Jurnal Edutech Undiksha
Volume 11, Number 2, Tahun 2023, pp. 317-327
P-ISSN: 2614-8609 E-ISSN: 2615-2908
Open Access: https://doi.org/10.23887/jeu.v11i2.53690

Android-Based SIGAP Application to Increase the Effectiveness of Student Management

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ARTICLE INFO

Article history:
Received November 22, 2022
Accepted July 19, 2023
Available online December 25, 2023

Kata Kunci:
Aplikasi SIGAP, Android, Manajemen Peserta Didik

Keywords:
SIGAP App, Android, Learner Management

ABSTRAK

Perlu adanya hubungan yang lebih baik antara orang tua dan sekolah untuk meningkatkan kedi-siplinan siswa dan meningkatkan prestasi. Kolaborasi antara orang tua dengan guru seharusnya dapat meningkatkan disiplin dan prestasi peserta didik. Tujuan penelitian ini untuk menciptakan aplikasi SIGAP berbasis android untuk meningkatkan efektivitas manajemen peserta didik. Penelitian ini adalah penelitian pengembangan yang menggunakan model Borg and Gall. Subyek penelitian adalah Kepala Sekolah, Wakil Kepala Sekolah Kesiswaan, guru, peserta didik dan orangtua. Teknik pengumpulan data menggunakan wawancara, studi dokumentasi, dan angket. Teknik analisis data menggunakan analisis deskriptif kuantitatif untuk data kuantitatif dan model Miles and Hubberman untuk data kualitatif. Produk yang dihasilkan berupa aplikasi SIGAP berbasis android, buku yang berisi deskripsi aplikasi SIGAP, panduan untuk guru, panduan untuk siswa dan panduan untuk orangtua. Hasil Validasi produk Aplikasi SIGAP divalidasi oleh ahli TIK dengan hasil 89% dan ahli manajemen 96% atau dengan predikat sangat baik. Uji coba diberikan pada guru, peserta didik dan orang tua. Hasil uji coba terhadap guru adalah 93%, untuk peserta didik 92% dan orang tua 85%. Simpulannya aplikasi SIGAP efektif digunakan.

ABSTRACT

There needs to be better relationships between parents and schools to improve student discipline and increase achievement. Collaboration between parents and teachers should improve student discipline and achievement. This research aims to create an Android-based SIGAP application to increase the effectiveness of student management. This research is development research using the Borg and Gall model. The research subjects were the Principal, Deputy Principal for Student Affairs, teachers, students, and parents. Data collection techniques use interviews, documentation studies, and questionnaires. The data analysis technique uses quantitative descriptive analysis for quantitative data and the Miles and Huberman model for qualitative data. The resulting product is an Android-based SIGAP application, a book containing a description of the SIGAP application, a guide for teachers, a guide for students, and a guide for parents. Product Validation Results ICT experts validated the SIGAP Application with results of 89% and management experts with 96% or a very good title. Trials are given to teachers, students, and parents. The test results for teachers were 93%, for students 92%, and for parents 85%. The conclusion is that the SIGAP application is effective to use.

1. INTRODUCTION

Education is defined as more than just skills and technology training. Lifelong intellectual preparation, cultivating the mind's ability to face new situations and respond with ingenuity, imagination and creativity (Frascara, 2020). Education in Indonesia is related human development to achieve quality goals, both skills and religion so that they can benefit the nation and state (Fahrozy et al., 2022). Education is related to learning skills, developing talents, understanding concepts and theories (Meyer & Norman, 2020). Education builds learning experiences, develops emotional, relational and moral health so that meaningful learning is created (Shavazipour et al., 2021). Students are miniature adults who have limitations, so they need guidance from anyone who is more mature so that the individual becomes mature

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(Rifa'i, 2018). Students are immature humans and need guidance to grow and develop (Barni, 2019; Ebert et al., 2021). In guiding students to achieve goals, good management is needed. Management requires management, structuring and regulation to develop human resources to achieve the desired goals (Khairani & Putra, 2021; Kuntaua, 2022; Rumkel, Nam & Arsyad, 2018).

Student management is a collection of work that starts from the time students are accepted, until the time they leave school (Muspawi, 2020). Student management has the functions of planning, organizing, commanding, coordinating and controlling (Abdul-kahar & Shahrin Suleiman, 2018). Meanwhile, the management function mentioned is POSDCOR, namely planning, organizing, staffing, directing, controlling, reporting and budgeting (Chongesiriroj & Bunchapatanasakda, 2020). Student management plans strategies, allocates resources, carries out activities and supervises so that students can develop themselves in terms of intelligence, socialization, talents and interests so that their needs and welfare are met. Student management aims to organize all kinds of student activities so that they run regularly so that educational goals are achieved (Arfiariska & Hariyati, 2021). Apart from this, student management also functions as a means for students to develop themselves as well as a series of activities, each of which has stages according to its implementation (Hakim et al., 2023; Talibo, 2018). Students are treated as subjects and encouraged to participate in planning and decision-making activities in the activities carried out. All forms of management students must be addressed to carry out educational missions and in order to educate learners. Its function is to equip students well in school until his future conforms to the four pillars management, namely quality, independence, community participation and transparency (Sugawara & Nikaido, 2014). The scope of student management includes three main tasks, namely acceptance of new students, learning progress activities, as well as guidance and discipline development (Muspawi, 2020; Saifulloh & Darwis, 2020). In terms of disciplinary guidance and development, this includes attendance arrangements. The implementation of student attendance arrangements must be carried out in a structured manner. The presence of students is very important because teaching and learning activities at school will stop if students are not present. Student discipline must be well managed. Because students are examples in structuring rules at school (Alfisyah, 2021). It is very important for students to plan carefully, to determine what must be done and minimize problems that arise. With planning, if problems arise, they can be resolved more quickly.

Ideally, in managing students, technology is needed so that there is accurate data. The use of Information and Communication Technology (ICT) is considered a necessity. Especially in the era of industrial revolution 4.0, ICT plays a very important role. ICT is also called a device used to convey information in electronic form so that parties who need it can communicate with each other (Assahary et al., 2017; Szymkowiak et al., 2021). Information technology is defined as the result of engineering carried out by humans to facilitate the delivery of information so that it is easier to access (Nurussaniah et al., 2020; Sutarman, 2017). Information technology is referred to as a science needed to manage information (Yao et al., 2021). Information and communication technology are activities related to processing, cultivating, managing and manipulating media for media (Huda, 2020). ICT relates to managing, processing, utilizing and processing information from one device to another by utilizing hardware and software. Information can be stored in the form of images, sounds or writing. Today's ICT developments have penetrated the world of education. Teachers must be technologically literate because using ICT can make their work easier. ICT helps the administration process, improves the quality of learning, makes it easier to manage grades, makes communication with parents of students easier, etc (Huda, 2020). The use of ICT brings various benefits in education. In terms of speed, technical work in the education sector can be completed more quickly, the results of the value processing are consistent and do not change, the results are in accordance with standards (Lee & Yoon, 2021). The use of ICT for learning has goals and benefits (Widianto, 2021). One of them is that it can help the learning process for both teachers and students. Apart from that, it can add references in the search for knowledge, obtain information that is part of the scientific discipline that students must master. ICT is also used as a learning resource and learning media to shape the learning process so that it has an important role (Grilyon Tumba'Arrang, Andi Agustang, Muhammad Syukur, 2020; Ramírez et al., 2021). The use of ICT in schools is integrated with the use of smartphones with the use of various applications (Komalasari, 2020).

In fact, student management is experiencing problems. In an effort to improve student discipline and increase achievement, the lack of good relationships between parents and schools is a problem in itself. Collaboration between parents and teachers should be able to improve student discipline and achievement. Parents' support and active role in the programs carried out by the school is mandatory (Rantauwati, 2020). In relation to the discipline development activities of students at SMK Negeri 1 Tengaran, this is only carried out by the principal and teachers. Creating school communication with parents is an effort that must be taken to achieve educational progress. In reality, creating communication is a difficult thing to do. Based on the results of an interview with the head of SMK Negeri 1 Tengaran, it was stated that the students' parents

were very busy and did not monitor their sons and daughters' progress at school both in terms of discipline and achievement. According to the principal, information regarding activities at school is only about learning progress which is delivered once a semester. Apart from that, only students who experience problems at school are invited to come by their parents.

Based on the results of interviews with the coordinator of the Student Development Implementation Task Force (STP2K), which has the task of providing guidance and supervision to students in accordance with school regulations and rules, the violations and achievements obtained by students at SMK Negeri 1 Tengaran have not been documented. Activities carried out so far if a violation is found, reprimand or punishment will be carried out immediately at that time. Therefore, it is difficult to find out students who are continuously disorderly, because there is no documentation. Violations committed at school must be recorded properly to facilitate the management of students (Yulita & Huda, 2021). Likewise, in terms of documentation of achievements obtained by students. Apart from these two things, student attendance is also done manually. Manual attendance management creates difficulties, because detection takes a long time (Ezekiel et al., 2021). What is done in schools to monitor attendance is that picket teachers are tasked with checking the presence of students who are not present by going around from class to class. Based on the results of interviews with the Deputy Head of Student Affairs, this was deemed ineffective due to various kinds of obstacles faced in the field, for example when students arrived late, but the picket teacher had gone around and it was recorded that students were not present. Apart from this, there are obstacles in terms of licensing. Students who do not attend school do not immediately provide permission letters. Elaskari in his research stated that recording student management tends to result in errors and wastes time (Elaskari et al., 2021).

It is necessary to use technology in schools in order to minimize problems that arise and provide solutions (Muksith & Rukmana, 2022). Schools are institutions that focus on teaching students by utilizing technology, and developing information technology-based management information systems to be able to keep up with changing times (Nur et al., 2022). Rapid technological advances must be utilized to build communication, both between school members and all stakeholders so that the next generation will grow up to comply with regulations and have broad insight. The use of technology in the world of education continues to grow, including the use of Android-based mobile phones (Putra et al., 2021). Hence, development SIGAP application to increase the effectiveness of student management. An application is a program created to help solve problems (Albab et al., 2021; Ivan et al., 2020). Applications are developed by conducting analysis, then designed, implemented and tested according to needs. Applications are software created by a person or company to help complete certain tasks (Prastyo et al., 2021; Putro Utomo & Purba, 2021). The application is a program that is ready to be used. Using applications can solve problems and make someone's work easier (Bello et al., 2020). The application was created to find comfort in various fields to observe and analyze various situations that occur in parts of the world, both in real time and indirectly (Mohammad Suryawinata, 2019). This application can be used using an Android-based smartphone. Android is an operating system that supports touch screen devices (Bello et al., 2020). Android is used with touches, swipes and taps which are usually operated using a mobile phone (HP). Android is also explained as a mobile operating system that uses applications (Komariyah & Listiadi, 2022; Patterson et al., 2019). The facilities provided by Android are very complete, making it create its own ecosystem. Previous research findings state that the Sigap application for disaster information has good quality and is presented to disaster response volunteers and the community in general (Lazim & Rochmaniah, 2022). Android application development can answer human needs, build new services and businesses, provide games and can also be used in various fields. Because of its open-source nature, application makers can freely create applications that can be downloaded via the Google Play Store. The aim of this research is to create an Android-based SIGAP application to increase the effectiveness of student management.

2. METHOD

This research method is research and development (R&D) using the Borg & Gall model. Product development is carried out to the fifth stage, which consists of: Research and information collecting, namely conducting research and collecting information about student management that has been carried out so far. Planning, namely planning the development of the Android-based SIGAP application. Develop preliminary form of product, namely developing the initial form of an Android-based SIGAP application product. Preliminary field testing, namely conducting field tests or small group tests. Main product revision, namely carrying out revisions to the main product. This research was conducted at SMK Negeri 1 Tengaran, Semarang Regency, which is located at Jalan Darun Na'im, Karang Duren Village, Tengaran District, Semarang Regency. Reasons for choosing the place where the research was conducted This school is because SMK Negeri 1 Tengaran has a very large number of students, namely 2,046 and the management of

students at this school is done manually, so its implementation is less effective. The subjects of this research were the school principal, deputy principal for student affairs (*Waka Kesiswaan*), Counselling Guidance coordinator (BK coordinator), Student Guidance Implementation Task Force coordinator (STP2K coordinator), teachers, students and parents. This research is development research; therefore, validation is needed so that a quality product is produced. Validators in this development research were carried out on 2 (two) experts, namely 1 (one) ICT expert and 1 (one) management expert. After the product is validated, a trial will be carried out on 5 (five) teachers, 5 (five) students and 3 (two) parents who are randomly selected. The purpose of limited trials is to obtain information relating to the feasibility and effectiveness of the product produced. Apart from that, tests are carried out to get input and as material for improvement so that it becomes a better product.

Data collection techniques using interviews to find information regarding student management carried out at SMK Negeri 1 Tengaran, document studies to obtain information regarding how student management is carried out and using validation questionnaires and application user questionnaires. Validation questionnaires were submitted to ICT experts and management experts. The instruments used were interview sheets and validation sheets. The validity of the data is tested using a credibility test. Testing the credibility of the data used is triangulation. The triangulation used in this research is source triangulation and technique triangulation. The expert validator grid is presented in Table 1.

Table 1. Expert Validator Grid

ICT Expert Validation	Management Expert Validation
a. Initial display	a. Ease of use
b. Menu display	b. Suitability of the application to school needs
c. Color matching in the application	c. Suitability of the application to student needs
d. Font size and type	d. Ease of managing students
e. Menu size	e. Ease of use
f. Image suitability	f. Usefulness of the application for schools
g. Use of background	g. Usefulness of the application for students
h. Loading speed	h. Usefulness of the application for teachers
i. Ease of running the application	i. Usefulness of data processing results
j. Application flexibility	

3. RESULT AND DISCUSSION

Results

Based on the results of the analysis, the weaknesses of the management activities carried out so far at the school based on the results of interviews with the school principal require more time because they are still carried out manually. Apart from that, the absence of control from parents' limits teachers' ability to accompany students. Preliminary research found potential problems and obstacles in managing students. Planning, organizing and monitoring activities for students at SMK Negeri 1 Tengaran have been carried out. However, in general, documenting student activities experiences problems in terms of managing absences, violations and documenting achievements that have been obtained. Filing documents in paper form or conventionally is considered to be a problem. Apart from that, the large amount of time consumed makes the conditions for managing students at this school ineffective and the school's communication with parents is limited. After the research and information gathering stage, the author plans an Android-based application that can be used by students, teachers and parents. The school forms a team to help manage activities so that they are carried out according to planning and monitor all activities in accordance with established procedures.

Recording of students who are absent, which has been done in schools so far, is by writing in attendance recaps. As quoted in an interview with the school principal, it was stated that students who were absent could convey this via WA to the homeroom teacher. The homeroom teacher will report absences by forwarding the information to the school group. Students who do not attend can also send permission letters to their parents or entrust them to friends. Managing absences at the same time as managing permits. Student attendance management is carried out by the picket teacher. The technique used in recording student attendance is that the picket teacher goes around the classes to record student absences. Permission letters from the class are taken by the picket officer and then reported to the BK. Likewise for recording achievements recorded by student affairs. This is similar to the principal's statement, that students at school are governed by rules and regulations. Those who commit violations are followed up directly by the teacher who discovered the violation, with book evidence to manage each student's violations. Students who commit violations at school are recorded in the book. Each student can see the

violations committed. BK and homeroom teachers monitor and provide follow-up action for students who violate. The application to facilitate student management produced is the SIGAP application, SIGAP is an acronym for permits, violations, absences and achievements which can be downloaded via the Play store application. This application is named SIGAP with the design in Figure 1.

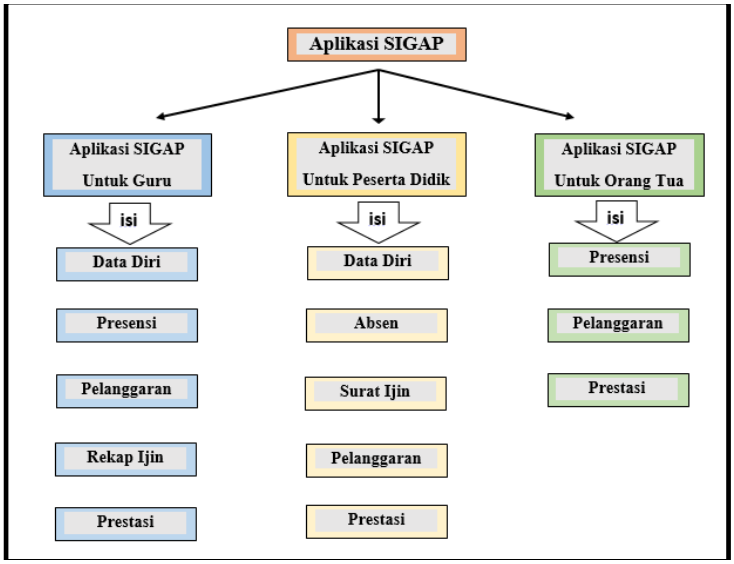

Figure 1. SIGAP Application Design

The SIGAP application can be used by teachers, students and parents. For teachers, this application contains a menu of personal data, attendance, violations, permit recaps, and achievements. Meanwhile, for students, the application contains a menu of personal data, absences, permits, violations and achievements. The SIGAP application for parents contains attendance, violations and achievements as in Figure 1. The researcher then created a research instrument. The instrument created is a grid for creating validation sheets that will be used by expert validators. Apart from validators, the author also prepared a grid as a guide when conducting field tests or small group tests. At the stage of developing the initial form of the product, the application will be validated by ICT expert validators and management experts, and the author also creates a guidebook, both a guide for teachers, students and parents. The SIGAP application display is presented in Figure 2.

Figure 2. SIGAP Application Display

The initial appearance of the SIGAP application directs its users, namely parents, teachers and students. The teacher login menu is directed to use the email account registered with the school account. After successfully logging in, the user is directed to a page containing personal data, attendance, violations and a summary of permits and achievements. The SIGAP application allows student users to use five menus, namely "personal data", "absences", "permission letters", "violations" and "achievements". Before using this menu, students log in by selecting the "student" menu and using the school email. The SIGAP application aims to provide convenience and shorten communication between schools and parents. Therefore, in this application there is a menu for parents, namely "Presence", "Violations" and "Achievements". To be able to enter the parent menu, the user used is the student's name. Meanwhile, the password used is the student's

TTL. The menu displayed in this section is attendance, violations and achievements. Parents can find out about their son's and daughter's activities at school at any time.

After the application is completed, the author creates a user manual, which will serve as a guide for using the SIGAP application. The SIGAP application guidebook consists of four parts, namely a general guide, as well as a guidebook for teachers, students and parents. The SIGAP application manual generally contains instructions for using the application on laptops, computers and smartphones. The next step in the Borg & Gall model stage is to validate the application. The ICT expert validation results are summarized based on the assessment aspects presented in Table 2.

Table 2. ICT Expert Validation Results

No	Validation	Results (%)	Criteria
1	Display quality	86	Good
2	Technical quality	93	Very good

Based on Table 2, the assessment carried out by ICT experts on the SIGAP application shows results of 85% with good criteria for display quality. The average obtained was 4.3. Meanwhile, for technical quality, ICT expert validators showed an average of 4.6 with a percentage of 93% with very good criteria. In general, the author recapitulated the calculation of ICT expert validator assessments of the SIGAP application with a total score of 44 and an average of 4.4 and a result percentage of 89%. Input from ICT expert validators needs to be corrected so that the password does not use the date/month/year of birth format because it is very risky for errors and using "/" often causes login failure. Further validation is carried out by management expert validators. The aspects assessed by validators are technical quality and usefulness. The instrument used was a questionnaire with the help of the Google Form application. Assessment using a Likert scale. The validation results by management experts are summarized according to aspects and are shown in Table 3.

Table 3. Management Expert Validation Results

No	Validation	Results (%)	Criteria
1	Technical quality	90	Very good
2	Quality of usefulness	97	Very good

Based on Table 3, the management expert validator of the SIGAP application on technical quality shows a result of 90%. The average for the technical quality aspect is 4.5 out of 5. The assessment of the usability quality shows a result of 97% with an average of 4.9%. The author recapitulated the overall assessment of management expert validators on the SIGAP application with a total score of 48, an average of 4.8 with a percentage of 96%. Input from management expert validators, that the SIGAP application added an assessment component, thus providing a complete report to parents. After validation, the next stage is to conduct limited trials on prospective users, namely five teachers, five students and three parents. Prospective users are given the SIGAP application, then install the application on their smart device. Once the application is installed, log in using your school domain email account. The instrument used in the limited trial was a questionnaire filled in using a Likert scale. The instrument is divided into three assessment aspects with a total of ten questions. The aspects assessed are the appearance of the application, usefulness of the application and technical quality. The test results are presented in Table 4.

Table 4. Recapitulation of Trial Results

Aspect	Teacher	Learners	Parent
Appearance	88%	86%	85%
Usefulness	96%	97%	87%
Technical	96%	92%	83%

Based on Table 4 are the results of limited scale trials carried out on three potential users. Tests carried out on teachers, respectively, on aspects of appearance, usefulness and technical quality, obtained results of 88%, 96% and 96%. The results obtained from student trials on the appearance aspect were 86%, the usefulness aspect was 97% and the technical quality aspect was 92%. With parents, the trial of the SIGAP application on the appearance aspect obtained results of 85%, usefulness 87% and technical quality aspects obtained results of 83%. This shows that the SIGAP application is feasible and valid to use.

Discussion

Based on the results of the interview, the student arrangements carried out at SMK Negeri 1 Tengaran have been carried out well but have not been well documented. This is also a weakness in the implementation of managing violations in schools. The organizing function in management has also been carried out at this school. Student management centers on regulation, service and supervision (Farhani, 2019; Fetra Bonita Sari, Risda Amini, 2020). The existence of the STP2K team which is under student affairs and is responsible to the school principal helps manage violations. Apart from management, the controlling function is also carried out through the role of BK and homeroom teacher. The weakness is the lack of communication between schools and parents. Triansyah said that the importance of communication with parents will help students' social and intellectual development (Triansyah et al., 2022). However, the communication process between the school and parents has not been running well. Parents come to school only to take learning reports at least twice a year. However, this also could not be implemented properly due to the impact of the pandemic. The school has also provided services to students' needs, through counseling guidance services, or through homeroom teachers. Management of students at SMK Negeri 1 Tengaran in terms of supervision has also been carried out, but has not been well documented. Weaknesses in manually managing attendance will result in data errors (Elaskari et al., 2021). Errors in the process of documenting absences. Elaskari said that in managing students, if it is done manually, it will take a lot of time. Similar to what Elaksari said, a lot of time was wasted in controlling attendance. This is due to the large number of groups at Tengaran Vocational School, and teaching and learning activities are not fully carried out in the classroom.

Management functions are classified into POAC, namely planning, organizing, actuating, and controlling (Panpatte & Takale, 2019). This function has also been carried out in schools. Planning has been carried out by creating a student work program. This work program includes all activities that will be carried out during one academic year. Activities are made systematic and planned so that the programs that have been planned can be realized. Based on the results of the interview, the organizing function is realized from the existence of the STP2K team which is under student leadership and is responsible to the school principal to help manage violations. Apart from management, the actuating or implementation function is carried out in accordance with the planned work program, while the controlling function is also carried out through the role of BK and homeroom teacher. The weakness is the lack of communication between schools and parents. The importance of communication with parents will help students' social and intellectual development (Arfiariska & Hariyati, 2021; Triansyah et al., 2022). However, the communication process between the school and parents has not been running well. Parents come to school only to take learning reports at least twice a year. However, this also could not be implemented properly due to the impact of the pandemic. Weaknesses in manually managing attendance will result in data errors (Elaskari et al., 2021). Errors in the process of documenting absences. Elaskari said that in managing students, if it is done manually, it will take a lot of time. Managing students in the event of absences at SMK Negeri 1 Tengaran takes up a lot of time and there are weaknesses in its management. Attendance controls also become weak. This is due to the large number of groups, and teaching and learning activities are not fully carried out in the classroom. This description is a weakness in student management at school.

The aim of developing the SIGAP application is to assist in recording and reporting related to attendance, violations, permits and achievements made in schools as well as providing benefits for improving school quality. Apart from that, the benefits for students are to shorten the attendance reporting flow and train independence. This also describes the second step of the Borg & Gall model, namely planning. The third step in the Borg & Gall model is developing the initial product. The SIGAP application contains permits, violations, absences and student achievements, which can be downloaded on the Play Store. This application can be accessed by school principals, teachers, students and parents of students. The school principal can carry out direct monitoring of students. For homeroom teachers and guidance and counselling teachers, easy access to attendance, permits, violations and achievements. For parents, permission letters do not need to be delivered to school. Apart from that, you can also monitor violations committed by your sons and daughters at school. The results of product development in the form of the SIGAP application can help collect data on student attendance. Application to track student attendance (Chiang et al., 2022). This research developed an application for smartphones to help with student absences. Using an Android-based system for tracking attendance does not require large costs and is effective in terms of time. This application is also useful for building better communication with parents. Based on the results of parental assessments, this application can help communication between students and parents. Parents can find out about students' attendance as well as violations and achievements obtained. So, this application can narrow the distance between schools and parents. This is similar to the results of research conducted by Wibawa and Wisyastuti who developed an Android-based application which has facilities in the form of recording information on violations and tasks that must be completed, as well as an absence menu to monitor

attendance which can be accessed by parents in real time. Communication between teachers and parents becomes more effective in terms of monitoring violations and activities carried out by students at school (Lazim & Rochmaniah, 2022; Wibawa & Widyastuti, 2019).

The research carried out brought positive results to the school. This can be seen from the test which shows that the usefulness of this application is in the very good category. So, the author can conclude that student management weaknesses can be overcome by using the SIGAP application. In accordance with research conducted by Rjeib who also conducted research to recommend web-based applications to provide convenience for school management (Rjeib et al., 2018; Yulita & Huda, 2021). However, the application produced by Rjeib, apart from managing attendance, can also manage academic information, thereby reducing paper use and minimizing recording errors. Apart from that, research conducted by Yulita and Huda also designed an application to facilitate student management (Yulita & Huda, 2021).The aim of this research is to design an information system for monitoring student violations in student management to make it easier for users to input violations committed. This application can be accessed by 9 users, namely operators, admins, guidance counselors, teachers, school principals, homeroom teachers, student affairs teachers, students and parents. Similar to the research the author conducted, the result of this research is an application designed to produce a student monitoring system. This is considered to bring effectiveness in student management, especially in absenteeism and violation data management.

The weakness in managing attendance manually is that data collection errors occur and it wastes a lot of time. Therefore, barcode technology is used to process student attendance (Elaskari et al., 2021). This research develops an attendance application using a barcode generator and an online barcode scanner application, so that it can shorten time and make it easier to manage the information obtained. The results of this research are the same as research that researchers have conducted, namely the use of technology in managing student absences. Using the SIGAP application also uses technology. Based on the test results, it was found that the SIGAP application can provide convenience for users and can help manage student management in schools.

This finding is reinforced by previous research findings stating that attendance management uses the concept of facial recognition as a means of verification, the SIGAP application also uses facial recognition through online attendance (Ezekiel et al., 2021). Face-app application for taking absences using a facial recording camera which can be controlled using an Android-based cellphone to make it easier to manage absences, shorten time, correct deficiencies when done manually, and reduce labor requirements (Himel et al., 2022). The monitoring information system at Gandasari Vocational School makes it easy for parents to communicate with the school via web-based applications related to student discipline. The SIGAP application also provides easy communication between parents and schools (Triansyah et al., 2022).The advantage of this research is that the development of the SIGAP application is the use of technology in student management. The growing development of ICT can finally be utilized for better management of students. The SIGAP application can be downloaded from the Google Play Store so that users can learn independently and can be used widely. The SIGAP application can be improved by adding other menus, for example online report cards or assessments. Apart from that, monitoring of industrial work practices can also be added so that this application becomes an information system and can make it easier to manage students while at school.

4. CONCLUSION

The implementation of student management carried out in schools has so far been carried out manually without the use of technology. Management of absences is still done manually so students cannot know their attendance. Reporting of permits is done by reporting via the WhatsApp group and recording of violations and achievements is still done manually. The SIGAP application was developed using the Borg & Gall model up to the fifth stage. Users of this application are teachers, students and parents. In the SIGAP application there is a menu for absences, permits, violations and achievements. After validation, the SIGAP application was assessed by ICT experts and management expert validators with the results of the SIGAP application being accepted with a very good title. The results of the SIGAP application trial were carried out to test the quality of the products produced. Trials are given to teachers, students and parents. Each of them has three assessment aspects, namely aspects of appearance, usefulness and technical quality. Based on the test results, the SIGAP application is in the very good category.

5. REFERENCES

Abdul-kahar, A., & Shahrin Suleiman, E. (2018). A Contextual Framework of Henry Fayol's 14 Principles of Management for the Public Sector Efficiency and Effectiveness of Policy Responsibilities by a

Government. *Journal of Advanced Research in Business and Management Studies, 11*(1), 46–61. https://www.akademiabaru.com/submit/index.php/arbms/article/view/1291.

Albab, U., Purnamasari, H., & Isman, S. (2021). The Influence of the Tracer Package Application Media Through the Problem Based Learning Model on Motivation and Learning Outcomes in Network Infrastructure Administration Subjects for Class Xi Kindergarten Students at SMKN 2 Bangkalan. *Exemplary Journal, 6*(2), 85–94. http://journal.unirow.ac.id/index.php/teladan/article/view/269.

Alfisyah, M. (2021). Student Management. Isema Journal: Islamic Educational Management, 3(2), 53–63. https://doi.org/10.15575/isema.v3i2.5009.

Arfiariska, PA, & Hariyati, N. (2021). Implementation of Student Management from a Character Education Perspective. *Inspiring Journal of Educational Management, 9*(1), 648–663. https://ejournal.unesa.ac.id/index.php/inspirasi-manajemen-pendidikan/article/view/39764.

Assahary, SM, Barlian, E., Nurdin, S., & Zulmuqim, M. (2017). The Development of Thematic Learning Model to Improve Students' Character in an Integrated Learning of Religion Education and Environment Towards Students in Adiwiyata School. *International Journal of Multicultural and Multireligious Understanding, 4*(6), 1. https://doi.org/10.18415/ijmmu.v4i6.95.

Barni, M. (2019). Challenges for Educators in the Millennial Era. *Transformative, 3*(1), 99–116. https://doi.org/10.23971/tf.v3i1.1251.

Bello, A.A., Chiroma, H., Gital, AY, Gabralla, L.A., Abdulhamid, S.M., & Shuib, L. (2020). Machine learning algorithms for improving security on touch screen devices: a survey, challenges and new perspectives. *Neural Computing and Applications, 1*(1), 1022–1034. https://link.springer.com/article/10.1007/s00521-020-04775-0.

Chiang, T.-W., Yang, C.-Y., Chiou, G.-J., Lin, FY-S., Lin, Y.-N., Shen, VRL, Juang, TT-Y., & Lin, C.-Y. (2022). Development and Evaluation of an Attendance Tracking System Using Smartphones with GPS and NFC. *Applied Artificial Intelligence, 36*(1), 1137. https://doi.org/10.1080/08839514.2022.2083796.

Chongesiriroj, S., & Bunchapatanasakda, C. (2020). The Study on the Development of the Participatory Management of Occupational Group that Affects the Sustainable Development of Mae Chan Tai Community, Mae Suai District, Chiang Rai Province. *Social Science and Humanity Journal, 10*(2).

Ebert, L., Watkins, S., & Dowse, E. (2021). Students together with academics ensures retention and success: The STARS project. *Nurse Education Today, 97*(June 2020), 104723. https://doi.org/10.1016/j.nedt.2020.104723.

Elaskari, S., Imran, M., Elaskri, A., & Almasoudi, A. (2021). Using barcodes to track student attendance and assets in higher education institutions. *Procedia Computer Science, 184*, 226–233. https://doi.org/10.1016/j.procs.2021.04.005.

Ezekiel, P., Taylor, O., & Deedam, F. (2021). Attendance Monitoring System using Multiple Facial Recognition. *International Journal for Research in Applied Science and Engineering Technology, 8*(2). https://doi.org/10.22214/ijraset.2021.34755.

Fahrozy, FPN, Iskandar, S., Abidin, Y., & Sari, MZ (2022). 19th-20th Century Learning Efforts and 21st Century Learning in Indonesia. *Basicedu Journal, 6*(2), 3093–3101. https://doi.org/10.31004/basicedu.v6i2.2098.

Farhani, D. (2019). Character Education Management Through Religious Co-curricular Activities. Isema Journal: Islamic Educational Management, 4(2), 209–220. https://doi.org/10.15575/isema.v4i2.5619.

Fetra Bonita Sari, Risda Amini, M. (2020). basicedu journal. Basicedu Journal,. Basicedu Journal, 5(5), 3(2), 524–532. https://journal.uii.ac.id/ajie/article/view/971.

Frascara, J. (2020). Design Education, Training, and the Broad Picture: Eight Experts Respond to a Few Questions. She Ji, 6(1), 106–117. https://doi.org/10.1016/j.sheji.2019.12.003.

Grilyon Tumba'Arrang, Andi Agustang, Muhammad Syukur, et al. (2020). Phinisi Integration Review Effectiveness. *Phinisi Integration Review, 3*(1), 90–99.

Hakim, MN, Iskandar, MN, Pesantren, I., Abdul, KH, & Mojokerto, C. (2023). Developing Talents and Interests with Student Management. *Kharisma: Journal of Islamic Educational Administration, 2*(1), 26–37. https://doi.org/10.59373/kharisma.v2i1.17.

Himel, S., Md. Ashik Iqbal, Mahidul Islam Rana, & Tusar Mozumder. (2022). Face-App: A real-time face recognition e-attendance system for digital learning. *Global Journal of Engineering and Technology Advances, 11*(1), 013–024. https://doi.org/10.30574/gjeta.2022.11.1.0049.

Huda, IA (2020). Development of Information and Communication Technology (ICT) on the Quality of Learning in Elementary Schools. *Journal of Education and Counseling (JPDK), 2*(1), 121–125. https://doi.org/10.31004/jpdk.v1i2.622.

Ivan, Delgado-Ceballos, J., Ortiz-de-Mandojana, N., & Antolin-Lopez, R. (2020). New Ways of Teaching: Using

Technology and Mobile Apps to Educate on Societal Grand Challenges. *Journal of Business Ethics, 161*(2), 243–251. https://doi.org/10.1007/s10551-019-04184-x.

Khairani, D., & Putra, ED (2021). Analysis of the Implementation of the Five Educational Character Values in Learning Activities in Elementary Schools. *Basicedu Journal, 5*(4), 2247–2255. https://doi.org/10.31004/basicedu.v5i4.1198.

Komalasari, R. (2020). Benefits of Information and Communication Technology During the Covid 19 Pandemic. *Thematic, 7*(1), 38–50. https://doi.org/10.38204/tematic.v7i1.369.

Komariyah, PI, & Listiadi, A. (2022). Development of Android-Based Mobile Learning as a Learning Media for the MYOB Accounting Application Program. *Journal of Teacher and Learning Studies, 5*(2), 175–184. https://doi.org/10.30605/jsgp.5.2.2022.1901.

Kuntaua, D. (2022). School-Based Management Strategy and Christian Pedagogy. *Salvation Journal, 2*(2), 92–102. https://doi.org/10.56175/salvation.v2i2.36.

Lazim, MF, & Rochmaniah, A. (2022). SIGAP Application Quality Through Webqual Analysis. *Indonesian Journal of Innovation Studies*, 21. https://doi.org/10.21070/ijins.v21i.832.

Lee, D., & Yoon, S. N. (2021). Application of artificial intelligence-based technologies in the healthcare industry: Opportunities and challenges. *International Journal of Environmental Research and Public Health, 18*(1), 1–18. https://doi.org/10.3390/ijerph18010271.

Meyer, M. W., & Norman, D. (2020). Changing Design Education for the 21st Century. *She Ji, 6*(1), 13–49. https://doi.org/10.1016/j.sheji.2019.12.002.

Mohammad Suryawinata, MS (2019). *Web Based Application Development*. In F. Megawati (Ed.), UMSIDA Press (First). UMSIDA Press.

Muksith, A., & Rukmana, O. (2022). Design of Student Information Systems in Integrated MI X. Industrial *Engineering Research Journal, 1*(2), 164–171. https://doi.org/10.29313/jrti.v1i2.508.

Muspawi, M. (2020). Understand the Basic Concepts of Student Management. Batanghari University Jambi *Scientific Journal, 20*(3), 744. https://doi.org/10.33087/jiubj.v20i3.1050.

Nur, Y., Harmawati, H., & Maulana, R. (2022). Analysis of the Use of Information Technology in Online Learning During the Covid-19 Pandemic in Elementary Schools. *Basicedu Journal, 6*(1), 869–876. https://doi.org/10.31004/basicedu.v6i1.2022.

Nurussaniah, N., Anita, A., Boisandi, B., Saputri, DF, Sukadi, E., Sari, IN, Matsun, M., Nurhayati, N., Angraeni, L., Hakim, L., & Wahyudi , W. (2020). Training on Making ICT-Based Physics Learning Media for Teachers in Bengkayang Regency, West Kalimantan. *Journal of Community Service, 5*(4). https://doi.org/10.30653/002.202054.755.

Panpatte, S., & Takale, V.D. (2019). *To Study the Decision Making Process in an Organization for its Effectiveness*. 3(1), 73–78.

Patterson, Z., Fitzsimmons, K., Jackson, S., & Mukai, T. (2019). Itinerum: The open smartphone travel survey platform. *SoftwareX, 10*, 100230. https://doi.org/10.1016/j.softx.2019.04.002.

Prastyo, YD, Silviyani, & Dharmawan, YY (2021). The Effect of Board Games on Students' Communicative Competence. *Beyond Linguistics: Journal of Linguistics and Language Education, 4*(2), 33. https://doi.org/10.36448/bl.v4i2.2279.

Putra, AA, Wahyuni, IW, Alucyana, & Ajriya. (2021). The Effect of Mobile Phone Use on Elementary School Students. *Al-Hikmah: Journal of Religion and Science, 18*(1), 79–89. https://doi.org/10.25299/al-hikmah:jaip.2021.vol18(1).6531.

Putro Utomo, D., & Purba, B. (2021). Utilization of Learning Media as an Online-Based Examination Tool. *Abdimas Journal, 1*(2), 59–63.

Ramírez, M. del C., Cózar-Gutiérrez, R., Roblizo Colmenero, M.J., & González-Calero, J.A. (2021). Towards a coordinated vision of ICT in education: A comparative analysis of Preschool and Primary Education teachers' and parents' perceptions. *Teaching and Teacher Education*, 100. https://doi.org/10.1016/j.tate.2021.103300.

Rantauwati, HS (2020). Collaboration between Parents and Teachers through Kubungortu in Forming the Character of Elementary School Students. *WUNY Scientific Journal, 2*(1), 116–130. https://doi.org/10.21831/jwuny.v2i1.30951.

Rjeib, H.D., Ali, N.S., Al Farawn, A., Al-Sadawi, B., & Alsharqi, H. (2018). Attendance and information system using RFID and web-based application for academic sector. *International Journal of Advanced Computer Science and Applications, 9*(1), 266–274. https://doi.org/10.14569/IJACSA.2018.090137.

Rumkel, Nam & Arsyad, J. (2018). The Impact of Law on Narcotics Use Among Ternate City Students. *Journal of Legal Studies "THE JURIS," II*(2), 187–195. http://ejournal.stih-awanglong.ac.id/index.php/juris/article/view/56/41.

Saifulloh, AM, & Darwis, M. (2020). Learning Management in Increasing the Effectiveness of the Teaching

and Learning Process during the Covid-19 Pandemic. *Bidayatuna: Mandrasah Ibtidaiyah Teacher Education Journal, 3*(2), 285. https://doi.org/10.36835/bidayatuna.v3i2.638.

Shavazipour, A., Jan, H., Multi-scenario, K., Shavazipour, B., Kwakkel, J. H., & Miettinen, K. (2021). This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details . approach Copyright : Rights : Rights url : Please cite the original version : Multi-scenario multi-objective robust. *Environmental Modeling and Software, 144*(2), 105134. https://doi.org/10.1016/j.envsoft.2021.105134.

Sugawara, E., & Nikaido, H. (2014). Student Management. *Antimicrobial Agents and Chemotherapy, 58*(12), 7250–7257. https://doi.org/10.1128/AAC.03728-14.

Sutarman. (2017). *Introduction to Advanced Information Technology*.

Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., & Kundi, G.S. (2021). Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technology in Society, 65*(March). https://doi.org/10.1016/j.techsoc.2021.101565.

Talibo, I. (2018). Management Functions in Learning Planning. *Iqra' Scientific Journal, 7*(1). https://doi.org/10.30984/jii.v7i1.606.

Triansyah, J., Apriyanti, M., Nurachim, RI, & Saraswati, SD (2022). Web-Based Student Violation Monitoring Information System Design at SMK Gandasari. *International Journal of Informatics and Computer Science, 6*(1), 15–21. https://doi.org/10.30865/ijics.v6i1.3881.

Wibawa, & Widyastuti, TM (2019). Improved Communication of Parents and Teachers by Using Android-Based Applications as a Media for Forming Character Children at an Early Age in Elementary School. Taman Sari 3 Yogyakarta. *International Journal of Engineering Technology and Natural Sciences, 1*(2), 31–36. https://doi.org/10.46923/ijets.v1i2.48.

Widianto, E. (2021). Utilization of Information Technology Based Learning Media. *Journal of Education and Teaching, 2*(2), 213. https://doi.org/10.24014/jete.v2i2.11707.

Yao, S., Li, D., Yohannes, A., & Song, H. (2021). Exploration for network distance teaching and resource sharing system for higher education in epidemic situation of COVID-19. *Procedia Computer Science, 183*, 807–813. https://doi.org/10.1016/j.procs.2021.03.002.

Yulita, F., & Huda, A. (2021). Design and Development of an Android-Based Student Violation Monitoring Information System. *Voteteknika (Vocational Electronics and Informatics Engineering), 9*(3), 69. https://doi.org/10.24036/voteteknika.v9i3.113425.