

Digitalizing Assessment : An E-Report Application for Supporting Accountability in Merdeka Curriculum-Based Learning

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Abstract: This study aims to analyze the utilization of the current E-Report system in managing student assessments, identify the challenges encountered in the assessment process, and explore the development of an enhanced E-Report application to improve assessment accountability. The research adopts a Research and Development (R&D) approach based on the Borg and Gall model, implemented up to the fifth stage, and employs a mixed-methods design integrating both quantitative and qualitative data to obtain a comprehensive understanding of system use and development. The study was conducted at SMP Negeri 1 Bandungan, Semarang Regency, Central Java Province, involving teachers, system operators, and the vice principal for curriculum affairs as research participants. Data were collected through interviews, observations, document analysis, and questionnaires. Research instruments included interview guides, observation sheets, assessment documents, and validation questionnaires. Qualitative data validity was ensured through technique and source triangulation, while quantitative data validity was established through expert judgment. The findings indicate that the manual process of inputting assessment descriptions requires simplification to enhance efficiency and effectiveness. The Microsoft Excel-based E-Report application developed in this study provides flexible access and facilitates more efficient data management. Validation results showed scores of 88% and 94% from two management experts and 94% from an ICT expert. User testing results demonstrated ratings of 98.06% for display quality, 92.50% for technical quality, and 88.33% for accessibility. Overall, the application is categorized as “very good” and proven effective in enhancing assessment accountability.

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Introduction

Information technology (IT) is essential for supporting the performance of organizations, companies, and institutions in a more effective and efficient manner. Technological advancements over time have significantly impacted various aspects of society. In this context, the development of computer technology plays a crucial role in providing fast and accurate information without consuming excessive time. Across government sectors, educational institutions, and private enterprises, the use of computers and information systems has facilitated a wide range of tasks, from storing important documents to generating reports.

In the Merdeka Curriculum, report cards are designed to include descriptive narratives of learning achievements, highlighting both the strengths and areas that need improvement. This information provides clear guidance for students and parents to gain a deeper understanding of the learning process, thus serving as a basis for determining the next steps in



learning. According to the Guidelines for Learning and Assessment (2022), the description of students' competency achievements contains information about the competencies that have been mastered and those that require further development. These descriptions are written in a positive and encouraging tone, serving as a reference for students and parents in planning the next stages of learning.

To support teachers in carrying out this responsibility more effectively, digitalization offers a highly relevant solution. One example is the development of an E-Report application that simplifies the process of entering grades, particularly in composing learning achievement descriptions. With an integrated and efficient system, teachers can save time and energy, allowing them to focus more on the learning process. Moreover, this application promotes transparency and accountability in the management of educational data. Such digitalization not only enhances the quality of teachers' work but also supports the optimal realization of the goals of the Merdeka Curriculum.

Given these various limitations, the development of a digital report card system has become an important and relevant solution, especially in the era of educational digitalization. A digital reporting system not only improves efficiency in the grading process but also provides real-time access for parents and students to monitor academic progress. Furthermore, in the context of the Merdeka Curriculum, digital report cards enable teachers to deliver more personalized, in-depth, and holistic descriptions of student learning achievements (Prasetyo, 2022). This indicates that the use of a digital report system aligns with the spirit of the Merdeka Curriculum, which emphasizes student-centered learning and encourages collaboration among schools, teachers, students, and parents in creating a more transparent, participatory, and meaningful educational process—thereby enhancing assessment accountability.

Assessment accountability is a crucial aspect of the learning evaluation process, requiring that assessment results be transparent, objective, and easily auditable. Operationally, this accountability is manifested through several key indicators. First, transparency, which refers to the availability of clear and accessible information regarding assessment criteria and students' competency achievements. Second, auditability, which involves the presence of systematic and traceable documentation that can be reviewed by relevant stakeholders. Third, consistency, meaning the alignment between the designed assessment procedures and their implementation in practice, ensuring fairness and accuracy of the results. These indicators serve as a fundamental basis for the development of an E-Report application to support teachers in conducting assessments that are accountable and reliable.

The E-Report application is an efficient and practical service that offers various solutions in the field of education, particularly in the utilization of Information and Communication Technology (ICT). It assists teachers in managing students' academic and non-academic scores and supports schools in compiling assessment reports in accordance with applicable guidelines. Additionally, the application provides access for parents and other stakeholders to monitor students' learning progress.

In the implementation of the Merdeka Curriculum, the E-Report system serves as a key instrument in supporting student assessment and the reporting of learning outcomes. However, teachers often encounter several challenges in managing the E-Report system. One of the main obstacles is the limited access, as the system can only be operated through a single server within the school environment. This condition requires teachers to complete the

data input process at school, which is often time-consuming and inflexible—especially for teachers with tight teaching schedules.

In addition, the process of completing achievement descriptions is still carried out manually. Teachers are required to check off each indicator of learning objectives that have been achieved or still need improvement, which is time-consuming and prone to data entry errors.

Furthermore, the current E-Report system cannot be directly accessed by students' parents. This inability to view their children's academic progress in real time creates limitations in terms of transparency and communication between the school and families. These issues highlight the need to develop a more flexible, efficient, and accountable E-Report system—one that not only facilitates the data entry process for teachers but also provides more transparent access for parents to support their engagement in their children's education.

Research Method

This research can be categorized as research and development (R&D), which is a systematic process used to develop and validate educational products such as curricula, instructional tools, teaching methods, or evaluation systems. The purpose of this study is to produce an effective product that can be practically implemented in the field through iterative stages of design, testing, revision, and evaluation.

This research and development study employed a mixed-method approach, which combines both qualitative and quantitative methods in order to provide more accurate and comprehensive findings. The mixed-method approach was chosen to effectively address the research problems. This study was conducted using a sequential exploratory design, in which qualitative methods were applied in the initial phase of the research, followed by quantitative methods in the subsequent phase.

The development of the application was carried out at SMP Negeri 1 Bandungan. This school was selected as the research site because it is considered a complex educational institution. SMP Negeri 1 Bandungan has six classes at each grade level, resulting in a total of eighteen learning groups (rombel). Each class has an average of 36 students, making the total student population approximately 600. The school employs 35 teachers. The subjects of this study included teachers, system operators, and parents or guardians of students at SMP Negeri 1 Bandungan. The term "teachers" in this context refers to both subject teachers and homeroom teachers. Meanwhile, the object of this research is the E-Report processing application.

Data collection techniques included interviews, questionnaires, document analysis, and observation. Qualitative data were validated using triangulation of techniques and sources. Technique triangulation refers to the process of cross-checking data collected through multiple methods, such as interviews, questionnaires, and observation checklists. Source triangulation involved verifying the data by comparing inputs from various sources, including the principal, vice principal of curriculum, teachers, and parents. Quantitative data validation was carried out by ensuring that the instruments used for data collection were valid, thereby guaranteeing the validity of the research findings. The validation of quantitative research instruments was conducted using the Expert Judgement method, which involves experts in the relevant field to assess the alignment between the instruments, research objectives, and the intended measurement constructs.

The qualitative data analysis method applied in this study follows the approach proposed by Miles and Huberman, which emphasizes an interactive and continuous process of analysis until data saturation is achieved. The validation process—conducted both by experts and end-users—aimed to determine the level of validity and reliability of the materials or aspects used to assess the feasibility of the developed E-Report application based on the Merdeka Curriculum in enhancing assessment accountability.

The development process of the Merdeka Curriculum E-Report application was carried out through several stages, namely: research and information collecting, planning, develop preliminary of product, preliminary field testing, and main product revision.

Research and information collecting

In this stage, the researcher conducted preliminary research and information gathering through interviews, observations, and document analysis. The subjects involved in this stage included subject teachers and homeroom teachers who were directly engaged in the use of the Merdeka Curriculum E-Report at SMP Negeri 1 Bandungan. The initial findings revealed that the input process for assessment descriptions was still carried out manually, requiring teachers to check off each learning objective that had been achieved or still needed improvement.

The existing E-Report system provided by the Ministry of Education and Culture (MoEC) also faced accessibility issues, making it inflexible for use whenever needed. This condition caused difficulties for teachers in compiling student learning reports effectively, while homeroom teachers had to manually recheck the reports before they could be distributed to students and parents.

In addition, based on the results of observations, it was found that the process of inputting assessment descriptions required a considerable amount of time, especially when adjusting to the learning achievement characteristics of each student in different subjects. Document analysis revealed that there was no well-integrated system available to assist teachers in managing and compiling student learning reports automatically. Therefore, the development of an E-Report application is necessary to improve the effectiveness, efficiency, and accountability of the student learning report process.

Planning

At the planning stage, the researcher began designing the development of the Merdeka Curriculum E-Report application based on the findings from the previous stage. The product developed was a Microsoft Excel-based application aimed at facilitating teachers in the process of inputting and processing assessment descriptions. This application was designed as a solution to enhance the efficiency and accuracy of student learning report generation while addressing the accessibility issues previously encountered in using the E-Report system provided by the Ministry of Education and Culture.

Through the development of this application, it is expected that teachers will be able to input assessment descriptions more quickly and systematically, thereby eliminating the need for time-consuming manual processes. In addition, the application enables homeroom teachers to verify data more easily, thus improving the accuracy and accountability in compiling student learning reports.

In its development process, the application was built using Microsoft Excel due to its accessibility and familiarity among teachers. This platform also does not require additional costs and can be operated without an internet connection, making it more flexible in its implementation. With a simple yet functional design, the E-Report application is expected to

provide ease for teachers in supporting the implementation of the Merdeka Curriculum at SMP Negeri 1 Bandungan.

Develop preliminary of product

At this stage, the researcher began developing a prototype of the Merdeka Curriculum E-Report application based on the design formulated during the planning phase. The development of the product was carried out by considering the initial research findings as well as the needs of subject teachers and homeroom teachers in the process of inputting assessment descriptions. The initial step in this development was to create the application framework, which would later be validated by a team of experts. The following is the flowchart of the initial product development:

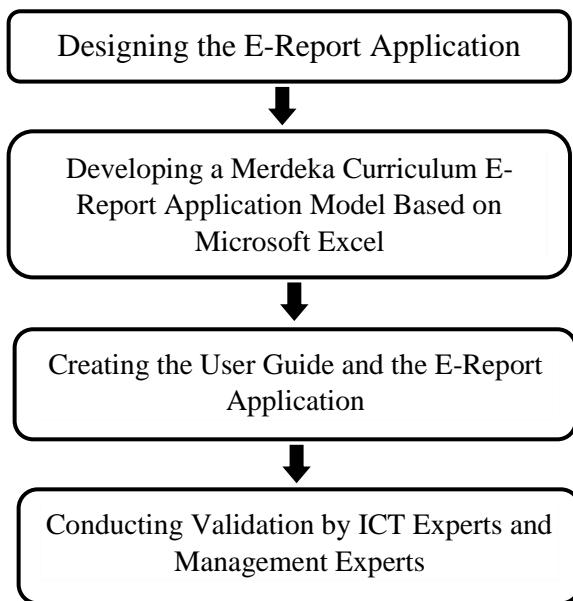


Figure 1. Product Development Flow

This E-Report application was developed using Microsoft Excel, with features designed to assist teachers in automatically generating student assessment descriptions. Several key features developed during this initial stage include: a systematic input format, automation in generating assessment descriptions based on learning achievements, and a report display that aligns with the standards of the Merdeka Curriculum E-Report.

Preliminary field testing

The trial was conducted to assess the quality of the developed product. In this study, the field testing involved 30 participants, including teachers, system operators, the principal, and school supervisors. During the trial implementation, the researcher conducted observations, interviews, and distributed questionnaires. The results of this trial served as the basis for revising the developed product.

Main product revision

At this stage, the researcher conducted an evaluation of the Microsoft Excel-based E-Report application integrated with Google Drive, which had been tested by teachers at SMP Negeri 1 Bandungan. Refinements were made based on the feedback received during the product trial. The purpose of this stage was to ensure that the product was ready for broader implementation and could provide optimal benefits for its users.

Result and Discussion



The management of academic evaluations at SMP Negeri 1 Bandungan is executed by individual subject instructors. Each educator possesses the authority to assess student performance indicators, which encompass both formative and summative assessment frameworks. This procedure encompasses stages of evaluation predicated on diverse criteria, including attendance, assignments, formative quizzes, mid-term assessments, and final examinations; subsequently, it involves the input of student grades into the Academic Information System (AIS) or grade repository, followed by the processing necessary to generate final grades for each respective subject. The aggregated results from all subjects are then compiled by the homeroom teacher or administrative department (TU) for inclusion in the grade report or report card. Each educator maintains the responsibility for the assessment of student grades pertaining to their respective courses, thereby ensuring that students receive accurate and quantifiable grades for each subject undertaken.

The curriculum management framework provides each educator with a standardized grade repository, utilized for the provisional documentation of learner performance metrics. Upon the conclusion of the academic semester, educators transcribe the documented performance metrics into an electronic reporting instrument (e-report card) with the objective of streamlining the assessment reporting procedure, enhancing the availability of information for guardians and students, and minimizing reliance on physical documentation. Beyond the archiving of performance metrics, e-report cards may also encompass delineations of competencies attained by students, alongside additional data pertinent to educational outcomes. This enhances the accessibility of educational outcome information for guardians and students, and facilitates the longitudinal monitoring of student learning trajectories. The currently operational e-report card system within the institution is a digital application engineered to systematically capture and archive student academic performance results.

Despite the e-rapor system being characterized as efficient and user-centric, its deployment presents certain limitations, particularly with regard to accessibility. A majority of educators are able to access the e-rapor system solely via the institutional network. Feedback from educators indicates that the e-rapor system is exclusively online and frequently operational only within the confines of the educational institution. This circumstance engenders challenges, particularly as the deadline for report card issuance approaches. Educators often experience delays waiting for access to school computing resources and may be compelled to extend their working hours to fulfill timely report card data entry. Consequently, educators are frequently required to allocate additional hours to finalize grade and narrative data entries. The current methodology for inputting grades into the e-rapor system relies on manual entry, necessitating educators to input student grades predicated on their academic performance and subsequently select the pertinent descriptions manually. The inefficiency in the description entry process is compounded by the requirement for educators to affirm the learning objectives met by students. One educator highlighted that a significant challenge associated with the utilization of e-rapor is the critical need for precision when inputting learning objectives at the onset of data entry. Furthermore, intermittent internet connectivity often results in delayed visibility of entered learning objectives, necessitating re-entry, which may result in redundant data entries. The process of eliminating duplicate entries frequently encounters complications, compelling educators to reiterate the data input procedure multiple times due to suboptimal data preservation by the system.

This phenomenon suggests that while the e-rapor system facilitates the input of academic performance data, the persistence of system instability poses a significant

challenge. Restricted accessibility is a principal constraint impacting the utilization of the e-rapor system. Instructors are permitted to access the e-rapor exclusively via the institution's internal network, which restricts operational flexibility. Additionally, continuity of server functionality by the school operator is a prerequisite for educator access to the system. In general, the methodology for grade data entry requires enhancement. It has been observed that the operational flexibility of the employed software remains considerably constrained, inherently limiting tasks to a singular geographic locus. Moreover, the procedure for inputting descriptors of educational accomplishments continues to depend on manual systems, resulting in inefficiencies and time wastage. Optimizing this process could alleviate instructors' workload and enhance accountability in educational assessment.

The outcome of the product development process is an electronic reporting application that adheres to the Merdeka Curriculum, implemented via the Borg and Gall development framework. This independent curriculum electronic report is engineered to facilitate the generation of student learning outcome reports that conform to the principles and structural specifications of the Merdeka Curriculum, enabling educators to digitally document student competency attainments and produce reports that are readily accessible and comprehensible. The development of this electronic report employs the Borg and Gall framework, a methodical and systematic development paradigm designed to ensure that the resultant electronic report fulfills the requisite quality and efficacy standards. This framework encompasses five distinct phases: conducting research and information collection, planning, and developing an initial prototype. Subsequent to the creation of the preliminary prototype, an evaluative trial is administered, succeeded by iterative modifications informed by the trial outcomes.

In the developmental phase, Microsoft Excel was employed owing to its widespread accessibility and familiarity among educators. Microsoft Excel is a spreadsheet application developed by Microsoft, incorporated within the Microsoft Office productivity suite. This software is utilized for numerical data processing, computational analysis, data interpretation, and graphical representation. Within the educational sector, Microsoft Excel facilitates the management of student information, generation of reports, and data analysis. The selection of this platform is beneficial, as it entails no supplementary financial investment and functions efficiently without reliance on internet connectivity, thereby enhancing operational versatility. Featuring an aesthetically streamlined yet functional interface, this e-report tool intends to aid educators in the implementation of the Merdeka Curriculum at SMP Negeri 1 Bandungan.

The application underwent validity assessment conducted by a panel of management specialists that included two experts in management and one in information technology (IT). The evaluation by the first management expert in relation to the utility quality demonstrated a score of 87%. The assessment of effectiveness also achieved a score of 87%, while efficiency was rated at 90%. A comprehensive summary of the management expert evaluations yielded a cumulative score of 44, translating to a percentage of 88%. In consideration of these findings, the author deduces that the e-rapor application is categorized as 'very good' based on the management expert evaluations.

The evaluation conducted by the second management specialist regarding the application's utility yielded an assessment score of 87%. The dimension of effectiveness achieved a perfect score of 100%, while the efficiency criterion was appraised at 95%. Subsequently, the author conducted a thorough synthesis of the management expert's evaluation, resulting in a cumulative score of 47, equating to a percentage of 94%. Based on



these findings, the author deduces that the e-rapor application is classified as 'exemplary' according to the expert's evaluation.

The evaluation conducted by the information technology specialist regarding the display quality of the application yielded an assessment score of 95%. The appraisal of the technical quality dimension achieved a maximum score of 100%, whereas the security dimension was assigned a score of 80%. The author undertook a systematic consolidation of the specialist's assessment, culminating in an aggregate score of 47, equating to a percentage score of 94%. The author deduces that the e-rapor application, per the information technology specialist's evaluation, is classified within the "very good" category.

The empirical data obtained from user trials involving operators, subject educators, and homeroom educators indicate that the dimension of display quality achieved an average evaluation score of 98.06%, classified as "very good." The technical quality dimension yielded an average score of 92.50%, similarly classified as "very good." Moreover, the aspect of accessibility attained an average score of 88.33%, also categorized as "very good." Consequently, the findings from the user trials substantiate the assertion that the e-rapor application is regarded as "very good" and plays a significant role in enhancing the accountability of assessment procedures.

Furthermore, the methodology for aggregating descriptions of student achievement predominantly relies on manual processes. Educators are tasked with assessing performance metrics, determining whether they have been attained or not, followed by the transcription of these assessments into narrative format. The resultant narratives frequently exhibit inconsistencies and lack clarity. This may arise from insufficient or suboptimal data quality, inadequately optimized models, linguistic vagueness leading to ambiguity, insufficient contextual comprehension, and a lack of logical coherence. To generate narratives that are consistent, lucid, and precise, enhancements in data quality are imperative, along with the optimization of models utilizing appropriate parameters, and the employment of clear, uniform, and unequivocal language. Such evaluations are critical in quantifying the advancements and efficacy of educators in fulfilling educational objectives and providing constructive feedback for professional progression. This process necessitates considerable effort, particularly for instructors overseeing multiple classes with extensive student populations. Consequently, the resultant descriptions frequently demonstrate shortcomings in consistency and clarity. Sudjana (2009) posits that effective assessment must offer a comprehensive representation of student learning outcomes encompassing cognitive, affective, and psychomotor domains.

Furthermore, the innovation of this Excel-integrated E-report application draws inspiration from the research conducted by Nanda et al. (2021), which presented a web-based student report application at SD Islam Riyadlul Mubtadiin. While web-based frameworks offer enhanced adaptability, the principles of automation and accessibility in reporting systems elucidated in their findings serve as a foundational framework for the development of the E-report system at SMP Negeri 1 Bandungan. The implementation of Microsoft Excel, augmented with macros and Visual Basic for Applications (VBA), affords operational efficiency for educators acquainted with the software, concurrently facilitating the automated and efficient processing of student performance metrics and accompanying descriptive assessments.

In response to identified issues, the E-report application tailored for the Merdeka Curriculum was constructed in accordance with the Borg and Gall (1983) methodological framework, advancing to the fifth phase of its implementation. The application was

developed utilizing Microsoft Excel, which was adapted to support the input of academic performance data, automate the generation of performance descriptors, visualize grade distributions through graphical representations and tabulated formats, and produce report cards suitable for printing and electronic distribution in Portable Document Format (PDF).

Within the theoretical framework, the advancement of this application is congruent with the paradigms of an optimal assessment system as articulated by Dick and Carey (2001), who posit that instructional system design must adhere to sequential phases encompassing needs analysis, design, development, implementation, and evaluation. The developmental model employed is also aligned with the methodology proposed by Borg and Gall (1983), highlighting the necessity of user validation and iterative refinements to attain an ideal product. Moreover, the instructional technology framework posited by Heinich et al. (1996) advocates that the integration of media and technology in educational contexts should be strategically aimed at addressing learning challenges and enhancing educational efficacy. In this instance, the E-report application was conceived to fulfill educators' requirements for a pragmatic and accountable assessment system that facilitates the execution of the Merdeka Curriculum.

Furthermore, this advancement facilitates educators' capacity to concentrate primarily on the evaluation of student learning outcomes instead of being encumbered by administrative responsibilities associated with grade management. Utilizing automated descriptive analytics and structured grade aggregations, educators can efficiently ascertain student progress and formulate suitable pedagogical interventions. This paradigm aligns with the principles of the Merdeka Curriculum, which advocates for differentiated and learner-centric educational methodologies. It is anticipated that this application will not only streamline the assessment procedure but also integrate into the institutional endeavors to cultivate the Pancasila Student Profile via an adaptive and collaborative framework for learning and assessment.

The present application was constructed utilizing Microsoft Excel as the foundational platform, subsequently enhanced through the integration of macro functionalities and Visual Basic for Applications (VBA). The selection of Excel as the underlying framework was predicated on factors including accessibility, user acclimatization (educators), and adaptability in the administration of evaluative data. Through the implementation of VBA programming, this application is capable of executing a range of automated operations, including the computation of grades, the generation of achievement summaries predicated on assessment outcomes, and the production of final reports in Portable Document Format (PDF) that are prepared for printing or distribution to guardians.

Enhancement of the accessibility of educational data to guardians can be achieved through multiple methodologies, including the deployment of technological solutions such as applications or digital platforms and the optimization of communication pathways between educational institutions and guardians. This readily accessible data is crucial for enabling guardians to actively engage in the educational process and to monitor their progeny's developmental trajectories. Educational institutions may establish online platforms that provide guardians with access to vital information regarding their offspring, including academic performance metrics, attendance records, and features that facilitate bidirectional communication between schools and guardians, thereby fostering dialogue and deliberation concerning student development. The implementation of such online platforms is anticipated to enhance guardians' digital literacy competencies. Educational data is delivered in a systematically organized format conducive to comprehension, exemplified by the utilization

of graphical representations, tabular data, or illustrative diagrams. Educational institutions may furnish a succinct elucidation of the data presented, thereby facilitating parental comprehension of its implications. To enhance the accessibility of educational data for guardians, an integration employing Google Apps Script has been designed, wherein value metrics and achievement indicators are rendered in a digital dashboard format leveraging Google Sheets, thus ensuring accessibility across diverse devices. This framework aims to fulfill the criteria of assessment transparency and to foster reciprocal communication between educational entities and parents. Guardians possessing streamlined access to their offspring's educational metrics can engage actively in the pedagogical process and assist their children in optimizing their academic potential, thereby enabling schools to identify obstacles and proffer more tailored and efficacious support, consequently elevating the standards of educational quality.

The findings of this study carry important implications for educational policies and teaching practices, particularly in the management of student assessment within the Merdeka Curriculum. The development of the Excel-based e-report application at SMP Negeri 1 Bandungan demonstrates that local innovations can effectively promote accountability and efficiency in educational administration. For policymakers at both school and district levels, this research highlights that strengthening reporting systems for student learning outcomes does not necessarily require expensive commercial or online software; rather, it can be achieved through independently developed solutions that utilize existing school resources.

From a pedagogical perspective, the implementation of this application helps teachers better understand the relationship between learning objectives and students' achievement descriptions in a more systematic manner. This fosters a reflective culture of assessment in which teachers focus not only on numeric scores but also on descriptive feedback that captures students' learning progress. Consequently, this aligns with the principles of formative assessment and competency-based learning emphasized in the Merdeka Curriculum.

Furthermore, the e-report application can be adapted for use in other school contexts with varying levels of resources. Schools with limited internet access can implement it offline, as it is based on Microsoft Excel and does not depend on an online server. Conversely, schools with more advanced infrastructure may develop an online or integrated version that connects with their school management systems. Adaptation can be achieved by modifying file structures, data input formats, and assessment rubrics according to each school's characteristics and needs. This flexibility ensures that the application is scalable and sustainable, offering practical value for diverse educational settings across Indonesia.

Conclusion

The findings reveal that the manual process of inputting assessment descriptions needs to be simplified to improve efficiency and effectiveness. The Microsoft Excel-based E-Report application developed in this study can be accessed flexibly and facilitates data management. Validation results showed a score of 88% from the first management expert, 94% from the second management expert, and 94% from the ICT expert. User testing results showed a display quality rating of 98.06%, technical quality of 92.50%, and accessibility of 88.33%. This application falls into the 'very good' category and is effective in enhancing assessment accountability.

Recommendation

Referring to these findings, several recommendations are proposed for future development. Schools need to improve access to technological devices that support the use of the E-Report application, such as more capable computers or laptops, to optimize the application's functionality. In addition, more intensive training is required for teachers and school staff on the effective use of the E-Report application, particularly in utilizing Microsoft Excel.

The application could also be further developed by adding new features, such as integration with other platforms or the development of a more flexible web-based application, making it easier to access across various devices and locations. Future research is encouraged to explore in greater depth the impact of the E-Report application implementation on improving educational quality and student learning outcomes, as well as to examine its potential for development in other schools with different contexts. Additionally, future improvements should aim to refine the remaining stages of the Borg and Gall development model, particularly stages six through ten, ranging from field testing to the process of dissemination and implementation.

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