Mobile-Based Elementary School Report Card Information System (SIRAM) to Reduce Teacher Stress Levels

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A B S T R A K

Rapor konvensional yang digunakan masih memiliki tingkat kerumitan yang tinggi, sehingga memicu tingkat stres guru ditiap akhir semester dalam penginputan nilai. Tujuan penelitian ini untuk menciptakan sistem informasi rapor SD berbasis mobile (SIRAM) untuk mengurangi tingkat stres guru. Penelitian pengembangan ini menggunakan model ADDIE. Pada penelitian ini menggunakan pendekan kuantitatif dan juga kualitatif. Subjek penelitian ialah adalah guru kelas 3 (tiga). Metode pengumpulan data menggunakan wawancara, pedoman observasi, kuesioner/angket, dan lembar rating scale. Teknik analisis data menggunakan uji one sample t-test. Berdasarkan analisis yang dilakukan hasil dari aplikasi SIRAM memiliki feature-feature Login, Create, Read, Update, Delete (CRUD). Hasil validitas isi yaitu sebesar 0,9, sehingga dinyatakan valid dengan tingkat validitas tinggi menunjukkan sudah layak dalam penggunaannya. Hasil uji efektifitas tingkat stres guru, dengan taraf signifikansi 0,05 (5%) didapatkan nilai t 1,761, maka aplikasi SIRAM tidak berpengaruh terhadap tingkat stres guru, sebelum dan setelah pemberian aplikasi SIRAM. Implikasi penelitian ini diharapkan dampak selanjutnya sekolah bisa berlangganan hosting sebagai penunjang aplikasi agar bisa terus menggunakan aplikasi SIRAM untuk ke depannya.

A B S T R A C T

The conventional report cards that are used still have a high level of complexity, thus triggering the teacher's stress level at the end of each semester in inputting grades. The purpose of this study was to create a mobile-based elementary school report card information system (*SIRAM*) to reduce teacher stress levels. This development research uses the ADDIE model. In this study using a quantitative approach as well as qualitative. The research subjects were grade 3 (three) teachers. Methods of data collection using interviews, observation guidelines, questionnaires, and rating scale sheets. The data analysis technique used the one sample t-test. Based on the analysis carried out, the results of the SIRAM application have Login, Create, Read, Update, Delete (CRUD) features. The result of content validity is 0.9, so that it is declared valid with a high level of validity indicating that it is feasible to use it. The results of the effectiveness test of the teacher's stress level, with a significance level of 0.05 (5%) obtained a t value of 1.761, then the *SIRAM* application did not affect the teacher's stress level, before and after the administration of the *SIRAM* application. The implication of this research is that it is hoped that the next impact will be that schools can subscribe to hosting as a support for applications so that they can continue to use the *SIRAM* application in the future.

1. INTRODUCTION

Assessment is a method used to identify the success of the learning process that has been taken by students at the educational level. The assessment process also helps identify what the learning situation is like (Anggraini & Kuswanto, 2019; Msosa et al., 2021). With the assessment, students get feedback from what they have learned (Imania & Bariah, 2019; Msosa et al., 2021). The teacher knows the level of student ability in terms of knowledge, skills, and attitudes (Schildkamp et al., 2020; Zhang, 2020). Assessment does not only stop at calculations, but also on student progress that must be reported. Assessment is also closely related to evaluation and reporting. Evaluation is not only in the form of values in the questions, but also examines the many aspects that make a program successful or not (Munthe,

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2015; Wegmann & Smith, 2019). Evaluation is the process of describing, collecting, and presenting valuable data to determine alternative decisions. The evaluation that has been carried out will be reported in the form of a report. Providing a report card is the final step in reporting learning evaluation which must be dynamic (Abdullah et al., 2015; Lazwardi, 2017; Triastuti et al., 2017). Report cards are books that contain intellectual values and academic results of students at school. Report cards are one of the school's responsibilities to the community in terms of competence possessed by students, in the form of a set of assessment results (Pangastuti & Priantinah, 2019; Puspaningrum et al., 2020). But at this time, the type of report card that is still used by various educational institutions is the conventional report card. This conventional report card is only given at the end of the semester, so the teacher inputs grades at the same time at the end of the semester after all learning activities have been completed (Febriyanto et al., 2020; Meyer-Beining et al., 2018). The report cards currently used are in excel form, even though not all teachers are able to use excel. The storage space is quite large in the form of files. The form of report cards given at this time is still static, which means that only class teachers have the opportunity to manage information (Abdullah et al., 2015; Triastuti et al., 2017). As a result, the teacher becomes busy at the end of the semester because there are many grades to be inputted, the complexity of formulas in excel and the minimal ability to operate them triggers the teacher's stress level. Stress is a psychological and physical condition of a person when under pressure. Factors that have the potential to cause stress such as environmental factors, organizational factors, and personnel factors. These factors are relevant in contributing to teacher stress or stress in an organization, such as in a school (Sokal et al., 2020; Tajulashikin et al., 2013; Yuzulia, 2021).

Based on the results of interviews and observations at SD Negeri 3 Banjar Jawa, similar problems were also found. Inputting report card grades using excel consists of 29 menu tables, all of which are required to be filled in. This is because the menus are interconnected and related. Before inputting grades, the teacher must enter the school's identity as well as the student's identity. For inputting grades in excel report cards, the teacher must enter student learning outcomes for one semester one by one according to the indicators and KD per subject. This causes an increase in emotional levels and routine work pressure, resulting in stress on the teacher. Based on the results of an interview with one of the teachers, the teacher said that at the end of each semester, he was always at a loss when filling in grades because there were so many grades that had to be entered simultaneously.

The solution to overcome this problem requires the development of an e-report that is able to help teachers effectively. The scope of the system designed is only made to be accessible by school principals, admins, homeroom teachers, and teachers only (Sofyan et al., 2020; Utomo, 2017). Admin only processes homeroom, teacher, student, subject, class, curriculum data and prints report cards (Azhar Juliantri et al., 2017; Puspaningrum et al., 2020). The homeroom teacher only processes the processing and sees the value of the report card. The teacher can only enter a student's final grade. While the principal can see student report card grades to see the progress of students. Report cards are books that contain the value of intelligence and student achievement at school (Fahsya et al., 2020; Pangastuti & Priantinah, 2019). This report card serves as the teacher's official report to parents or guardians of students. Report cards are a form of school accountability to the community regarding the abilities of students in the form of a set of assessment results (Azhar Juliantri et al., 2017; Puspaningrum et al., 2020). E-report is a web-based application system that is expected to change teacher work patterns from manual patterns to digital patterns (Fahsya et al., 2020; Salem & Samad, 2021). E-report cards can make it easier for teachers to conduct student assessments, even to printing report cards and evaluating student learning outcomes. Some of the previous findings, e-report cards existed beforehand and efficiently and effectively support teachers in easing their tasks in calculating student grades (Azhar Juliantri et al., 2017; Pangastuti & Priantinah, 2019). However, the existing e-reports have not met the need to reduce teacher stress levels in inputting grades in each semester. This complaint is the point of view for the development of a mobile-based SD report card information system (*SIRAM*). So, the purpose of this research is to create a mobile-based SD report card information system (*SIRAM*) to reduce teacher stress levels.

2. METHOD

This study uses the ADDIE method. The ADDIE model describes the stages of the model which consists of five steps, namely analysis, design, development, implementation, and evaluation (Cahyadi, 2019; Muruganantham, 2015; Zulkifli et al., 2018). The analysis phase was carried out including an analysis of the teacher's needs for the assessment evaluation process. Identify teacher characteristics in age, technological skills, work experience. Environmental analysis is used to determine the state of the school environment on the aspect of teacher stress levels and influences teacher behavior at school.

The design stage is designing the *SIRAM* design and designing research instruments. The design was developed to provide an overview of the *SIRAM* workflow to be developed. In addition, it also carries out activities to design validation instruments and teacher stress measurement instruments. The development stage was carried out by developing the *SIRAM* application, validating the developed product, and assessing tools and withdrawing teacher responses. Then in the implementation phase, the product is implemented in schools. The activities carried out are providing training to teachers in using the *SIRAM* application by providing demonstrations on product use and conducting trials using a one-shot case study design. The activity begins with giving treatment 3 times and then ends with giving the teacher to use the *SIRAM* application 3 times with a period of 3 weeks, then given a posttest to find out the final result by giving 1 questionnaire. Finally, the evaluation stage of the activities carried out evaluates the entire process of research activities carried out in the form of formative and summative evaluations.

The subject of this development is *SIRAM*, while the objects in this study are content validity, teacher response, and effectiveness of *SIRAM* application products. The subject of this research is the teacher of grade 3 (three), with the object of research being the teacher's stress level. The data collection instruments in this development research included interview guidelines, observation guidelines, questionnaires, and rating scale sheets. The analysis used is, at the analysis stage of data collection using questionnaires, interviews and observations which then analyze the data which can use descriptive qualitative; at the development stage data collection used a questionnaire/questionnaire and rating scale which then analyzed the data which was able to use the gergory index, aiken index and quantitative descriptive at the implementation stage of data collection using a questionnaire/questionnaire to measure the effectiveness of the SIRAM application on teacher stress levels which were then analyzed using test one sample t-test.

3. RESULT AND DISCUSSION

Result

Based on the stages of the research, the results of the analysis showed that grade 3 elementary school teachers ranged in age from 33-54 years, with teaching experience ranging from 10-20 years. The only application that teachers have used for report cards is Excel. The excel report cards used take a lot of time because they input student scores for one semester one by one and must go through data processing first. The development stage obtains the results of a design overview of the *SIRAM* workflow that will be developed where the *SIRAM* application uses a mobile system so that it can be installed for Android users. Then the validation instruments, teacher responses, and teacher stress levels were produced. The development stage obtained the SIRAM application designed for android users. The validity of the *SIRAM* content is 0.9 with a high level of validity and the teacher's response to the *SIRAM* application gets a percentage of 96%. The results of the effectiveness test of whether the *SIRAM* application is able to reduce teacher stress levels, from the calculation of the one sample t-test with a significance level of 0.05 (5%). The results can be seen in Table 1.

Table 1. Results of the One-Sample t-test

	Test Value = 5					
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
					Lower	**Upper**
teacher stress	-1.871	14	0.082	-0.20000	-0.4293	0.0293

Based on Table 1, it is known that the value of t (t-count) is -1.871. The value of df or degrees of freedom is 14. The value of sig. (2-tailed) of 0.082. So based on a significance level of 0.05 (5%), 0.082 > 0.05 so that H0 is accepted, by obtaining a significance level of 1.761, the ttable calculation results are in the area receiving H0. Therefore, there is no significant difference in the stress level of teachers, before and after giving the *SIRAM* application. Based on the results of this study, the effectiveness of the developed *SIRAM* application was declared ineffective. This was due to the sample being too small, only 3 people. A sample of only 3 people causes the data distribution to be abnormal so that the results of the calculation of the one sample t-test are not significant, the sample with a small number results in the one sample t-test being carried out resulting in insignificant calculations. Furthermore, at the evaluation stage, the results obtained from each stage went according to what had been designed, with several evaluation improvements given.

Discussion

Based on the results of this study, the effectiveness of the developed SIRAM application was declared ineffective. SIRAM is an application developed on a mobile basis to compile reports on student learning outcomes in one semester. *SIRAM* was developed using the Android Studio application. The *SIRAM* application that has been developed has features such as Login, Create, Read, Update, Delete (CRUD). In the *SIRAM* application, teachers can manage student data, input student scores based on spiritual, social, knowledge and skills, update student scores every time, and see student learning outcomes in the report card section. In the *SIRAM* application there are 5 main parts, namely login, dashboard, main data, value input, and report cards. The dashboard section contains general information about *SIRAM*. The *SIRAM* application is said to be feasible due to several things, namely the teacher feels it is facilitated in recapitulating student scores according to the aspects of the assessment used because it uses a digital report card application (ARD)(Nurdin & Musthofa, 2020; Nurgiyantoro et al., 2015; Nuryadi et al., 2017). The teacher only inputs student scores every day and will be accumulated by the system automatically (Azhar Juliantri et al., 2017; Puspaningrum et al., 2020). ARD can increase the effectiveness and efficiency of managing the evaluation of learning outcomes. ARD is an application system that is said to be able to change teacher work patterns from manual to digital while making it easier for teachers to evaluate students and evaluate student learning outcomes (Salem & Samad, 2021; Fahsya et al., 2020).

The *SIRAM* application can also be seen in terms of novelty, namely an e-report application product in the form of an Android application (Nurdin & Musthofa, 2020; Sofyan et al., 2020). Android itself is a mobile operating system (mobile operating system) that adopts the Linux operating system, which is widely used by many people. Android is supported by many available applications, so it is the most widely used operating system on mobile phones (Aini et al., 2021; Pratama, 2021). The *SIRAM* application can be seen from the system used, namely the mobile system. The mobile system on the cellphone that is used now causes all one's activities to be completed easily, because all work is flexible. Mobile apps can be accessed at any time without a time limit (Fatihahsari & Darujati, 2021; Hardjono et al., 2020; Ismail et al., 2018). Previous findings state that online report card applications can make it easier for teachers to make student evaluations (Salem & Samad, 2021; Sofyan et al., 2020).

However, the *SIRAM* application is said to be suitable for use. With the new *SIRAM* application, it has not been able to reduce the teacher's stress level in inputting grades, this is due to the lack of samples used so that no significant difference is seen after using this application. This was due to the sample being too small, only 3 people. A sample of only 3 people causes the data distribution to be abnormal so that the results of the calculation of the one sample t-test are not significant, the sample with a small number results in the one sample t-test being carried out resulting in insignificant calculations. Furthermore, at the evaluation stage, the results obtained from each stage went according to what had been designed, with several evaluation improvements given. The implication of this research is that it is hoped that the next impact will be that schools can subscribe to hosting as a support for applications so that they can continue to use the *SIRAM* application in the future.

4. CONCLUSION

The SIRAM application product prototype that has been developed has features such as Login, Create, Read, Update, Delete (CRUD). The SIRAM application has 5 main parts, namely login, dashboard, main data, value input, and report cards. Second, the validity of the SIRAM content is stated to be valid with a high level of validity. Teachers, get a t value of 1.761 which means that the SIRAM application does not affect the teacher's stress level, before and after giving the SIRAM application.

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