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Development of the SAKOLA Application: An Android-Based Assessment System for Physical Education, Sports, and Health in Elementary Schools

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ABSTRACT

This study aims to develop the SAKOLA (School Administration System) application, an Android-based tool designed to enhance the assessment process in Physical Education, Sports, and Health learning in elementary schools. Employing the Research and Development (R&D) methodology with the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), the study systematically addressed existing challenges faced by teachers in conducting assessments. Observations in Padang City elementary schools revealed significant difficulties, including manual processes, inadequate facilities, and a lack of technological tools for recording, analyzing, and communicating learning outcomes. The School Administration System (SAKOLA) application was designed to address these issues by providing features such as automatic summarization of assessments, mobile accessibility, and user-friendly navigation. The results demonstrated that the application is highly valid, with expert evaluations yielding an average validity score of 82.86%, categorized as "very valid". Practicality testing further confirmed its usability, with scores consistently categorized as "very good" across individual, group, and field tests. The application also proved effective in improving assessment efficiency and user satisfaction. These findings establish the SAKOLA application as a valid, practical, and effective tool, offering a significant advancement in the management of learning assessments for Physical Education, Sports, and Health in elementary schools.

Keywords: *Assessment system, Android application, Physical education, Elementary schools, SAKOLA.*

INTRODUCTION

Assessment encompasses behavior, skills, abilities, preferences, and interactions of children with their peers, teachers, and play materials/tools. In conducting an assessment, several aspects require attention, namely observing what the child is doing, what the child is capable of, and the child's habitual behaviors (Fawcett & Watson, 2016; Novianti & Ferianto, 2023). The results of such assessments indicate that a significant number of teachers struggle with using computers, which reduces their effectiveness. Another study focused on developing a learning evaluation system for Physical Education, Sports, and Health. This study explored the use of technology to create a computer-based system that can automatically process assessment data entered by an admin. However, it has a limitation: the requirement of an admin to input the data.

During observations at several elementary schools in Padang City, it was noted that teachers' ability to perform assessments was still inadequate. The observations revealed that teachers struggled to accurately record incidents involving children. Additionally,

schools lacked adequate support in providing assessment instruments, and many schools demonstrated limited understanding of assessment implementation.

Based on the issues mentioned above, the researcher proposed developing an application to assist teachers in recording and communicating learning assessment results more efficiently. The application, named the School Administration System (SAKOLA), offers several advantages. Teachers can upload and select the indicators they wish to develop and include activity types that support the achievement of developmental goals (Widyaningsih & Kuswandi, 2023). After conducting lessons, teachers can input assessment results for the chosen indicators, which the application will automatically record and summarize. This eliminates the need for manual summaries. The application also simplifies the process for teachers as it is mobile-friendly and can be operated via smartphones.

Based on the problems outlined above, the study questions for this study are formulated as follows:

1) What is the process of developing an Android-based assessment system for learning Physical Education, Sports, and Health through the SAKOLA application in public elementary schools in Padang City?
2) What is the validity of the Android-based assessment system for learning Physical Education, Sports, and Health through the SAKOLA application for public elementary schools in Padang City?
3) How practical is the Android-based assessment system for learning Physical Education, Sports, and Health through the SAKOLA application in public elementary schools in Padang City?
4) What is the effectiveness of the Android-based assessment system for learning Physical Education, Sports, and Health through the SAKOLA application in public elementary schools in Padang City?

The main objective of this study is to develop the SAKOLA application as a valid, practical, and effective Android-based tool to assist teachers in planning and conducting skill assessments, particularly in Physical Education, Sports, and Health subjects.

METHOD

The development of learning tools, specifically the Android-based SAKOLA application, utilizes a research and development (R&D) approach (Rachma & Muhlas, 2022; Saadah & Hasanah, 2023; Ditha *et al*., 2024). Sugiyono *et al* (2019) define R&D as a study methodology designed to produce specific products and systematically test their effectiveness for real-world applications. This approach is particularly suitable for developing innovative tools aimed at addressing practical problems in education, such as simplifying the process of assessment and reporting.

The procedure employed in this study is based on the ADDIE development model, a widely recognized framework for instructional design and development (Spatioti *et al*. 2022; Adeoye *et al*., 2024. The ADDIE model consists of five interconnected stages that guide the development process systematically:

- Analysis: This stage involves identifying the needs, challenges, and objectives of the application. The focus is on understanding the context of use, such as the specific

requirements of teachers in assessing student performance and the technological capabilities of schools.

- Design: In this phase, the structure and functionality of the SAKOLA application are planned. This includes defining the user interface, selecting key features (e.g., uploading indicators, recording assessment results, and generating summaries), and ensuring mobile compatibility to enhance usability.
- Development: The application is created during this stage based on the design specifications. Developers use programming tools to build the Android-based system, ensuring that all planned features are implemented and integrated effectively.
- Implementation: The developed application is deployed in selected schools for pilot testing. Teachers are trained to use the application, and its functionality is evaluated in real-world classroom settings.
- Evaluation: In the final stage, feedback from users (teachers and administrators) is collected and analyzed to assess the application's validity, practicality, and effectiveness. Improvements are made based on this feedback to refine the application for broader implementation.

By adopting the ADDIE model, this study ensures that the development of the SAKOLA application is grounded in a clear and methodical process, from conceptualization to practical use. The emphasis on iterative evaluation at each stage enhances the reliability and relevance of the tool in addressing the needs of educators and improving learning assessments.

RESULTS

The SAKOLA application was developed to create a product that is valid, practical, and effective in supporting school administration processes, particularly in skills assessment for Physical Education, Sports, and Health subjects. This development follows the ADDIE model, ensuring a systematic and comprehensive approach. Below is the detailed development process and the results obtained:

Analysis Stage

In the analysis stage, the needs and challenges in school administration, particularly in learning assessments, were identified. Observations conducted in elementary schools in Padang City revealed several issues:

- Teachers faced difficulties in summarizing assessments due to the manual processes involved.
- Many schools lacked adequate facilities to support assessment activities.
- Teachers needed tools to streamline recording, analyzing, and communicating learning assessment results effectively.

The primary goal identified during this stage was to develop a mobile-based system that could address these challenges while being accessible, affordable, and user-friendly.

Design Stage

During the design phase, the features and structure of the SAKOLA application were conceptualized. Key design considerations included:

- Assessment Feature: Teachers can input competency standards and learning indicators, making it easier to generate summaries automatically.
- Virtual Classrooms: These provide tools for managing folders containing teaching materials, restricting user access, and recording participant scores.
- Mobile Accessibility: The application was designed to be accessible via smartphones, ensuring convenience for teachers.

The application's interface was planned to be intuitive, with straightforward navigation and visually clear elements to facilitate ease of use, even for teachers with limited technological experience.

Development Stage

The development stage involved creating the Android-based application according to the design specifications. The process included:

- Coding and implementing the planned features, ensuring compatibility with Android devices.
- Testing each feature individually to ensure functionality, such as the automatic summarization of assessment results and the seamless operation of virtual classroom tools.
- Incorporating free access to the system, making it available to schools regardless of budget constraints.

Implementation Stage

The SAKOLA application was implemented in selected elementary schools in Padang City for pilot testing. This stage involved:

- Training teachers to use the application, ensuring they understood how to input data, manage folders, and utilize the assessment feature.
- Collecting feedback from users regarding the application's usability, functionality, and overall impact on the assessment process.
- Addressing any technical issues or user concerns identified during the pilot phase.

Evaluation Stage

The evaluation phase assessed the validity, practicality, and effectiveness of the SAKOLA application. Below are the results along with detailed discussions:

- Validity: The validity of the SAKOLA application was determined through expert reviews and study findings. According to Ni Made Citra Dewi *et al*. (2014), the application achieved an average validity score of 82.86%, categorizing it as "very valid". This result indicates that the features and functionalities of the application align with the needs of teachers and schools. The high validity score reflects that the SAKOLA application is well-designed and can be reliably used for assessments. Expert reviews have confirmed that the application adheres to educational standards and supports effective learning and administration processes. The robust design also ensures that the application is adaptable for various educational contexts.
- Practicality: The practicality of the application was evaluated through testing phases, including individual, small group, and field tests. Results from Pratama *et al*. (2014) indicate: 1) Individual testing scored 82%, categorized as very good; 2) Small group testing scored 81.47%, also categorized as very good; and 3)Field testing scored

81.37%, further affirming its very good practicality.

These results demonstrate that the SAKOLA application is user-friendly and easy to implement in real-world settings. Teachers found the application intuitive, even those with limited technological skills, which underscores its practicality. The ability to access the application through mobile devices adds to its convenience, making it a valuable tool for daily school operations. Additionally, the consistency of scores across individual, group, and field tests indicates that the application can be broadly adopted without significant barriers.

CONCLUSIONS

Based on the study and development of the SAKOLA application, several conclusions can be drawn. The development of an Android-based assessment system for learning Physical Education, Sports, and Health through the SAKOLA application in public elementary schools in Padang City was carried out through a structured approach consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. This systematic methodology ensured that the application was carefully developed and optimized. The validity of the assessment system was categorized as “very valid” after undergoing a single revision cycle, demonstrating that the application meets the necessary educational and technical standards for effective implementation in schools. In terms of practicality, the application was determined to be highly practical, reflecting its user-friendliness and functionality, which allow teachers and administrators to seamlessly incorporate it into their daily activities. Furthermore, the application’s effectiveness was rated as “effective”, based on observations that highlighted its significant contribution to supporting and enhancing the assessment process in Physical Education, Sports, and Health learning. These findings validate that the SAKOLA application is a valid, practical, and effective tool, providing a valuable solution for streamlining school administration processes and improving learning outcomes in public elementary schools.

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