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Development of Technology and Information based Supervision Applications to Improve the Performance of PJOK Teachers

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Abstract

Subdistrict, Serdang Bedagai RegencyThe type of research in this study is qualitative research development studies used in a study must be based on the problems raised. Research and development in this process Using a quantitative approach and using Research and Development research design This development research aims to produce an application product that can streamline the task of the principal in supervising while improving the performance of physical education teachers. The application developed is based on technology and information so that it is easy to use for supervisors in this case is the principal. This application product is suitable for use based on validation by supervision experts, technology and information experts, application design experts, trial results and respondent response results. Application product development research makes the principal's duties in the field of supervision more effective and efficient so that the principal as a supervisor is able to carry out his duties optimally.

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INTRODUCTION

The development of technology and information, especially those that occur in Indonesia, is very dynamic. These developments certainly have an impact on all fields, such as economy, health, social and of course on the field of education. In this case, Ahmad D. Marimba defines education as guidance carried out consciously by educators to students that aims to shape personality physically and spiritually. From the description above, it can be concluded that educational goals can be achieved if the learning process is carried out effectively and efficiently in order to achieve optimal goals. One indicator of the high quality of learning in education is the opportunity and space for students to develop their potential and talents and can meet the emotional needs of their students. In addition, to create quality learning must also begin with student involvement in learning and looking for material in learning. But in practice, learning always makes the teacher the sole source of learning, so it will indirectly limit the active attitude of students in looking for the material of a lesson, because students are used to just waiting for the material given by the teacher. This is certainly contrary to the learning process that should be applied in improving the quality of education.

One of the efforts that can be done is the development of technology and information both in the implementation of education in general and as a learning medium in the classroom. Thus, it is hoped that the learning process carried out will be better, which will eventually improve the quality of education in Indonesia . Quality education aims to realize a peaceful, democratic, moral, skilled, competitive, advanced and prosperous Indonesian society in the forum of the Unitary State of the Republic of Indonesia which is supported by Indonesian people who are healthy, independent, faithful, pious, have noble character, love the motherland, based on law and the environment, master science and technology, have a high work ethic and discipline . (Cholik, 2017) (Yanti STAI Rakha Amuntai et al., 2021) Digital literacy is also the ability to use information technology. With this program we can find that: First, the government made a breakthrough with visionary programs to improve the quality of education. Second, school principals must manage information technology if they want to manage their supervisory profession effectively, and teachers can also improve their performance through information technology management. In Government Regulation No. 19 of 2005, Article 57 classifies supervision as consisting of two parts, namely (1) academic supervision and, (2) managerial supervision. For managerial and academic supervision, the difference can be basically reviewed, namely managerial supervision, able to foster the Principal and staff in improving school performance. The ability of teachers to manage learning activities has a high responsibility for the success of learning, and this is as great as the responsibility of the principal in formulating learning success. Therefore, the principal must carry out good and correct supervision in accordance with the principles and techniques and the right approach so that this supervision can improve teacher performance in the future. A teacher is required to make a very large contribution to education in the school environment, especially in the implementation of teaching and learning because teachers play a central role in teaching and learning activities. Teacher performance cannot be separated from the influence of the principal's leadership. The main priority is to improve and improve the quality of learning by improving the performance of teachers who handle it. Teachers have great potential in each of them, but this potential has not been fully explored. Therefore, stimulation is

needed from several parties including supervisors and principals as stated through educational supervision activities.

The principal in this case as the head of the education unit has a very important role in carrying out quality assurance internally through his academic supervision duties. The administrators were already familiar with the concept of "inspection". Supervision comes from two words, namely "super" and "vision", super can be interpreted as excess, people who have advantages. While vision is defined as foresight. So, supervision can literally be interpreted as the advantage that people have to see far ahead. People who supervise are called supervisors or defined as people who have foresight, while people who are subject to supervision are called supervisors or people who are subject to supervision carried out by the supervisor. The supervisory activities carried out by supervisors are called supervision activities. So, supervision is supervision activities carried out by people who have advantages or abilities, so that the performance of the person supervised becomes better . From the definition of supervision, it can be concluded that the impact of supervision affects the supervised and supervisory.

Supervision can actually be carried out by the principal who acts as a supervisor . The principal as a supervisor must be able to manifest in one ability to compile, and also carry out educational supervision programs, and utilize the results. According to frugality The principal's skill to conduct academic supervision is the principal's performance of preparing, observing and also recording the implementation of learning, providing feedback, carrying out activities as a follow-up to the results of supervision. While the purpose of academic supervision is to help teachers to improve and moreover improve implementation in learning. (Munthe & Villa Delvina Br Ginting, 2016) (Karyati, 2020)

In the Ministry of National Education (2007) explained that clear indicators of the principal's supervision competence in planning an academic supervision program for teacher teachers in order to improve teacher professionalism, namely: (1) identifying and grouping problems / needs in the development of permanent learning based on the academic supervision area, (2) formulating academic supervision objectives which include direct outputs (outputs) and impacts (outcomes), (3) identify and determine an effective and appropriate approach to academic supervision with the problem being developed, (4) when establishing the mechanism and design of an academic supervision operation must be in accordance with the objectives, approach, and strategy chosen. (5) identify and determine the resources (people, information, equipment, and funds) needed for academic supervision activities, (6) prepare a schedule for the implementation of academic supervision, (7) Develop procedures and mechanisms for monitoring and evaluating academic supervision, (8) selecting and also establishing measures that ensure the sustainability of academic supervision activities. An application is a computer program in the form of software that is made to do and carry out special tasks by its users for certain purposes. While learning applications are software that is created or designed for certain purposes in conveying information to students in learning to stimulate the thoughts, attention, feelings, and abilities of students so that the impact will encourage their enthusiasm for learning. Learning applications act as a means of supporting or supporting learning to improve learning activities, so that their role does not replace the role of the teacher as a whole . (Yustitia et al., 2021)

The progress of science and technology has a huge influence in various areas of human life. Education as an inseparable part of the human maturation

process certainly on the one hand has a great contribution to the development of science and technology, but on the other hand education also needs to take advantage of advances in science and technology in order to be able to achieve its goals effectively and efficiently. Advances in science and technology have influenced the use of teaching aids in schools and other educational institutions. Today learning in schools began to be adjusted to the development of information technology, resulting in changes and shifts in the educational paradigm. This indicates that the use of information technology in the learning process in the classroom has become a necessity as well as a demand in this global era . . Physical education, sports and health are very important subjects for today's students, because with knowledge about health and sports practice, students can strengthen themselves, among others, by increasing endurance (immunity) to prevent the coronavirus. Regular exercise is one way to maintain health. Becoming a professional physical education teacher is not as easy as you might think. It is a big mistake to believe that physical education teachers only carry whistles when they teach. Maybe this assumption is because you have seen unprofessional teaching teachers. For example, teachers only teach while sitting, whereas students have to practice on their own without serious motivation, appreciation, or attention . (Flandi, 2022)

Performance is a person's ability to implement attitudes, skills and knowledge simultaneously. The term performance or work performance comes from job performance, namely work performance achieved by a person in carrying out the main duties, functions and responsibilities given to him. Performance is also defined as the level or degree of implementation of one's duties on the basis of what competence he already has. Performance can be interpreted as an expression of one's potential in the form of one's behavior or way of carrying out one's duties, so as to produce a product (work results) which is a manifestation of all duties and job responsibilities given to him (Ministry of Education, 2008). According to , Performance comes from the word (Akbar, 2018) job performance or actual performance (work performance or actual achievement achieved by a person). Understanding performance (work performance) is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him. According to Sjafri Mangkuperwira who said that performance is the result or level of overall success of a person during a certain period in carrying out duties compared to various possibilities, such as work result standards, targets or objectives or criteria that have been determined in advance and have been mutually agreed. Performance is also defined as a form of one's behavior or organization with an achievement orientation. A person's performance is influenced by several factors such as: ability, capacity, hold, incentive, environment and validity. Meanwhile, according to Hadawi Nawawi, performance is defined as what someone does or does not do in carrying out their basic duties.

METHODS

The type of research in this study is qualitative research, development studies used in a study must be based on the problems raised. Research and development in this process Using a quantitative approach and using Research and Development (R&D) research design according to (Sugiyono (2012) .

Participants

Research samples or respondents are parties who are sampled in a study. According to Suharsimi Arikunto gave a limit on the subject as an object, thing or

person where the data for the research variables are attached, and the one in question. The subject of research has a very vital role, because based on the subject of research, a research can run according to plan. From the research subject, the research variable data will be observed. Determining the sample in this study uses the Nonprobability Sampling technique with the Purposive Sampling method where the criteria taken are schools that have wifi networks. The preparation of test subjects in this study involved 23 principal subjects and 23 PJOK teacher subjects of public elementary schools, Sipispis District, Serdang Bedagai Regency. The preparation of test subjects in this study with stage 1 tests (small groups) and stage 2 tests (large groups) is aimed at:

1. In the phase 1 test (small group), this study involved as many as 10 subjects consisting of 5 school principals and 5 elementary PJOK teachers in Sipispis sub-district, Serdang Bedagai Regency.
2. In the phase 2 test (large group), researchers involved 36 people consisting of 18 principal subjects and 18 elementary PJOK teacher subjects in Sipispis sub-district, Serdang Bedagai Regency.

Sample Recruitment Procedure

This research was conducted at the Sipispis Sub-District Public Elementary School, Serdang Bedagai Regency. The experimental subjects in this study were 23 principals and 23 PJOK teachers in their respective schools, which were taken by sampling techniques by distributing Google Forms with certain considerations in accordance with the research objectives.

Procedure

The research design used in this study is in accordance with the steps for using the Research and Development (R&D) Method by Sugiono . So the development research procedure is summarized as follows: (Palmizal et al., 2020)

1. Identify Potential Problems

Research can depart from potential problems. Potential is that everything that can be utilized will have Sugiyono's growing value . This research contains potential problems that can be raised in the development of science and technology, but in the educational environment, especially in public schools, the process of evaluating teacher performance or supervising (Palmizal et al., 2020) learning used on average is still a lot manual so it is considered less effective.

1. Information Collection

Judging from the potential problems above, the next step is to find information in the field. Based on observations that have been made so far, the Supervision assessment process carried out by the principal to PJOK teachers in State Elementary Schools still uses a manual format, so it is less efficient and effective in the process.

2. Product Design

In this stage, it is to make an initial product in the form of a Technology and Information Supervision Application for principals and PJOK teachers of State Elementary Schools, Sipispis District, Serdang Bedagai Regency, where in making these products researchers must consult with IT expert material learning experts and a thesis proposal seminar has been carried out by researchers, this is done to review references and suggestions from examiners for development The products that researchers design can be used and have wide benefits.

Product design is a research design that will be used in writing scientific papers, in this case it includes planning that will be used to answer problems. To get the

appropriate product design, you must look at the problems that are the focus of research so that research can run effectively and efficiently.

The product design in this study is as follows

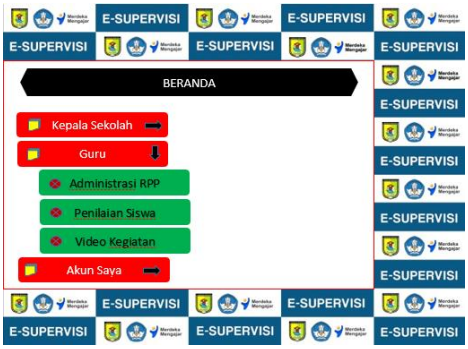

Figure 2. Application product design.

3. **Product Validation**

Product validation is a process of activities to assess whether the product design, in this case the new work system will rationally be more effective than the old one or not . Products from research will be validated by experts or experts who have experience to assess new products that have been designed, in order to find out the disadvantages and advantages. (Sugiyono, 2013) .

1. Product Revisions

After the product design is validated by experts, it will be possible to know the weaknesses of the product. These weaknesses will be revised for the better.

2. Product Trials

Product trials are carried out after the product has received an assessment by Materia Experts or media and IT Experts that the product being developed is feasible to be tested in several schools and by several principals. Product trials are conducted on a limited group. The purpose of this trial is to obtain information on whether the Technology and Information Supervision Application product for principals and PJOK teachers of Sipispis State Elementary School, Serdang Bedagai Regency, is effective and efficient as an assessment medium for school principals, especially on the performance of PJOK teachers. The data obtained from this trial is used as a reference to improve and improve the Technology and Information Supervision Application for PJOK principals and teachers of PJOK State Elementary Schools PJOK is the final product of this research. With this trial, the product quality of the Technology and Information Based Supervision Application developed has really been empirically tested and is worthy to be used as a Technology and Information Supervision Application for principals and teachers of PJOK State Elementary Schools, Sipispis District, Serdang Bedagai Regency.

3. End Products

The final product of this research is one that has been validated by experts and which has been tested to the Principals and PJOK Teachers of Public Elementary Schools, Sipispis District, Serdang Bedagai Regency.

Product design planning is carried out to finalize the research to be carried out. The steps taken for product design planning are:

1. Planning for making Web-based applications
1. Data collection to create a menu-program data menu
   Data collection needs to be done to determine the menu to be created in the application so that the program menu created can accommodate all elements of meeting process standards
2. Database planning using XM EYE software
3. Code generation using PHP 5 and HTML 5

Application development in the initial draft is validated by supervision experts and information technology experts so that this design is effective and efficient

in its use. Then after making the initial draft, proceed to design improvements after getting input from predetermined experts. The next process is a product trial that will be carried out to a small group of 10 people, namely 5 principals and 5 PJOK teachers as research subjects. In this trial it will be seen where the advantages and disadvantages of the product that has been designed. After input from experts and research subjects who use the product, design validation can be carried out as well as product validation by experts.

Data Design or Analysis

Data analysis is a process or effort to process data into new information so that the characteristics of the data are easier to understand and useful to be a solution to a problem. In general, the purpose of data analysis is to explain a data so that it is easy to understand. In this study, the data analysis technique used was a quantitative descriptive analysis technique with percentages. This technique is used to obtain quantitative data analysis from questionnaires that have been distributed. Through this Likert scale, the variables to be measured are described into variable indicators Then the indicator is used as a basis for the preparation of instrument item items which can be in the form of statements or questions. After the data is collected, the data will be analyzed with quantitative descriptive analysis techniques expressed in the distribution of scores and percentages, the next step is to descriptive and draw conclusions about each indicator, the suitability of aspects in the development of tool media can use It is a reference for assessing data resulting from expert validation This research is carried out in four stages which will later become guidelines in the implementation of research. A needs analysis was conducted to the principal to find out how much the need for application media in assisting the principal's task through the following question items:

Needs analysis question items using the Guttman scale. The results of the needs analysis of 23 school principals obtained the following data. From the table it can be seen that: 1) The principal's understanding of his duties as a supervisor is 100%. 2) The principal has supervised the physical education teacher 100%. 3) The principal has created a supervision program as much as 30% and those who have not created a program as much as 70%. 4) Principals who encounter problems or problems when they will supervise as much as 100%. 5) Principals who use the application in carrying out supervision as much as 0%. 6) Principals who feel effective in implementing supervision as much as 0% .7) Principals who want to use new methods in assisting supervision tasks as much as 100%. 8) Principals who need applications to streamline supervision tasks as much as 100%.

Based on the results of the answers from the needs analysis, it can be concluded that the idea of research for the development of technology- and information-based supervision applications to streamline the principal's supervision task so as to improve the performance of physical education teachers is very feasible .

Table 1. Interview Questions Using the Guttman Scale

No.	Question	Answer	
		Yes	Not
1	Do you understand the principal's supervision duties?		
2	Have you ever supervised a physical education teacher?		
3	Is your supervision of the physical education teacher programmed?		
4	Have you ever experienced problems		

	when supervising physical education teachers?	
5	Have you ever used an application to simplify the task of supervising physical education teachers?	
6	Has your supervision been effective?	
7	Do you want a new method to make it easier to supervise physical education teachers?	
8	Do you need a technology and information-based application to streamline your supervision tasks?	

Table 2. Percentage (%) of Needs Analysis Answers

No	Question	Answer	
		Yes	Not
1	Do you understand the principal's supervision duties?		
2	Have you ever supervised a physical teacher?		
3	Is your supervision of the physical education teacher programmed?		
4	Have you ever experienced problems when supervising physical education teachers?		
5	Have you ever used an application to simplify the task of supervising physical education teachers?		
6	Has your supervision been effective?		
7	Do you want a new method to make it easier to supervise physical education teachers?		
8	Do you need a technology and information-based application to streamline your supervision tasks?		

RESULT AND DISCUSSION

This development research aims to produce an application product that can streamline the task of the principal in supervising as well as improving the performance of physical education teachers. The application developed is based on technology and information so that it is easy to use for supervisors in this case is the principal. This application product is suitable for use based on validation by supervision experts, technology and information experts, application design experts, trial results and respondent response results. This research refers to the Borg & Gall development model which is simplified into 4 stages, namely the preliminary stage, validation stage, trial stage, and product revision stage.

Research Findings

- **Initial script for the development of technology and information-based supervision applications**

In this study, researchers developed a technology- and information-based supervision application based on personal experience as a principal in performing supervision duties for physical education teachers, where the implementation of supervision was considered less effective due to various problems that arose when performing the task. Problems can arise if the implementation of the programmed supervision is delayed because the principal or physical education teacher is unable to attend when the implementation schedule has been mutually agreed.

The results of interviews conducted with 23 principals found that: First, for question number one 100% answered that the principal understood the task of supervision. Second, for question number two, it was found that the principal had

100% supervised the physical education teacher. Third, for the third question, 64% of principals had supervised programmatically and 36% answered programmatically. Fourth, for the fourth question that as many as 100% of principals encounter obstacles when performing supervision duties. Fifth, for the fifth question, as many as 100% of principals have never used the application to help with their supervision duties. Sixth, for the sixth question as many as 100% of school principals answered that the supervision they did of Penjas teachers was not effective. For the seventh question, 92% of principals wanted a new way to make it easier to perform their supervisory duties more effectively. Eighth, for the eighth question that 100% of school principals need a technology and information-based application to streamline their supervision tasks.

When conducting research, the physical education teacher will fill in the completeness of learning administration in the form of a lesson plan (RPP) and a list of student grades ranging from daily assessments, midterm assessments, end-of-semester assessments and student report cards. Meanwhile, the principal can assess the performance of the physical education teacher through this application after seeing the completeness of the learning administration made by the physical education teacher. Assessments conducted by the principal include: Pedagogic, Personality, Social, and Professionalism. From the development of this application, it is hoped that the head of the school and the physical education teacher can use this product so that the effectiveness of the implementation of supervision can be achieved and the performance of the physical education teacher can also be improved.

- **Revision of Technology and Information-Based Supervision Application Development Script**

Application development carried out by researchers is an idea created based on personal experience which then researchers submit and discuss with supervisors and validators to get input or revisions related to technology- and information-based supervision applications that will be developed to improve the results of the research conducted. The research manuscript submitted to the supervisor and validator received a revision, from this guidance the researcher received input in compiling a menu display in the supervision application that had been designed, so that the input could be a reference in the implementation of the application to schools and physical education teachers.

- **Expert Validation**

Product Design Validation

The validation of the supervision application design involved three experts, namely: Masdinar, S.Pd is an elementary school supervisor in Sipispis sub-district, as Expert 1 supervision Prof.Dr. Imran Akhmad, M.Pd., and as Expert 2 supervision Dr. Nurkadri, M.Pd., is a postgraduate lecturer at Medan State University, as a technology and information expert, Ahmad Rizal, M.Kom is a lecturer at a state Islamic university as an application design expert.

- **Supervision Expert**

Supervision Experts provide an assessment of technology and information-based supervision application product design as Based on the table of results above, it can be seen the Histogram percentage of expert assessment of supervision of application products

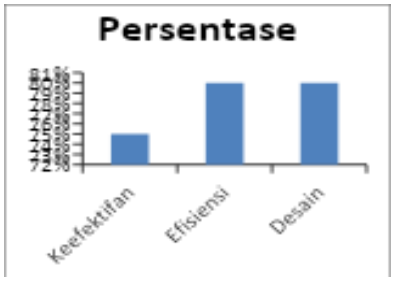

Figure 2. Percentage of the results of the supervision expert assessment of product design.

Based on the validation data of supervision experts in stage I above, it shows the results of the assessment on the aspect of application product effectiveness by 75%, assessment on the aspect of application product efficiency by 80%, and assessment on the application design aspect of supervision by 80%. The overall percentage of supervision application product assessment was obtained on an overall average percentage of 78.33% with a "feasible" rating kriteria meaning that the supervision application product can be used after improvements are made for phase II. The validation results in phase I are guidelines for developing product quality supervision applications before entering the phase II trial stage. Suggestions and input given by supervision experts on supervision application products are:

1. Inputting school data must be separated by each school.
2. The application must be able to be used quickly and precisely.
3. The principal assesses the teacher's performance objectively through the application.

a. Information and Technology Expert

Technology and information experts provide an assessment of the product design of technology and information-based supervision applications as follows: Based on the table of results above, it can be seen the histogram of the percentage of technology and information expert assessment of application products

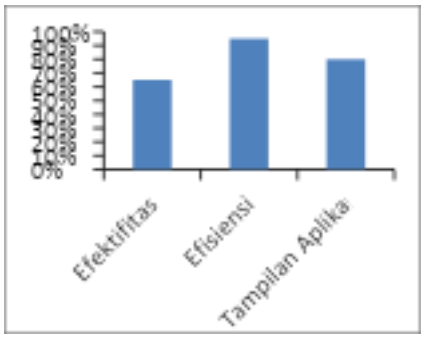

Figure 3. Percentage of Information and Technology Expert Assessment Results on Product Design

Based on the validation data of technology and information experts in stage I above, the results of the assessment on the effectiveness aspect of the application product by 65%, the assessment on the aspect of application product efficiency by 95%, and the assessment on the application design aspect of supervision by 80%. The overall percentage of supervision application product assessment is obtained on an average overall percentage of 80% with a "feasible" rating kriteria meaning that the supervision application product can be used after improvements are made for phase II.

The validation results of the two experts in phase I are guidelines for developing product quality supervision applications before entering the phase II trial stage. Suggestions and inputs provided by technology and information experts on supervision application products are:

1. Display menu to be adjusted to user access.
2. Clarify the teacher performance appraisal instrument by the principal.

b. Application Design Expert

Application design experts provide an assessment of the effectiveness, appearance of the application, and quality of the application. From the results of the assessment can be seen the following data:

Based on the table of results above, it can be seen the histogram of the percentage of application design experts' assessment of application products.

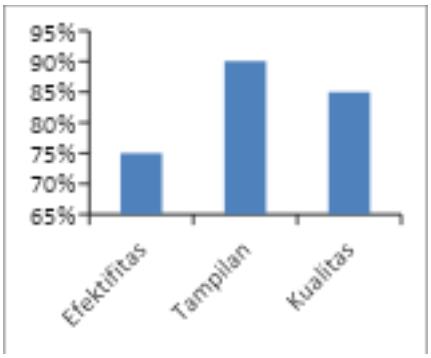

Figure 4. Percentage of application design expert assessment results on product design.

Based on the validation data of application design experts in phase I above, the results of the assessment on the effectiveness aspect of the application product by 75%, the assessment on the display aspect of the application product by 90%, and the assessment on the quality aspect of the supervision application by 85%. The overall percentage of supervision application product assessment was obtained on an overall average percentage of 83.33% with a "very feasible" rating kriteria meaning that the supervision application product can be used after improvements are made for phase II.

The validation results of the two experts in phase I are guidelines for developing product quality supervision applications before entering the phase II trial stage. Suggestions and inputs provided by technology and information experts on supervision application products are:

1. Add menu for two languages, namely Indonesian and English
2. Clarify the physical education teacher learning assessment instrument

Based on the conclusions above, this study has implications that the development of technology- and information-based supervision applications is very easy and provides effectiveness and efficiency for school principals and physical education teachers to improve their performance. This application is also easy to use anytime and anywhere as long as there is an internet network. The use of this application adds to the principal's method in carrying out his supervision duties. Furthermore, from the results of the development of the application, researchers will conduct further research in order to improve and wear the product..

CONCLUSION

From the results of the research that has been done, researchers concluded that application product development research makes the principal's duties in the field of supervision more effective and efficient so that the principal as a supervisor is able to carry out his duties optimally. The use of technology and information in supporting administrative fulfillment for physical education teachers can have a significant impact on improving the performance of physical education teachers. This technology- and information-based supervision application product is feasible to be used to streamline the principal's supervision task while improving the performance of physical education teachers. The use of application products is a new way for school principals to help supervision tasks that have been experiencing many obstacles in the field

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