Knowledge Management-Based Applications for Monitoring Student Behavior: A Tool to Improve School-Parent Collaboration

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ABSTRAK

Guru BK memiliki peran penting dalam memantau dan mencatat perilaku siswa. Dibutuhkan sebuah aplikasi yang akurat untuk mencatat perilaku tersebut. Tujuan dari penelitian ini adalah mengembangkan aplikasi pencatat perilaku siswa yang disebut aplikasi pencatat perilaku berbasis manajemen pengetahuan. Hasil pencatatan ini kemudian dipublikasikan dan dapat diakses oleh orang tua siswa (berbagi pengetahuan). Metode penelitian yang digunakan adalah penelitian dan pengembangan, dengan tahapan: studi literatur, analisis kebutuhan, pengembangan produk, dan uji coba produk. Hasil uji validasi oleh ahli materi, ahli IT, dan manajer menunjukkan rata-rata 96%, 88,4%, dan 94%, yang termasuk dalam kriteria sangat baik. Hal ini membuktikan bahwa aplikasi pencatat perilaku ini layak untuk dikembangkan. Hasil evaluasi terhadap guru terkait kegunaan, penambahan wawasan, dan kebermanfaatan aplikasi menunjukkan bahwa 44% guru menyatakan sangat setuju, 52% setuju, dan 4% tidak setuju. Evaluasi terhadap orang tua siswa terkait kegunaan, keakuratan pencatatan, dan keterbukaan akses informasi menunjukkan bahwa 48% sangat setuju, 50% setuju, dan 2% tidak setuju. Kesimpulan dari pengujian ini menunjukkan bahwa aplikasi mampu mencatat perilaku siswa secara akurat dan dapat digunakan sebagai bahan pengambilan keputusan oleh pihak sekolah dan orang tua siswa.

ABSTRACT

School counselors play an important role in monitoring and recording student behavior. Accurate implementation is necessary to document such behavior effectively. This research aims to develop a student behavior recording application called a knowledge management-based behavior recording application. The recorded data is then published and can be accessed by parents (sharing knowledge). The research method used is research and development which consists of the following stages: literature review, needs analysis, product development, and product testing. Validation tests conducted by subject matter experts, IT specialists, and managers showed average scores of 96%, 88.4%, and 94%, respectively, which fall within the "excellent" criteria. These results indicate that the behavior recording application is worthy of further development. The results of teacher evaluations regarding usability, increasing knowledge, and benefits of implementation show that 44% strongly agree, 52% agree, and 4% disagree. Parents' evaluations regarding usability, accuracy of recording, and transparency of access to information showed that 48% strongly agreed, 50% agreed, and 2% disagreed. Findings indicate that the app can document student behavior accurately and is suitable for decision-making purposes by schools and parents.

1. INTRODUCTION

One of the most important parts of a school is realizing the educational function and educational principles mandated by Law no. 20 of 2003 concerning the National Education System, namely Counseling teachers (BK). Counseling teachers have a very important role in supervising students and must ensure that each student's behavior can behave well in accordance with the vision and mission of national education. The main duties of guidance and counseling teachers include providing academic guidance; providing career guidance, helping solve problems faced by students, acting as a mediator for students with problems, and meeting the social and psychological needs of school children.

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Counseling teachers are tasked with knowing and understanding behavior and providing counseling to students with the aim of helping students overcome any problems. Guidance and counseling teachers must also be skilled at documenting all forms of student behavior that are recorded at any time. The skill of collecting and managing student behavior information is a basic need that must be inherent. These behavioral records can be used and become the basis for dealing with student problems. Student behavior is the main object of guidance and counseling teachers. Counseling teachers must be able to monitor student behavior at school and document it in various forms. Based on data on student behavior developments, guidance and counseling teachers can determine what treatment policies should be given if students commit negative actions at school. Therefore, the development of student behavior is something that must receive serious attention for guidance and counseling teachers (Ermindyawati, 2022; Fitri, 2022).

Recording student behavior is the main task of guidance and counseling teachers. Teachers must be consistent in recording student behavior. However, the large number of students and the busyness of the guidance and counseling teachers caused inconsistent recording of teacher behavior. Therefore, we need an application that can record and manage all information regarding the development of student behavior and can be accessed by all parties, including parents. The application is called a knowledge management based behavior tracking application. Through this application, schools can manage existing information and knowledge well so that all forms of organizational information and knowledge can be conveyed (knowledge sharing) by the school to parents through appropriate media. Similar research related to behavior recorder 4.0 states that the use of ICT for guidance and counseling teachers is very important, especially in online counseling through cybercounseling and e-counseling. Counseling teachers can find out students' problems and behavior through face-to-face contact in cyberspace. Previous research also shows that changes in student behavior are recorded in portfolio form as material for teacher evaluation. Other research on the role of guidance and counseling teachers in overcoming aggressive behavior at SMKN 2 Palangkaraya students. This research only produces a product in the form of a portfolio containing records of student behavior." (Aliyah & Safitri, 2020; Universitário et al., 2019).

The three research results above show that the behavior or character that appears in students is only recorded and archived in the form of a portfolio. The weakness of the research above is that guidance and counseling teachers track student behavior and are only limited to recording and using it themselves by the teacher without being able to access it by other parties. Therefore, it is necessary to develop an application-based student behavior tracking tool. All information and knowledge resulting from recording student behavior is managed in an integrated manner (knowledge management) and can be accessed by parties who need it. This research tries to develop an application-based behavior recording tool known as the Knowledge Management-Based Behavior Tracking App.

An application is a user-created program intended to perform a specific task (Ceptureanu et al., 2020; Sobolewska & Bitkowska, 2022). Application programs are ready-to-use programs or programs designed to carry out a function for users or other applications. Application is also defined as the use or application of a concept that is the subject of discussion or as a computer program created to help humans in carrying out certain tasks. Software applications designed for specific practitioner use, this broad classification can be divided into 2 (two), namely: a. Specialist software applications, programs with integrated documentation designed to perform a specific task. B. Packaged application, a program with integrated documentation designed for a specific type of problem. From the two definitions above, it can be concluded that an application is a set of commands or code that is arranged systematically to carry out commands given by humans through computer components or hardware that humans use in running application programs, thus helping humans in running application programs. provide solutions to what you want.

Behavior is an individual's response to a stimulus or action that can be observed and has a certain frequency, duration and purpose, whether consciously or unconsciously. Behavior is a collection of various factors that interact with each other (Ahdan & Setiawansyah, 2020; Kadir, 2017). The concept of behavior from a biological perspective is an activity or activity of the organism concerned. Human behavior is basically human activity itself so that human behavior has a very wide range, including walking, talking, reacting, dressing and so on. For the purposes of an analytical framework, it can be said that behavior is what an organism does, whether it can be observed directly or indirectly. ((Calpe-López et al., 2020; Darwis et al., 2021). Student behavior at school needs to be paid attention to and recorded as an effort to build character, good behavior and discipline based on school rules and regulations.

Management to maintain the continuity of business activities that receive explicit attention which is then reflected in strategies, policies and practices at all levels of the organization. This management is carried out by creating a direct link between the organization's intellectual assets (both explicit and tacit) and knowledge management results (Al-Dmour et al., 2023; Budiman et al., 2020). Previous research states that knowledge management is doing what is necessary to obtain maximum knowledge resources.

Therefore, knowledge management is also about creating, explaining and distributing knowledge for reuse, knowledge and study within the organization. Knowledge management is the activity of various knowledge between individuals in an organization which is managed through the process of collecting, compiling, storing and accessing information to increase the effectiveness, efficiency and productivity of the organization. (Almajali et al., 2019; Zahid et al., 2020).

Knowledge Management (KM) itself is a way for someone to obtain knowledge and utilize it (Dewi, 2023; Zhang et al., 2020). Something that is very important in the world of education, especially academic and not just intellectual (Amrullah, 2020; Nuryana, 2023). Through knowledge management, school organizations can collect new knowledge and discover new knowledge and be able to use it to make decisions (Dinasari et al., 2020; Tegeh, 2020). Therefore, the use of knowledge management is not only to achieve school goals but also to realize school ideals and improving the performance, especially of guidance and counseling teachers, and increasing school excellence. Therefore, the application of knowledge management cannot be separated from individual behavior in an organization (Emzir, 2020; Escrivão & Silva, 2022). Novelty in this research **t**lies in the integration of more sophisticated technology with artificial intelligence (AI)-based behavioral analysis features as well as a more interactive collaborative model between schools and parents**.** Different from previous research which only focused on recording student behavior, this innovation includes real-time processing of behavioral data**,** analyzing behavioral trends using machine learning, as well as providing proactive intervention recommendations for teachers and parents. Additionally, the app offers a more dynamic two-way feedback feature**,** enables direct, data-based communication between schools and parents through a personalized dashboard**.** With this approach, this research not only increases the effectiveness of monitoring student behavior, but also strengthens evidence-based collaboration between schools and families in supporting students' academic and social development more comprehensively.

This research aims to develop a knowledge management-based application which can be used to monitor and analyze student behavior in real-time, resulting in more accurate and relevant data for schools and parents. In addition, this research aims to increase collaboration between schools and parents through a data-based interactive communication platform, which allows more active involvement in supporting students' academic and social development. By applying artificial intelligence (AI) and machine learning technology, this research also seeks to analyze student behavior patterns and provide appropriate intervention recommendations for teachers and parents. Furthermore, this research wants to test the effectiveness of the application in increasing parental understanding and involvement in the development of student behavior and its impact on discipline and academic achievement. Finally, this research also aims to provide a two-way feedback system that allows for a more efficient and transparent exchange of information between schools and families.

2. METHOD

The method used is a research and development method which refers to the ADDIE development model. Design Analysis, Media Development, Implementation and Evaluation. R&D is the process or steps to create new products or improve existing products. In this research, R&D was chosen because this research seeks to develop a tool for recording student behavior which was originally manual into an application. Thus, the use of research and development methods in this research aims to produce a particular application, namely an application for recording student behavior. Research and development of this recording device is a scientific process that identifies needs, develops products, and validates the product as a new product that meets teachers' needs in documenting student behavior records. A new product is created using planned techniques and field tests to meet standards of quality, efficiency and effectiveness. The research stages are presented in Figure 1.
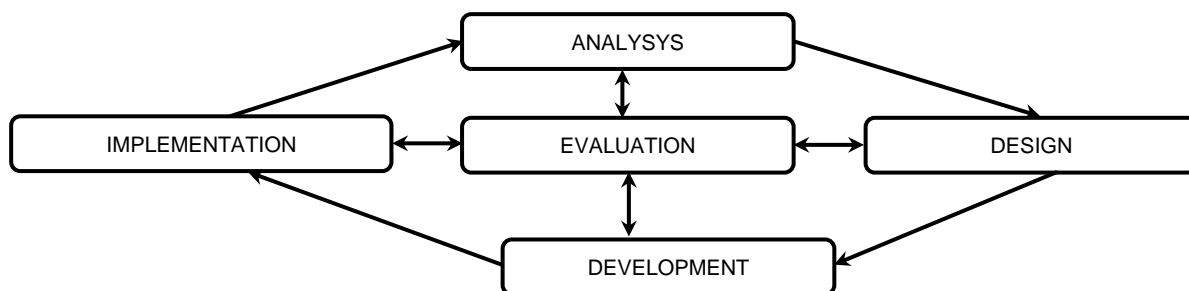

Figure 1. Stages of ADDIE Development

This research procedure begins with analysis: At this stage, a needs analysis, usage analysis, and reporting/evaluation analysis are carried out. Needs identification is carried out using a needs analysis questionnaire instrument. Design: The design of this behavior tracking application is based on the results of a needs analysis by taking into account the regulations that apply in the school, appropriate and inappropriate behavior, guidance counseling teachers and homeroom teachers as behavior recorders, homeroom teachers as reporting behavior records to parents, parents as recipient's student behavior reports from school. At this stage: give the application a name (behavior tracking application), Application users. This application is used by guidance and counseling teachers, homeroom teachers and school principals. Application usage guide. Application Development. Applications are developed according to school needs. When a student advances, changes classes, or graduates, the application will adjust the student's name according to the student's data. Implementation. This stage is the stage of implementing the design for developing student behavior recording. From each test carried out, feedback is obtained as a basis for revising the product until the final product is obtained. Evaluation. At this stage the product is evaluated as a form of revision from IT experts and management experts. Once revised, the product is ready to be tested in the field (large-scale trial) to find out how effective its implementation is and whether teachers and parents accept it.

Participants in this research were teachers and students of SMPIT Rahmaniyah Bogor. The number of teachers involved in this research was 41 people, 120 students, and 120 parents. As many as 80% are teachers and homeroom teachers and the other 20% are guidance and counseling teachers. The involvement of teachers and homeroom teachers is because apart from being responsible for student activities, they also have to report student activities to the homeroom teacher. The guidance and counseling teacher is the spearhead in directing and monitoring student activities. The selection of participants was based on the results of an analysis of school needs that teachers and homeroom teachers were required to be able to record every student's behavior at school and report it to related parties including parents via the application. Based on the results of the needs analysis, the school recommended teachers, homeroom teachers, guidance counselors and students proportionally representing each grade level to become participants in this research. To validate research instruments and products, researchers involved three experts, namely material/content experts, IT experts, and management experts. The material/content expert is a psychologist from Universe Enlightenment Indonesia Consulting. The IT experts are IT experts from BSD Education, and the management experts are academics from universities that have Educational Management study programs.

To determine its relevance to this research, researchers used a data collection method called a questionnaire which was given directly to respondents, material experts and IT experts. A questionnaire consists of a series of questions or written statements that are given to respondents to answer. Data analysis techniques from the validation test questionnaire were assessed using a Likert rating scale of 1 to 4 as follows (Sugiyono, 2020; Sumanto2014, 2020). Criteria for the quality of interpretation of Likert Scale scores can be seen in Table 1. A model is declared feasible if the average assessment score is ≥71 (Durst & Zieba, 2021; F. Fauziah, 2020).

Table 1. Likert Scale Model Assessment

Percentage	Interpretation
Figure 0%-20%	Very bad
Figure 21%-40%	Not enough
Figure 41%-60%	Enough
Figure 61%-81%	Good
Figures 81%-100%	Very good

To carry out data processing, researchers used validity and reliability tests. Instrument validity testing is carried out to determine the level of validity of an instrument or measuring tool. The results of this validity test are to see that an instrument is suitable to be used to measure what it should measure. To test the validity of the instrument, the product moment person technique was used. Instrument reliability testing is used to prove whether an instrument is suitable for use in data collection. The validity test was carried out using the Cronvabch Alpha formula. Úàstra Study, As a pre-research stage, the researcher conducted a literature study related to the results of research on student behavior recording devices which are widely used in various schools. A literature study was carried out to clearly define the problem to be researched, namely behavior, behavior tracking applications and knowledge management. Instrument Development: The next stage is for the researcher to develop the instrument. The instruments developed in this research were questionnaires and documentation. The questionnaire was developed to collect data in the form of participants' responses to the development of a student behavior recording application. The

instrument development stages include a literature review to determine approaches that can be used to measure and collect research data. Conduct FGDs with experts related to the product to be developed, namely material/content experts, IT experts and management experts. The next stage is to carry out trials on a small sample to determine the validity and reliability of the instrument. Next, revise the instrument. Preliminary research was carried out to collect information regarding student behavior, student behavior recording devices that teachers have used, as well as interviews with school management regarding the application or implementation of knowledge management in schools. Preliminary research data was analyzed to find out which applications were considered appropriate and relevant for recording student behavior accurately and easily accessed by related parties, including students' parents.

Experimental Design, In this research, model testing is important to find out whether the model developed (behavior recording application) is suitable for use or not. Limited model testing was carried out on 10 teachers and 20 students. The teachers involved try to observe predetermined student behavior and then record the behavior carried out by students in the application that has been developed. The results obtained from limited trials are then used as a basis for making improvements to the applications that have been developed. The next stage, researchers conducted extensive trials on 20 teachers and 40 students representing grade levels, namely grades 7-9. Test this extensively. Testing the effectiveness and implementation of the model was carried out to find out whether the behavior recording application being developed was in accordance with the stated objectives or not, namely recording student behavior in real time through the application and then recapping it and conveying it to students. ' parent. After the model developed was proven effective, the model was then widely applied to all predetermined participants. To test the input and output results of student behavior data, researchers used black box testing, namely software testing designed without looking at the process to obtain output without knowing the structure of the software code and whether the software used in the application is appropriate. works well or not.

3. RESULT AND DISCUSSION

Result

This behavior recording application functions as application-based data that records automatically as material for reporting student behavior while at school to be reported to parents. Recording this behavior is used as material for appreciation and correction of student behavior at school. If students behave well they will get additional points (rewards), if their behavior is not good or violates the rules then the points will be minus or deducted. Giving rewards is one way for teachers to appreciate and appreciate students' good and commendable actions or behavior.

The main data on student behavior recorded in this application is based on knowledge management, namely teachers, students and parents have knowledge about the positive culture at school which is outlined in school regulations and the school code of ethics which functions as behavioral guidelines in the educational process. implemented at school. Based on the results of black box testing, data was obtained that all software functions functioned well. The following are the results of testing the behavioral tracking application software. Testing Scheme Using the Black Box Testing Method is presented in Table 2.

Table 2. Testing Scheme Using the Black Box Testing Method

Test Items	Test details
In and Out	Validate entry and exit from the application
	Student Data Search
Manage Student Data	Add Student Data
	Change Student Data
	Delete Student Data
	Search Class Data
Manage Class Data	Add Class Data
	Change Class Data
	Delete Class Data
	Look for Positive Behavioral Data
Manage student behavior based on	Look for Negative Behavioral Data
knowledge management	Change Behavioral Data
	Delete Behavioral Data
	Student Data Search
Manage Student Data	Add Student Data
	Change Student Data

Test Items	Test details
Manage Material Data	Delete Student Data
	Ingredient Data Search
	Add Material Data
	Changing Material Data
	Delete Material Data
Manage Behavioral Assessment Data	Search Behavioral Assessment Data
	Add Behavioral Assessment Data
	Change Behavioral Assessment Data
	Delete Behavioral Assessment Data
	Publish and Close Behavior notes
	View Behavior note details
	View Behavior Report
	View the Behavior Item Report

The results show that all functions in the software can function well and can be relied upon to record and process student behavior records made by the teacher and make automatic recapitulations. This proves that this application is suitable for use to record student behavior. This knowledge management-based behavior tracking application was developed using data, school operational standards, policies, school strategic plans outlined in the form of a guidebook and school regulations approved at the start of the school year. In the guidebook there are points of violations and rewards for students which are implemented in the behavior recording application to make it easier for teachers and homeroom teachers to record them and report them in the form of a behavior record report to the students' parents. The following is an example of the results of the recapitulation of recording student behavior through this application. The behavioral tracking application description report is presented in Table 3.

Table 3. Behavior Tracking Application Description Report

No	Date	Category	Information	Detail	Point
1	18 April 2022	Gift	*Khatam* Al Quran 1x in a month	Ramadan Year 2022	+5
2	2 April 2022	Gift	Always come to school on time for 1 week	-	+2
3	March 25, 2022	Gift	Dhuha prayer at least 4 times a week	-	+5
4	March 12, 2022	Gift	Likes to help and becomes a loyal friend for three months.	-	+5
5	March 11, 2022	Gift	Dhuha prayer at least 4 times a week	-	+5

The data explains that the student concerned on April 18 2022 received an additional reward of 5 points for completing reading the Koran once a month, on April 2 2022 he received an additional reward of 2 points for always coming to school on time for 1 week. On March 25 2022, you will get an additional reward of 5 points for praying Dhuha at least 4 times a week. On March 12, 2022, you will receive an additional reward of 5 points for being helpful and loyal for three months. Points are added and subtracted based on school regulations which are in the form of a rule book and have been socialized by the school. The results of Material/Content Expert Responses to the Behavior tracking application are presented in Table 4.

Table 4. Results of Material/Content Expert Responses to the Behavior tracking application

No.	Measurable Aspects	Percentage of Achievement	Interpretation
1.	Content Coverage	96%	Very good
2.	Presentation Techniques	92%	Very good
3.	Language	100%	Very good
	Average of all aspects	**96%**	**Very good**

These experts' responses prove that this application is worth using and developing. The following are the results of the material/content expert's responses. The results of IT Expert Responses to the Behavior Tracking Application are presented in Table 5.

Table 5. Results of IT Expert Responses to Behavior Tracking Applications

No.	Measurable Aspects	Percentage of Achievement	Interpretation
1.	Ease of access	92%	Very good
	Ease of operation	90	Very good
2.	Ease of recording	81%	Good
3.	Recording accuracy	99%	Very good
4.	Availability of software and hardware	80	Good
	Average of all aspects	**88.4 %**	**Very good**

Table 6. Management Expert Responses to Behavior Tracking Applications

No.	Measurable Aspects	Percentage of Achievement	Interpretation
1.	Staff availability	100%	Very good
	Organizational structure	100%	Very good
2.	Access feedback	81%	Good
3.	Serve	95%	Very good
4.	Its relevance to the school's vision	97%	Very good
	Average of all aspects	**94%**	**Very good**

The results of application product validation responses by material/content experts regarding aspects of content coverage, presentation techniques and language show an average of 96% and are in the very good category. The results obtained from IT experts regarding aspects of ease of access, ease of operation, ease of recording, accuracy of recording, and availability of soft and hardware obtained results with an average of 88.4% (very good). Meanwhile, the results of management experts' responses and validation regarding aspects of staff availability, organizational structure, access to feedback, services, and relevance to the school's vision obtained an average result of 94% and was in the very good category. These results indicate that this application is worthy of development.

In general, the response from experts is to continue to prioritize the needs of students and parents based on educational aspects. The openness and communication that schools build with parents using this application needs to be implemented consistently so that this application can be utilized optimally. This application transparently conveys student behavior, both positive and negative, for the education and coaching process carried out jointly by the school and parents. Consistently conveying information about student behavior is very important so that parents can monitor and know what their children are doing at school. As expressed by Fauziah F (2020), the homeroom teacher or guidance counselor is the person who knows best about student behavior at school. All student behavior data is recorded and collected to be submitted to parents. This data must be submitted consistently and continuously so that parents can monitor their child's activities at school at all times.

After revising the results of the feasibility test for the product being developed, trials and implementation of product use were carried out. The trial was carried out for two weeks. At this stage the teacher carefully notes every student's behavior, both positive and negative. Each behavior is recorded accurately and additional points are awarded for positive behavior and deduction points for negative behavior. The recording results are then summarized and communicated to parents so they can be accessed at any time. The results of product use trials showed that 97% of students strongly agreed and gave positive responses; 100% of teachers gave positive responses and agreed with this application; and 98% of students' parents strongly agreed and gave positive responses. Product evaluation is carried out by distributing questionnaires to teachers to determine the usefulness of the application in supporting daily work. The evaluation results are presented in Table 7.

Table 7. Product Evaluation Results for Teacher Behavior Tracking Applications

No	Question	And	A	And	And	Total
1	Is this application useful for your task?	18	23	0	0	41
	Percentage	**56%**	**44%**	**0%**	**0%**	**100%**
2	Does this application help you understand	18	21	2	0	41

No	Question	And	A	And	And	Total
	about knowledge management?					
	Percentage	44%	51%	5%	0%	100%
3	Does this app make it easier for you to report student behavior at school?	13	25	3	0	41
	Percentage	32%	61%	7%	0%	100%
	Average	44%	52%	4%	-	

Based on the results of an evaluation of 41 teachers regarding the use of this application regarding the usefulness of this application for teachers, the results obtained were 56% strongly agreed; 44% agree. Regarding teachers' understanding of knowledge management; 44% of teachers strongly agree; 51% agreed, and 5% disagreed. Regarding whether this assignment helps make teachers' jobs easier, 32% strongly agreed, 61% agreed, and 7% disagreed.

Table 8. Product Evaluation Results for the Behavior Tracking Application for Parents of Students

No	Question	And	A	And	Vda	Total
1	This application is useful for you to find out student behavior at school.	52	68	0	0	120
	Percentage	43%	57%	0%	0%	100%
2	This application can record student behavior at school accurately.	68	48	4	0	120
	Percentage	57%	40%	3%	%	100%
3	This application adds to your insight regarding the management of knowledge in schools, especially in the aspect of sharing knowledge (disseminating information to parents)	53	63	5	0	120
	Percentage	48%	52%	4%	0%	100%
	Average	48%	50%	2%	0	

Based on the evaluation results of 120 parents of students, it appears that this application is useful for knowing their children's behavior at school; 43% strongly agree, 57% agree. The reliability of this application can record student behavior accurately; 57% strongly agree, 40% agree, and 3% disagree. Implementation of this application is part of knowledge management (knowledge sharing) in schools: 48% strongly agree, and 52% agree; and 4% disagree.

Discussion

The discussion above shows that the use of ICT in counseling guidance is very important. In line with what previous research stated, guidance and counseling teachers must be able to utilize ICT in carrying out their main tasks. The use of this technology will really help teachers in documenting students' notes or portfolios while they are at school (E. R. Fauziah, 2019; Raudeliuniene et al., 2020).. Regarding the use of ICT, teachers are also required to innovate in managing student behavior data. How student behavior record data can be easily documented, analyzed and reported to interested parties. Therefore, guidance and counseling teachers are required to continue to innovate in recording student behavior, including using certain applications that can make it easier for guidance and counseling teachers or homeroom teachers to report data on student behavior developments(Setyosari, 2020; Sudaryono, 2019). This research focuses on development knowledge management based application Which aims to monitor student behavior and improve collaboration between schools and parents. In the world of education, monitoring student behavior is an important aspect in supporting their academic and social development. However, conventional monitoring systems often face obstacles in terms of efficient data management, limited communication between schools and parents, and a lack of data-based analysis in identifying student behavior patterns. Therefore, this research proposes a technology-based solution that can overcome these obstacles through the use of artificial intelligence (AI) and machine learning in student behavior analysis.

The application developed in this research is designed to collect, store and analyze student behavior data in real-time, thereby enabling schools and parents to gain deeper insight into student

development (Hidayatullah et al., 2019; Ida Fonseca & Farinha, 2020; Sibero, 2020). One of the main features in this application is an interactive dashboard that provides quick access to student behavior reports, as well as a notification feature that provides early warning if there are behavior patterns that need special attention. With a two-way feedback system, teachers and parents can communicate more effectively and provide more targeted interventions according to student needs. The research results show that the use of this knowledge management-based application has a positive impact on parental involvement in monitoring student behavior (Notoatmodjo, 2020; Sijtsma et al., 2020). Parents find it easier to access information regarding their child's development, while teachers can submit reports in a more structured and data-based manner. In addition, the application of AI in this application allows the system to identify recurring behavioral patterns and provide intervention recommendations that can help teachers and parents determine the best steps to support student development. However, this research also found several challenges in implementing the application, such as the need for adequate digital infrastructure and the readiness of schools and parents to adopt this technology.. Not all schools have the same access to technological devices and stable internet, so adoption of this application may vary depending on the conditions of each institution. In addition, although AI technology can help in behavioral analysis, active involvement from teachers and parents is still needed to ensure that the interpretation of the data provided by the system is appropriate to real conditions in the field.

By considering these various findings, this research provides recommendations for this application to be further developed with a lighter version that can be used offline, so that it can reach more schools, including those in areas with limited digital infrastructure. Apart from that, there needs to be a training program for teachers and parents to ensure that they can use this application optimally and understand its benefits in supporting student development. With proper implementation, this knowledge management-based application has the potential to become an effective tool in improving monitoring of student behavior and strengthening collaboration between schools and parents to create a more inclusive and data-based educational environment (Rosa, 2020; Sangkala, 2019).

The implications of this research cover various aspects in the world of education, especially in increasing the effectiveness of communication and collaboration between schools and parents in monitoring and guiding student behavior. With knowledge management-based applications, Schools can manage student behavior data more systematically and based on evidence, so that decision making regarding educational interventions becomes more targeted. In addition, the use of artificial intelligence (AI) and machine learning in behavior analysis allows early predictions of problems that students may face, so that schools and parents can take more effective preventive steps. From a parent's perspective, the app provides easier and more transparent access to a child's development, encouraging more active involvement in their education. More broadly, this research contributes to the development of educational technology (EdTech) by presenting a data-based student monitoring model that can be adapted by other educational institutions. Thus, this research not only has an impact on improving the quality of student behavior management, but also on strengthening school and family relationships in creating a learning environment that is more supportive and oriented towards students' holistic development.

Although this research offers an innovative solution in monitoring student behavior based on knowledge management, there are several limitations that need to be considered. One of the limitations is dependence on digital technology and infrastructure, which may not be fully available or optimal in all schools, especially in areas with limited internet access. In addition, the effectiveness of this application is highly dependent on the active participation of teachers and parents, which can be a challenge if there are barriers to technology adoption or time constraints. Accuracy of behavioral analysis using artificial intelligence (AI) and machine learning It can also be influenced by the quality and amount of data collected, so it requires good data management so that the system can work optimally. As a recommendation, further research could focus on developing a lighter version of the application that can be used offline, so that it can be accessed by schools in areas with limited digital infrastructure. Apart from that, training and mentoring programs are needed for teachers and parents to increase understanding and acceptance of this technology, so that collaboration can run more effectively. The use of data in the system also needs to be maintained with high standards of security and privacy, to ensure that student information is maintained. By paying attention to these aspects, it is hoped that this application can be more effective in supporting monitoring of student behavior and strengthening cooperation between schools and parents in educating children more comprehensively.

4. CONCLUSION

Based on the results and process of developing a behavior tracking application based on knowledge management and expert validation test results, this application has high feasibility for development and

use. This application can make it easier for BK teachers to supervise and develop their students. Apart from that, it makes it easier for homeroom teachers to report student behavior to parents based on data and facts because it includes the date, time and specifications of the behavior carried out. This is also an effort so that schools can provide maximum services in order to achieve quality educational services. Knowledge management-based behavior tracking applications can record student behavior accurately. These results prove that the knowledge management-based behavior tracking application is very effective in use. Apart from making it easier for guidance and counseling teachers, homeroom teachers and teachers to record student behavior, this behavior recording data can also be accessed by parents and used as a basis for handling students.

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