri). Ada empat unsur yang dijelaskan yaitu (1) perencanaan SIM berbasis Android di SMK SMTI Bandar Lampung, (2) penyelenggaraan SIM berbasis Android di SMK SMTI Bandar Lampung, (3) implementasi SIM berbasis Android di SMK SMTI Bandar Lampung Lampung Lampung, dan (4) monitoring dan evaluasi SIM berbasis Android di SMK SMTI Bandar Lampung. Pendekatan yang digunakan dalam penelitian ini adalah pendekatan kualitatif deskriptif. Data penelitian diperoleh dari dua sumber yaitu peneliti dan 10 informan. Teknik pengumpulan data dilakukan dengan: (1) wawancara, (2) observasi, dan (3) studi dokumen. Keabsahan data diperoleh dari temuan yang dilakukan dengan uji kredibilitas, dependabilitas dan konfirmabilitas. Hasil penelitian menunjukkan bahwa, (1) Perencanaan SIM di SMK SMTI Bandar Lampung mengakomodir kebutuhan steakholder yang diperoleh melalui brainstorming dan memilihnya sesuai dengan tujuan sekolah. (2) Penyelenggaraan SIM di SMK SMTI Bandar Lampung mensosialisasikan SIM berbasis Android sesuai dengan penggunanya seperti guru, siswa dan orang tua. (3) penerapan SIM berbasis Android di SMK SMTI Bandar Lampung dapat meningkatkan mutu pelayanan pendidikan yang efektif dan efisien. (4) Monitoring dan evaluasi SMK berbasis SIM SMTI Bandar Lampung dapat dilakukan dengan melihat melalui akun admin seberapa aktif guru, siswa dan orang tua menggunakan SIM untuk kegiatan belajar mengajar.

Keywords: SIM, Management, Android

Abstract: Sistem Informasi Manajemen Berbasis Android Pada SMP Teknologi Industri di Bandar Lampung. This study aimed to analyze and describe an Android-based SIM at SMK SMTI (Industrial Technology High School). There are four elements described, namely (1) planning an Android-based SIM at SMK SMTI Bandar Lampung, (2) organizing an Android-based SIM at SMK SMTI Bandar Lampung, (3) implementing an Android-based SIM at SMK SMTI Bandar Lampung, and (4) monitoring and evaluation of an Android-based SIM at SMK SMTI Bandar Lampung. The approach used in this study was a descriptive qualitative approach. The research data were obtained from two sources, namely researchers and 10 informants. Data collection techniques were carried out by: (1) interviews, (2) observation, and (3) document study.

The validity of the data was obtained from the findings that were carried out by testing the credibility, dependability and confirmability. The results showed that, (1) the SIM planning at SMK SMTI Bandar Lampung accommodated the needs of steakholders obtained through brainstorming and selecting them according to school objectives. (2) SIM organization at SMK SMTI Bandar Lampung socialized Android-based SIM according to users such as teachers, students and parents. (3) the implementation of an Android-based SIM at SMK SMTI Bandar Lampung could improve education quality services that are effective and efficient. (4) monitoring and evaluation of SIM-based SMK SMTI Bandar Lampung could be done by looking through the admin account how active teachers, students and parents were using SIM for teaching and learning activities.

Keywords: SIM, Manajemen, Android

- **INTRODUCTION**

The development of increasingly sophisticated information technology known as the digitalization era means that the world will focus on increasing production by utilizing the latest technology and replacing the use of human resources with tools (technology). In Indonesia, the curriculum opens access for millennials to gain knowledge and training to become competitive and productive workers. Technological innovation in the field of education to support learning is very much needed in this era. Because, to improve the quality of human resources (HR), it is necessary to do so that they can compete in the global arena. Therefore, educational institutions and teachers are needed to carry out creative and innovative learning (Samuel, 2015). Of course, this will work if it is supported by information and communication technology infrastructure in the era of the industrial revolution 4.0.

Management information systems play a very large and influential role in organizations, especially educational organizations, awareness of the importance of education management information system services can provide hope and better solutions in the future. That is why education always requires efforts to improve and improve in line with the increasing needs and demands of people's lives.

Management information systems (MIS) are used by schools to support a range of administrative activities including attendance monitoring, assessment records, reporting, financial management, and resource and staff allocation. MIS provides the information managers need to manage an organization efficiently and effectively. This system differs from other information systems in that it is designed to be used to analyze and facilitate strategic and operational activities within the organization (O'Brien, 1999). Watson et al (1987) describe a management information system (MIS) as an organizational method for providing past, present and projected information related to internal operations and external intelligence. It supports the planning, control and operations functions of the organization by providing uniform information in the right time frame to assist decision makers.

Telem (1999) defines MIS as a management information system designed to suit the structure, management tasks, teaching processes, and special needs of schools. O'Brien (1999) refers to MIS or MIS as the term given to a discipline that focuses on the integrity of computer systems with organizational goals and objectives. Based on the above definition, MIS refers to a system that uses the information required by the organization's management at every level in making operational, tactical and strategic decisions. Its primary objective is to design and implement procedures, processes and routines that provide appropriate detailed reports in an accurate, consistent and timely manner. MIS plays an important role in the field of decision making because it can monitor itself for disturbances in a system, determine the course of action, and take

action to control the system. It is also relevant in non-programmed decisions because it provides support by providing information for search, analysis, evaluation and choice and implementation process of decision making (Obi, 2003). This system has the capability to provide users with processing information, analytical models, real time updates and hypothetical scenarios to aid their decision making process.

The use of android-based mobile devices has grown very rapidly, so it has the concept that these devices can be useful in the teaching and learning process (Khaddage, Muller, & Flintoff, 2016; Eppard, Nasser, & Reddy, 2016). As educators consider how best to use mobility to promote learning, it's important to examine both mobile learning and collaborative learning strategies, and how best to combine the two to create effective learning experiences for students. The challenge is that some educational uses of mobile devices result in negative experiences for students who have difficulty with the tools used (Ting, 2012). However, despite the proposed advantages of using mobile computing devices to improve computer accessibility, diverse teaching styles, and academic performance, researchers are currently finding mixed results regarding the effects of mobile devices (Warschauer, Zheng, Niiya, Cotten, & Farkas, 2014).), and very little research on the best ways to use Android-based mobile devices, and the effectiveness of doing so.

An information system can be defined as a computer-based system that provides information to multiple users with desired needs. According to Davis (2002) a management information system is an integrated human and machine system to provide information to support management operations and decision-making functions within an organization. Furthermore, Susanta (2003), states that information is the result of data processing so that it becomes an important form for the recipient and has usefulness as a basis for decision making that can be felt as a result directly at that time or indirectly in the future about the organization. To overcome the problems above, we need an education management information system that is able to provide quick, accurate and efficient solutions. One solution to overcome this problem is to create an Android-based education management information system that can be accessed directly by users online without being limited by time and place.

The availability of a good management information system will greatly support educational activities at an institution. Management information systems in schools are very important in supporting teaching and learning activities in schools. The school management information system functions as a means used to convey information to students and parents. The existence of a management information system can support the smooth running of school administration activities which in turn can improve the quality of school management. Ting's research (2012) provides a different view of the pitfalls of mobile devices in learning and suggests that by relying on appropriate design, pitfalls can be overcome to gain a broader perception and design of mobile learning practices. The results obtained support that the contextual experience of using mobile devices in learning will increase user perceptions of the usefulness of mobile devices.

Meanwhile, Heflin, (2017) shows that the impact of mobile technology on students' attitudes, participation and learning by evaluating in three different collaborative learning environments, both with cellular technology and without cellular technology. This evaluation is to assess students' involvement, critical thinking, and attitudes towards collaborative learning. The results showed that students who wrote essays through shorthand typing on mobile devices appeared to exhibit less deep critical thinking than students who wrote their written responses on a computer or on paper.

Applications via mobile can be considered as the first step to bridge the gap between the two types of learning (formal and informal) (Khaddage et al, 2016). This approach is based on STEAM (Science, Technology, Engineering, Arts and Mathematics) as the subjects to be taught

and the specific skills needed to achieve Minimum Mastery Criteria (KKM) which can support student learning informally.

The rapid advancement of information technology is one of the causes of changes in the education system. This is in accordance with Permendikbud Number 34 of 2018 which explains the Standards for the Vocational Education System in order to improve the quality and competitiveness of Human Resources. Along with the rapid development of information technology, it is hoped that teachers, parents, students, and even the wider community can easily access and know everything related to school activities, quickly.

Responding to increasingly sophisticated information technology, the SMK SMTI Bandar Lampung school tries to apply the industrial revolution 4.0 to its students with an Android-based Information System that connects students, teachers and parents.

The use of android in a Management Information System will make it easier to access information such as attendance announcements that are intended for parents so that in using android the advantage is less paper so that paper use can be minimized and become environmentally friendly and strongly supports school programs that prioritize environmental friendliness, besides SIM Android has advantages such as easy to understand, useful, timely, and reliable. Research on Android SIM is still a little researched so the author is very interested in conducting research on Android-based Management Information Systems.

The development of a Management Information System (MIS) in schools is one of the efforts to improve education services and is a formal method that provides accurate and timely information to management to obtain information used in planning, organizing, implementing and monitoring.

- **METHOD**

This research was conducted from January to May 2020 at the Bandar Lampung High School of Technology. This study uses a descriptive qualitative approach, which is a study that intends to understand the phenomena of what is experienced by the research subject, such as behavior, perception, motivation, action, etc. holistically and by way of description in the form of words and language in a context. natural specialties and by utilizing various natural methods.

Sources of data from this study are primary data, namely: Principal of SMK SMTI Bandar Lampung and informants selected based on purposive sampling (teachers 2-3 people) Secondary data obtained from scientific books, reviews, educational journals, newspapers and articles.

Details of Research Informants

No	Informant	Institution	Amount
1.	Headmaster	Bandar Lampung SMTI Vocational High School	1
2.	Curriculum Waka	Bandar Lampung SMTI Vocational High School	1
3.	Teacher	Bandar Lampung SMTI Vocational High School	2
4.	Head of LSP	Bandar Lampung SMTI Vocational High School	1
5.	SIM vendors	IT Start-up	1
6.	Head of PPID	Bandar Lampung SMTI Vocational High School	1
7.	school Committee	-	1

No	Informant	Institution	Amount
8.	Student	Bandar Lampung SMTI Vocational High School	1
9.	Parents	-	1
Amount			10

The process of collecting data is done by means of interviews, observation and document studies. The following are interview guidelines, observation guidelines and document study guidelines Interview guidelines

No	Research Sub Focus	Indicator	Question	Informant
1	Planning	Selection or setting of organizational goals Penentuan strategi, kebijakan, proyek, program, prosedur, metode, sistem yang dibutuhkan untuk mencapai tujuan	1. Is the Android-based SIM planning in accordance with the school's goals? 2. How the principal has a high commitment to the implementation of an Android-based SIM 3. Does the implementation of the Android SIM in planning involve teachers, parents and students? 4. Who is involved in planning an Android-based SIM 5. How to do an android-based SIM planning strategy plan	Headmaster Waka curriculum Teacher Committee Vendor Student
2	Organizing	Division of tasks	1.How does the principal make a priority scale in the implementation of an Android-based SIM 2. How does the division of the group	Teacher Headmaster Student

No	Research Sub Focus	Indicator	Question	Informant
			work How do you cooperate to carry out the activities of implementing an Android-based SIM? 3. How to make it easier to use an Android-based SIM? 4. How to communicate or socialize an Android-based SIM between teachers, parents and students	
3	Implementation	*coordinating* *Motivating* *Communicating* *command*	1. How to make it easier to use an Android-based SIM 2. How to communicate or socialize an Android-based SIM between teachers, parents and students	Headmaster Deputy Head of Curriculum Parents Student
4	Evaluation	Determination of work standards hasil Measuring results	1. How does the school evaluate the implementation of the Android SIM 2. To what extent is the progress of the teacher filling in the content, students have accounts and students can run it 3. Does the Android-based SIM make it easier for teacher workers and easy to monitor teaching and learning activities? 4. How to follow up on the next SIM implementation	Headmaster Deputy Head of Curriculum

Observation Guidelines

No	Observing Process	Information
1	Planning - Work Meeting on an android-based SIM application development learning plan - Formulate goals to be achieved	

No	Observing Process	Information
	- Steps for developing an Android-based SIM application - SIM maintenance planning schedule	
2	Organizing - Distribution of SIM access rights, namely SIM admin, teachers, parents and school principals - Outreach to parents, students and teachers - Data collection and application installation - Android-based SIM application maintenance aplikasi	
3	Implementation - Android-based SIM application trial - Outreach to parents, students and teachers - Data collection and application installation - Android-based SIM application maintenance aplikasi	
4	Monitoring - Execution - How far is the implementation of the Android SIM SIM - Follow-up	

Data Analyst Techniques. Analysis of the data used in this study is reduction data, display data and conclusion can be seen in the form of the diagram below:

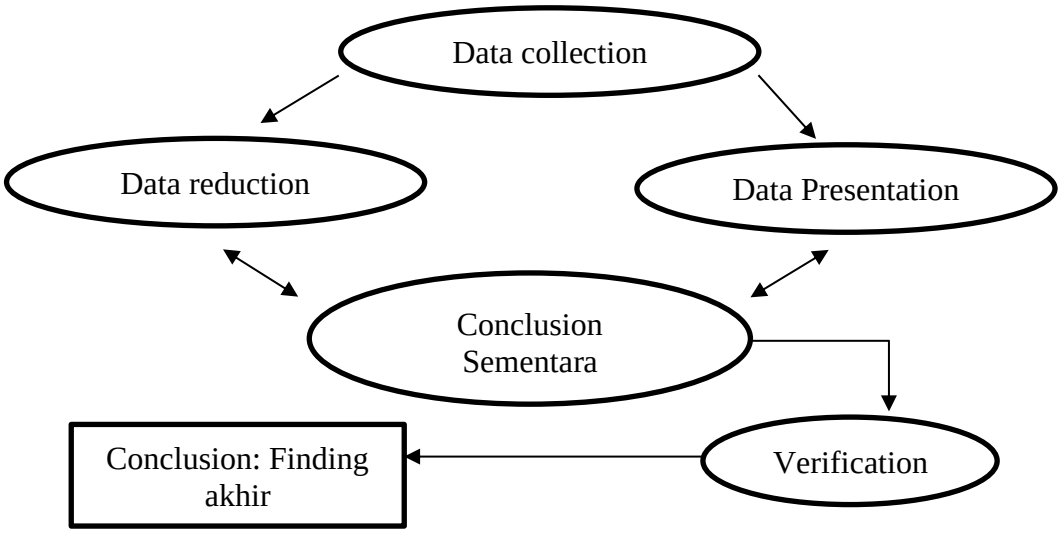

Figure 1. Miles and Huberman (2014) Data Analysis Techniques

Checking the validity of the data from the degree of credibility, transferability, dependability and confirmability. The stages of the researcher include establishing the research focus, determining the setting and research subjects, data collection, data processing, and data analysis and data presentation.

- **RESULT AND DISCUSSION**

In the application of an Android-based SIM at SMK SMTI Bandar Lampung, there are several stages, namely planning, organizing, implementing, monitoring and evaluating. According to Usman (2009) planning is as a whole process of thinking and determining carefully including things that will be done in the future in order to achieve predetermined goals. According to the androdi-based SIM planning activities at SMK SMTI Bandar Lampung, it is an activity that begins

with designing the needs or goals to be achieved through making decisions about what features will be displayed in the SIM application according to the needs of each stakeholder.

After planning there is also the next step, namely organizing, according to Terry (2008) organizing is setting up effective behavioral relationships between personnel, so that they work together efficiently and obtain personal decisions in carrying out tasks in environmental situations in order to achieve certain goals and objectives. Another opinion according to Robins (2004) is that organizing includes the process of determining what tasks to do, who to do, how to group the tasks, who reports to whom and at what level decisions must be taken. Similarly, organizing at SMK SMTI Bandar Lampung is a process of dividing tasks according to the main tasks and functions so that they have SIM access rights, namely admins, parents, and principals.

The next stage after the organizing stage is the implementation stage. Implementation according to Usman (2002) is as an expansion of activities that adjust to each other. Another opinion according to Siagin (2013) is that implementation is the overall effort, method, technique, and method to encourage organizational members to be willing and sincere to work as well as possible in order to achieve organizational goals efficiently, effectively, and economically. Similarly, the implementation of an Android-based SIM at SMK SMTI Bandar Lampung in its implementation is carried out when the system uses KBM (teaching and learning activities) face-to-face at school, therefore one of the menus in the SIM application is an attendance menu that can be known by parents because they are interconnected, making it easier for parents to monitor student progress from attendance and submission of assignments, of course through the SIM application in its implementation it can increase professionalism and performance.

The next stage, namely monitoring and evaluation, is the last part of the management function according to Usman (2013) control is the process of monitoring, evaluating, and reporting plans for achieving the goals that have been set for corrective actions for improvement. Another opinion according to Terry (2014) is that supervision is in the form of an inspection to ensure that what has been done is to make the manager aware of a potential problem before it becomes serious.

Monitoring and evaluation at SMK SMTI Bandar Lampung as an activity to follow the development of a program that is carried out regularly and continuously by involving stakeholders, namely principals, teachers, students and parents. The evaluation process is not only about the extent to which the objectives are achieved but is used to make decisions that are given to the principal with the help of teachers, waka curriculum, staff, administration and school committees.

Planning :

1. Planning involves related parties, namely principals, teachers, students and parents
2. Formulate or plan the goals to be achieved in planning SIM android
3. Decision making is taken according to the parties who need the Android SIM application to be made.

Table 1. SIM Planning Matrix at SMK SMTI Bandar Lampung

Component	state
• Selection of organizational goal setting • Determination of policy strategies, projects, procedures, program methods, procedures, systems needed to achieve goals	• Formulate or plan goals to be achieved in planning an Android-based SIM • Decision maker • Planning involves parties, namely the principal, teachers and parents orang • Planning strategies by reviewing literature studies of SIM application features are very helpful
Things that need to be improved	• Not all involved in planning SIM android • Maintain good communication • Improved understanding of SIM theory and application

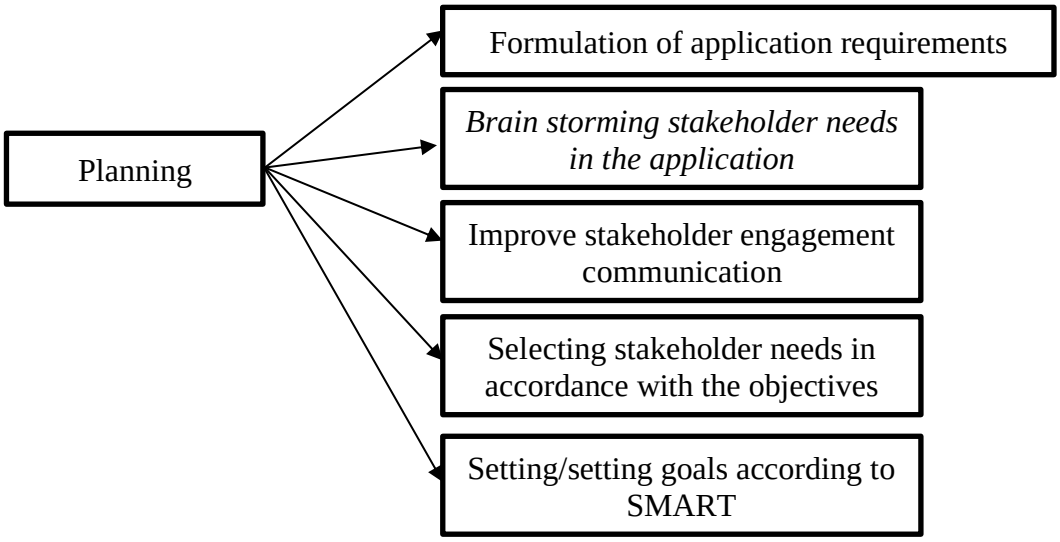

Figure 2. Android SIM Planning Diagram

Organizing:
1. Division of tasks in accordance with the main tasks
2. Android-based SIM operation technical guidance training
3. Android-based SIM operation trial

Table 3. Matrix of SIM Organization at SMK SMTI Bandar Lampung

Component	state
• Organizing • Division of tasks	• Division of tasks according to the main task • Android-based SIM operation technical guidance training • Android-based SIM operation trial Provision of accounts according to needs for teachers, students and parents
Things that need to be improved	• Provided training and assistance in operating an Android SIM • Making an easy-to-understand Android-based SIM operating manual

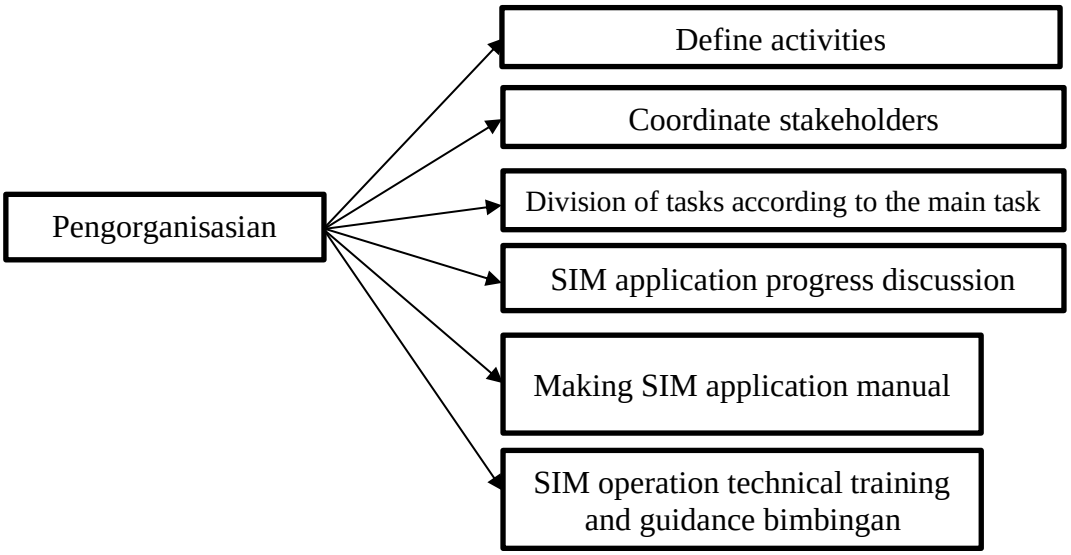

Figure 3. Android SIM Organization Diagram

Implementation:
1. Improving the quality of education services
2. Improve the efficiency and effectiveness of teacher reporting
3. Increase the level of parental trust in children
4. Improving teacher professionalism

Table 4. Matrix of SIM Implementation at SMK SMTI Bandar Lampung

Component	state
• Implementation • Coordinating • Motivating • Communicating • Commanding	• Improving the quality of education services • Improve the efficiency and effectiveness of teacher reporting • Increase the level of parental trust in children • Improving teacher professionalism

• Things that need to be improved	• The use of applications must continue to be socialized during the pandemic • Giving rewards, motivation and support from the principal • Provided workshops, scheduled training so that targets can be achieved

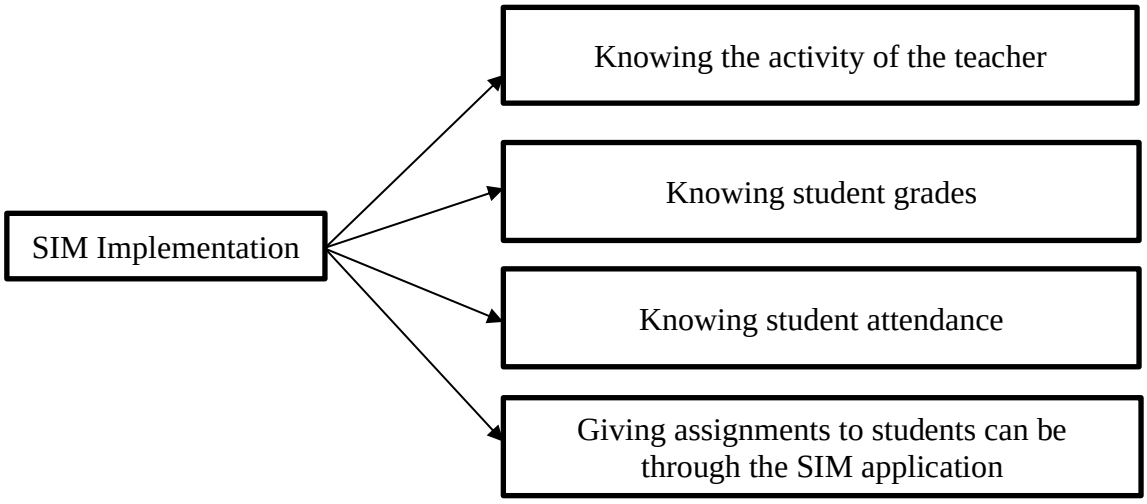

Figure 4. Android SIM Implementation Diagram

Monitoring :
• Knowing how active teachers and students are using the Android SIM application
• Knowing how active parents are in monitoring student progress
• Increase parental participation in monitoring the assignment of assignments from teachers

Table 5. Matrix for Monitoring SIM at SMK SMTI Bandar Lampung

Component	state
• Monitoring	• Knowing how active teachers and students are using the Android SIM application • Knowing how active parents are in monitoring student progress • Increase parental participation in monitoring the assignment of assignments from teachers
• Things that need to be improved	• Giving rewards and warnings in the active use of the Android SIM application • Scheduled training or workshop

In the matrix above, it can be seen that monitoring and evaluation can be done from activities to find out the activity of teachers in using the Android SIM application, knowing communication activities from the admin and increasing collaboration with parents in monitoring the tasks of

teachers and there are several things that need to be improved so that the SIM can run as it should be in accordance with what was planned so that the goals can be achieved. The data is displayed on the previous page.

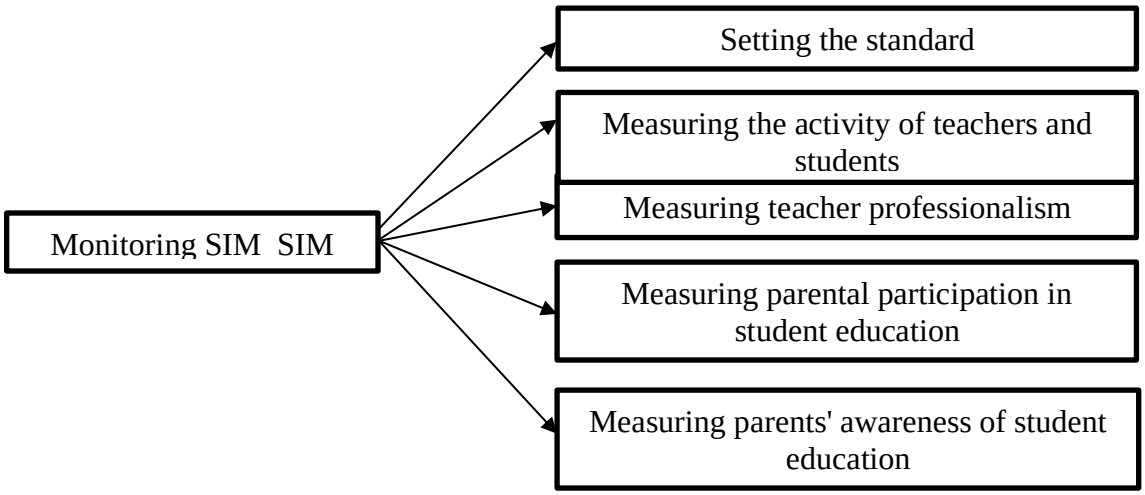

Figure 4.7 Android SIM Monitoring and Evaluation Diagram

- **CONCLUSION**

Based on the results of the research and the findings and discussion of the android-based management information system at SMK SMTI Bandar Lampung, it is concluded that:

SIM planning at SMK SMTI Bandar Lampung has carried out the needs of SIM users stakeholders have been accommodated through brainstorming and selecting them according to school objectives. Organizing an Android-based SIM at SMK SMTI Bandar Lampung has socialized the use of an Android-based SIM according to users such as teachers, students and parents. Implementation of an Android-based SIM at SMK SMTI Bandar Lampung can improve the quality of effective and efficient education services, increase parental trust in children, and increase teacher professionalism. Monitoring and evaluation of Android-based SIM at SMK SMTI Bandar Lampung can be done by looking through the admin account how actively teachers, students and parents use SIM for teaching and learning activities

Suggestion

These suggestions were put forward based on the research findings, which included suggestions from school principals, teachers, students, and parents in order to achieve the target of implementing an Android-based Management Information System application at SMK SMTI Bandar Lampung, as follows:

- The principal of SMK SMTI Bandar Lampung is expected to be implemented in accordance with the needs of schools that are more integrated with the school management system.
- Teachers are expected to further develop competencies and improve skills in using Android-based smartphone technology so that they can encourage students and parents to use Android-based SIM applications at SMK SMTI Bandar Lampung.
- Students continuously socialize and provide understanding and benefits of using SIM to their parents. So that parents of students can feel the benefits directly from the SIM application.

- Parents are expected to continue to cooperate with the parties by using the Android-based SIM application

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