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Article

Development e-report character model for elementary school students to increase the effectiveness of assessment

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ABSTRACT

The development of student character in integrated Islamic schools, which combine the Muslim personality-oriented Islamic Education Curriculum with the National Curriculum for behavioral assessment on report cards, is of paramount importance. This article focuses on the building of a practical and effective web-based character report card for elementary school children. This research utilized the 4 D methodology of Research & Development (R&D), including define, design, develop, and disseminate. The research findings on the development of e-report applications indicated a validity assessment by media professionals, yielding a score of 85.75%, categorizing it as highly practical. Evaluate the product's practicality with the t-test, which revealed that inputting values in the e-report application was more efficient than manual entry. The effectiveness is evidenced by the teacher's response, which garnered a positive evaluation with a score of 85.60%, categorizing it as very good. Utilizing web-based e-reports for processing assessments aids educators in effectively managing practical character behavior report scores for each assessment indicator description.

Keywords:

Character education
Elementary school student
E-Report

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Introduction

Education plays a crucial role in enhancing the quality of human resources, who are essential for advancing the quality of life (Khoiri, 2021). Character education serves as the fundamental basis for cultivating the nation's character. Character education encompasses a broader significance than moral education; thus, its implementation poses challenges in bridging education with the nation's youth (Tan, 2023). Character education encompasses moral education, integrating cognitive understanding, emotions, and behaviors (Kamila, 2023). Character education must be implemented systematically and consistently to achieve effectiveness. A child will develop emotional intelligence through character education (González-Pérez & Ramírez-Montoya, 2022). Emotional intelligence is the primary attribute for equipping children for the future, as it enables them to effectively confront many challenges, including academic obstacles (Fuad, 2020). Character education and academic achievement are intricately linked to emotional intelligence. Students' academic failures are attributed more to character than to intellectual intelligence (Rosak-szyrocka, 2024).

Educators and guardians can formulate successful tactics for children's advancement. Parents contribute essential information concerning the child's everyday behavior, requirements, and

competencies. Communication with students' parents might occur directly in person or indirectly through phone calls or SMS. This seeks to establish effective communication between educators and kids' parents. Children acquire knowledge and instill life values mostly through education, particularly in elementary school. This period is crucial for imparting fundamental concepts necessary for aspiring to future success. Elementary school significantly influences children's behavior and their capacity to acquire knowledge effectively (Uusimäki et al., 2023). Parental motivation enhances children's enthusiasm and eagerness to advance and learn effectively (Kalogeratos, 2023).

In formal education, schools play a crucial role in forming children's character. Schools are responsible not just for imparting extensive knowledge but also for cultivating character qualities in pupils. Consequently, character education is essential to incorporate into all educational activities. Character education seeks to cultivate an individual's personality; the school serves as an environment where a child's personality development encompasses not only cognitive dimensions but also emotive and psychomotor facets (Ulfah & Arifudin, 2021). Character education is implemented within an educational setting to cultivate and enhance children, enabling them to evolve into positive individuals with a commendable mindset, moral integrity, and a strong sense of responsibility.

Rapidly advancing information systems and technology are currently exerting a substantial influence on the educational sector. The school serves as a venue for the implementation of the education system, necessitating an information system and educational services that cater to the needs of students, parents, the community, and the institution itself (Alyoussef, 2023). Educational institutions aspire to cultivate competent human resources capable of competing in the globalized era. Achieving this necessitates various quality implementation components, including regulations, educational resources, personnel, curriculum, infrastructure, and a robust assessment system (Dewi et al., 2022).

Rahayu, (2015) stated that the report card reflects students' academic progress throughout the semester. The report card provides information regarding the attainment of competencies established in the curriculum. The progress report on student learning outcomes serves as the accountability of the educational institution to parents/guardians, school committees, the community, and other relevant entities. The report serves as a conduit for communication and collaboration among schools, parents, and the community, fostering student advancement and institutional growth. An online report card will ensure data backup, alleviating concerns for students and teachers. Juliantri et al., (2017) reported that 90% of questionnaire respondents found web-based report cards effective due to the convenience of accessing the program. The E-Rapor program was created to facilitate teachers in effectively designing, implementing, processing, reporting, and utilizing assessment data.

Considering the substantial student population of an educational institution that continues to utilize manual report card recording methods. This method is susceptible to recording inaccuracies, data loss, and delays in report submission. The management of manual character reports is time-consuming and inefficient, particularly when schools want prompt and precise character development reports for administrative needs. Sharma, (2023) asserts that educators must recognize that each child possesses distinct learning needs and methods of engaging with their environment at every developmental stage, even among peers of the same age. Consequently, it is essential to consider the provision of appropriate responses and assessments in accordance with the developmental stage of the students. Furthermore, instead of contrasting pupils with one another, educators should select assessment activities tailored to the learning needs of their students by assessing their progress prior to and following instruction.

Early childhood educators employ evaluations centered on students' learning needs and generate learning outcome reports aligned with curricular standards. The reports emphasize students' learning achievements by detailing the skills acquired through participation in educational activities within a specified period (Khoalenyane & Ajani, 2023). In the rapidly advancing digital age, the integration of information technology in education is essential (Haleem et al., 2022). A significant application of

information technology is the E-Report Information System. The E-Report Card is a contemporary tool for managing student grade data and communicating it to parents or guardians. The implementation of this technology enhances the efficiency, accuracy, and transparency of the report card administration process.

The E-Rapor system must be developed due to the complexity of managing learning information and assessing learning outcomes, which involves numerous data items and requires precision, as it pertains to critical information for various stakeholders; thus, a computer-based system is essential. The E-Report System is essential for standardizing and streamlining data processing inside educational units while also enabling the government to effectively monitor the management of learning information and evaluate educational outcomes. The product developed in this project, E-Rapor, is a digital version of the traditional report card concept that previously existed as physical sheets. The web-based application system is anticipated to transform teachers' work methodologies from manual to digital, facilitating student assessment, report card printing, and evaluation of character attitudes at Mutiara Cendekia Integrated Islamic School.

The assessment utilizing the E report system refers to a report card evaluation method that employs web-based software to aggregate information on student competency accomplishments according to the educational unit being built. The E-report application facilitates the processing of attitude scores by educators, enabling the automatic generation of final grades and their corresponding descriptions based on each assessed character indicator and the class teacher's observations. Consequently, the E-report consolidates this information into a student achievement report within the character report card. The researcher devised a web-based framework for creating character report cards for primary school pupils, intending to establish an effective and efficient model for online character report card assessment.

Methods

This research employs a Research and Development (R&D) methodology. The R&D technique is a research approach aimed at generating specific goods from development initiatives and evaluating their efficacy through systematic research and development phases (Gustiani, 2019). This research pertains to the creation of a 4D model encompassing definition, design, development, and dissemination (Thiagarajan, 1974). The model in this research was altered by reducing it from four steps to three: define, design, and develop. The employed system development methodology is the waterfall model. Pressman, (2010) describes the waterfall model as a traditional framework that advocates for a methodical and sequential approach to software development, commencing with system analysis and progressing through design, coding, and testing. This approach is a development framework grounded in the System Development Life Cycle (SDLC).

The development of this web-based character assessment system involved multiple stages. The initial phase involves needs analysis, when researchers discover and ascertain the requirements necessary for designing an e-report website. Researchers conducted interviews with many users, including instructors, and performed firsthand observations in the field to determine these demands. The second stage is design, derived from the needs analysis conducted in the preceding stage. This system design encompasses Unified Modeling Language (UML), a database, and a user interface. Following the design phase, the third stage is implementation, which entails the development of program code derived from the previously established design, executed in a programming language. The e-report web is developed using PHP programming language, utilizing the Code Igniter framework and MySQL database, culminating in the hosting of the website online. The software utilized for code development includes Sublime Text 3, XAMPP, and the Google Chrome web browser. At this juncture, it is anticipated that all functionalities will operate as intended and in alignment with the previously established design. Researchers also evaluated the webpage for faults.

The fourth stage involves evaluating the software (e-report website), specifically focusing on functional features and conducting alpha testing by media specialists. The product requires revision by incorporating the insights and recommendations of product specialists as a standard for enhancement prior to user testing, specifically with educators. Following the product expert's declaration of feasibility, we proceeded with a testing of the e-report website. The study's population comprised 30 educators from the Mutiara Cendekia Lubuklinggau integrated Islamic elementary school. The teacher functions as the executor in the execution of character education development within educational institutions. The educator is tasked with observing changes in student behavior throughout school hours.

This research employs quantitative data. The data collecting instrument's validity refers to the extent to which a test accurately assesses the intended assessment aim (Falk et al., 2023). Research tools in application development testing assess overall satisfaction about the program's usability, learnability, and website functionality, thereby evaluating the practicality of producing character e-reports. This research employed quantitative descriptive analytic approaches for data analysis. The data collecting employs a questionnaire for alpha and beta testing. sample was conducted via a purposive sample technique. Purposive sampling is a method for selecting samples based on predetermined criteria (Winarni, 2021). This study utilized data from IT media specialists, linguists, and character analysts. Alpha testing is defined as testing conducted by professionals utilizing their specialized judgment.

The information obtained from the questionnaire is quantitative data. This data can be transformed into qualitative data in interval format with a Likert Scale. The Likert scale measures the attitudes, views, and perceptions of individuals or groups about social phenomena. Each instrument item is assessed using a Likert Scale that ranges from extremely positive to very negative (Sugiyono, 2013). This study employs a questionnaire featuring five response options for each issue. The data is evaluated as follows :

Table 1. Response Score Data

Response	Score
Sangat Setuju	5
Setuju	4
Ragu-ragu	3
Tidak Setuju	2
Sangat Tidak Setuju	1

Descriptive analysis is conducted using the subsequent calculations:

$$\text{Eligibility Percentage} = \frac{\text{Observed score x } 100\%}{\text{Expected score}}$$

The outcomes of the aforementioned calculations are thereafter employed to assess the appropriateness of the media. Classification is categorized into five tiers on a Likert scale. This is a distribution of the many types of media appropriateness.

Table 2. Eligibility Categories

Category	Percentage (%)
Highly Valuable	81 - 100
Worthwhile	61 - 80
Acceptable	41 - 60
Impractical	21 - 40
Completely Unworthy	0 - 20

The acceptance testing phase involved evaluating the effectiveness and feasibility of the response questionnaire administered to users (teachers) of the built e-report online application.

Result and Discussion

System Needs Analysis Stage

A system can be developed to align with the preferences and requirements of the user. The initial phase of this research is analyzing the functional needs, conducted directly through interviews and observations. Mutiara Pakar Lubuklinggau Integrated Islamic Primary School cultivates character in its children. The teacher manually oversees report cards, student data, and teacher data, resulting in a time-consuming process for printing report cards. Some individuals organize this information in an Excel file, which requires considerable effort to compile due to the assignment of all grades to the respective teacher in the class. At this juncture, it can be asserted that the requisite features are as follows: 1) Information systems can assist and facilitate the responsibilities of administrators, educators (subject and practice teachers, guidance counselors, and guardian teachers), and students; 2) Information systems can enhance and simplify communication and discourse among parents; 3) Information systems can manage grades and generate grade data that can be downloaded as PDF documents by authorized users.

Performance analysis can be conducted via character report cards, where the human management of student data and grade recording heightens the risk of errors and necessitates a time investment of 30 minutes to 1 hour. It is essential for the management of student data and grade recording to be more automated and efficient, hence minimizing the danger of human error. The investigation reveals that the administrative process is time-consuming, susceptible to human error, and necessitates direct engagement with the school, typically spanning 1 to 2 weeks. It is anticipated that the implementation of technology will enhance the speed, efficiency, and accuracy of the administrative process through automation. Data can be rapidly accessible and analyzed, minimizing the potential for human error. The shift from manual report cards to online, web-based report cards exemplifies technology advancements that transform our interaction with information and offer more efficient and effective solutions in value management. This enhances the institution's efficiency regarding time and expenses while also improving the user experience for educators, therefore fostering increased involvement and accountability.

The e-Report System was built as *a web-based platform* to ensure that the input process is easily accessible to teachers. The system's users comprise system administrators, educators, and administrators tasked with comprehensive system management, including data manipulation such as addition, modification, and deletion of data inside the system. The educator is responsible for inputting the character indicator values established by Mutiara Cendekia Integrated Islamic Elementary School. The phases involved in identifying character indicators are executed through: 1) A literature study that employs regulations from the Ministry of Education and examines research articles to investigate the instillation of values and character in students. 2) Student observation, wherein educators or observers monitor student behavior in diverse contexts, both within and outside the classroom. Observation encompasses attitudes, ethics, accountability, cooperation, leadership, and other pertinent traits. 3) Interviews with students and parents, which might facilitate the exploration of their self-perceptions, moral reasoning, and ideas regarding the child's character. 4) Conduct interviews with traditional leaders to investigate local culture, thereby developing indicators pertinent to the social context and regional cultural norms. 5) Student self-assessment, in which pupils are requested to examine their own character. This exercise entails introspection regarding their behaviors, attitudes, and actions in relation to the aspired character. 6) Behavioral records, utilized by instructors or counselors, document observations of student conduct that exemplify character.

The indicators were derived from multiple phases conducted and subsequently tested on a small cohort of 28 fourth-grade pupils. Indicators that fail to characterize student conduct will be assessed and substituted with alternative character indicators. These indicators are anticipated to facilitate the evaluation of student conduct. Upon completion, it is determined that the character assessment indicator will be incorporated into the student report card, detailing the potential for character development at Mutiara Cendekia Integrated Islamic Elementary School.

System Planning

The report card system of Mutiara Cendekia Integrated Islamic Elementary School was designed using XAMPP, which integrates the PHP interpreter, MySQL database, and *web-based technologies*, including *the Bootstrap framework* and CSS. The constructed system is linked to the internet, enabling teachers to access it at any time and from any location to input assessments. This input method may involve the execution of an evaluation conducted by educators regarding the attitudes and behaviors of pupils in the school environment. Meticulous inspection will yield favorable outcomes in accordance with the prevailing conditions. Input process errors may arise when the teacher engages without explicitly monitoring and attending to the object. This evaluative inaccuracy may produce a skewed representation of character, rendering the assessment results ineffective as a standard for students' comportment in school. To enhance understanding, the process of designing a teacher user system is illustrated in Figure 1 below.

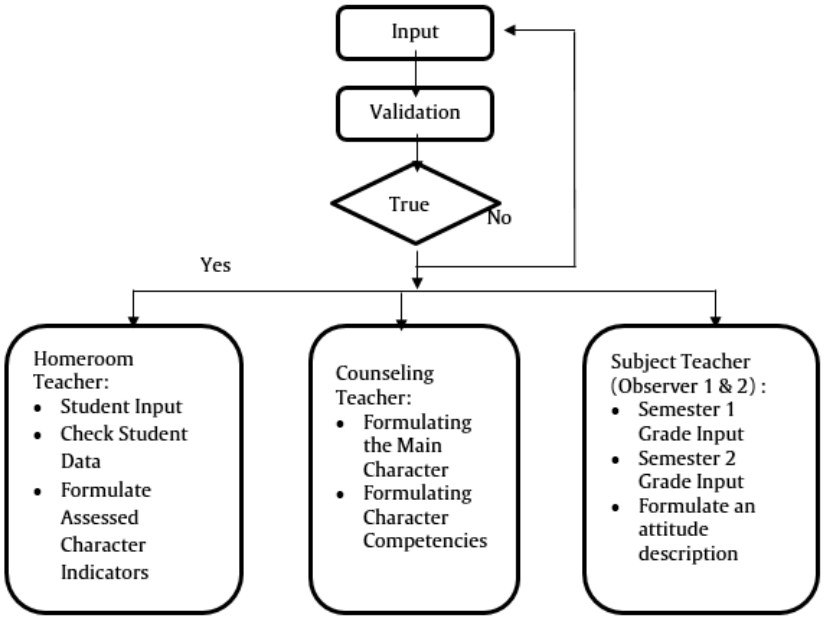

Figure 1. Teacher Activity Flow Diagram

Outcomes of Model E Development of Character Report Card

The users of the web-based e-Report system comprise administrators and educators. The initial login interface of the system is seen in Figure 2.

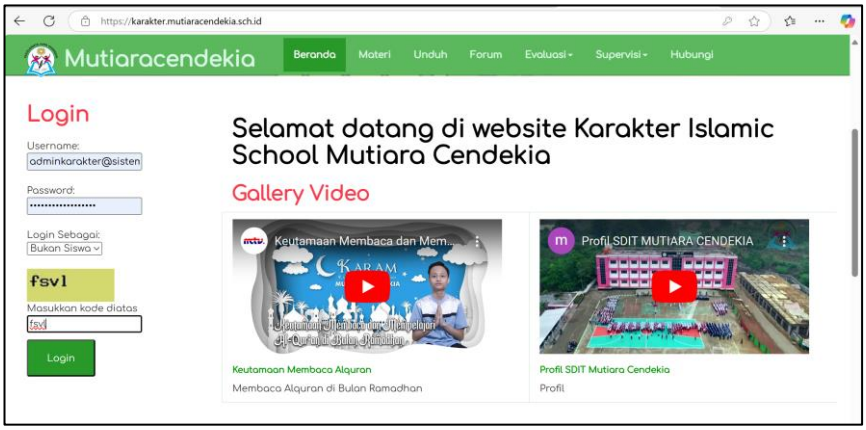

Figure 2. System Login Initial View

Input character values to accurately document behaviors observed in youngsters at school. Utilizing observers or educators designated to offer help in evaluating students' attitudes. Indicators collaboratively developed by educators and Counseling Guidance Educators are responsible for evaluating and cultivating pupils' conduct. These indications were derived from observation, debate, and trials conducted in small groups regarding student behavior descriptions. The evaluation display is illustrated in Figure 3 below.

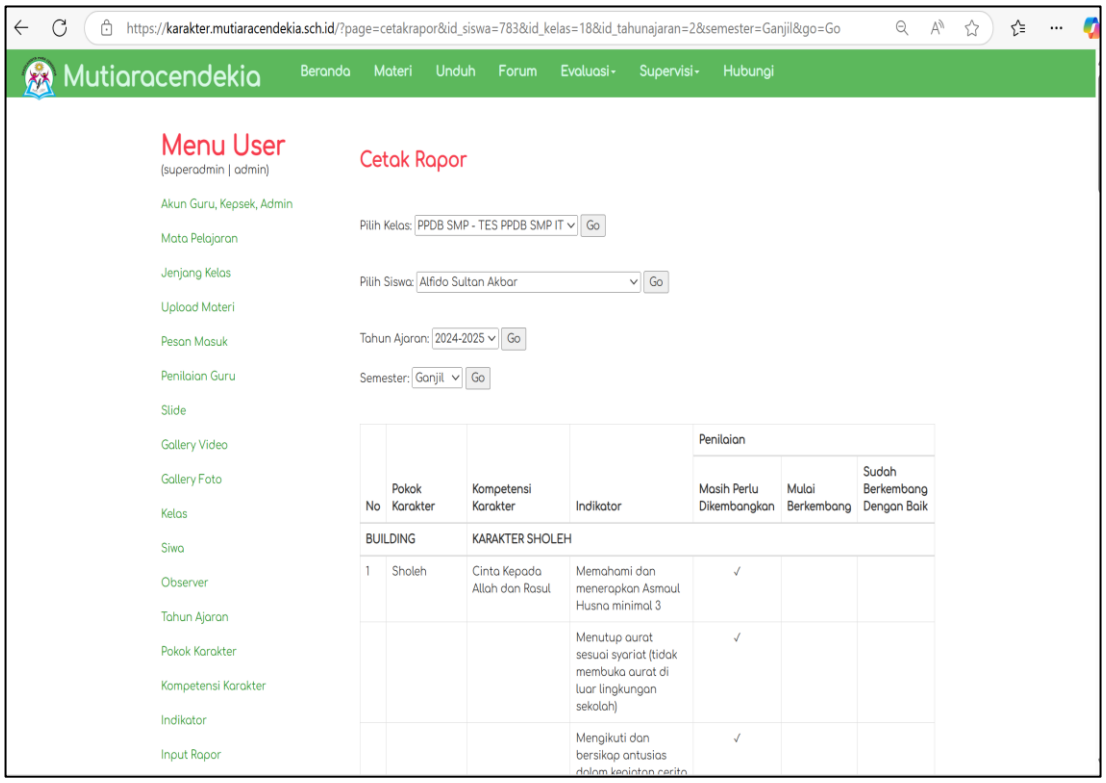

Figure 3. Value Description Display

The outcomes of this activity entail a reassessment of various challenges encountered during the execution of restricted trials. The improvements required include the addition of the school identification on the login page, namely the logo and school name. 2) Evaluation criteria for the observation of behavior and attitudes utilizing the Likert scale. It is essential to provide a file upload feature for data entry on the admin page and to modify student information on the educator page. 4) A function must be incorporated to download the list of teachers on the admin website, the grade leg on educator page, and the final score of each subject on the educator page.

Attitude of All Subject Teachers

Educators do observational activities regarding children's behavior inside the school setting, encompassing both academic engagement and social interactions. Subsequent to conducting observations, the instructor proceeds to input grades into the program, where the indicators have been modified or established to assess the child's condition and circumstances. The evaluation procedure commences with observations prior to recording the assessment outcomes (García-Carmona et al., 2024). The results about pupils' behavior and attitudes, derived from all indicators seen by the designated teachers, will be obtained.

All subject teachers implement e-report cards, supported by a dedicated technology and informatics team that administers the e-report card system, assisting teachers who encounter difficulties in entering attitude value data for both extracurricular activities and classroom learning processes. The introduction of the character report card assessment aims to mobilize all organizational resources to align with the leadership's planning and efforts to attain a specific

objective (Xu et al., 2024). Initially, the principal engages in socialization, followed by training for all parents. Subsequently, implementation occurs, which is then reviewed to identify any impediments or challenges encountered in utilizing e-report cards from the previous semester. Subsequently, the educators will disclose the impediment, after which the institution will offer accommodations for that impediment, maybe including training and personal help. The subsequent actions were conducted by educators to input kid attitude evaluations by Observers. Observers are educators designated by the principal to monitor and evaluate students' conduct during school hours.

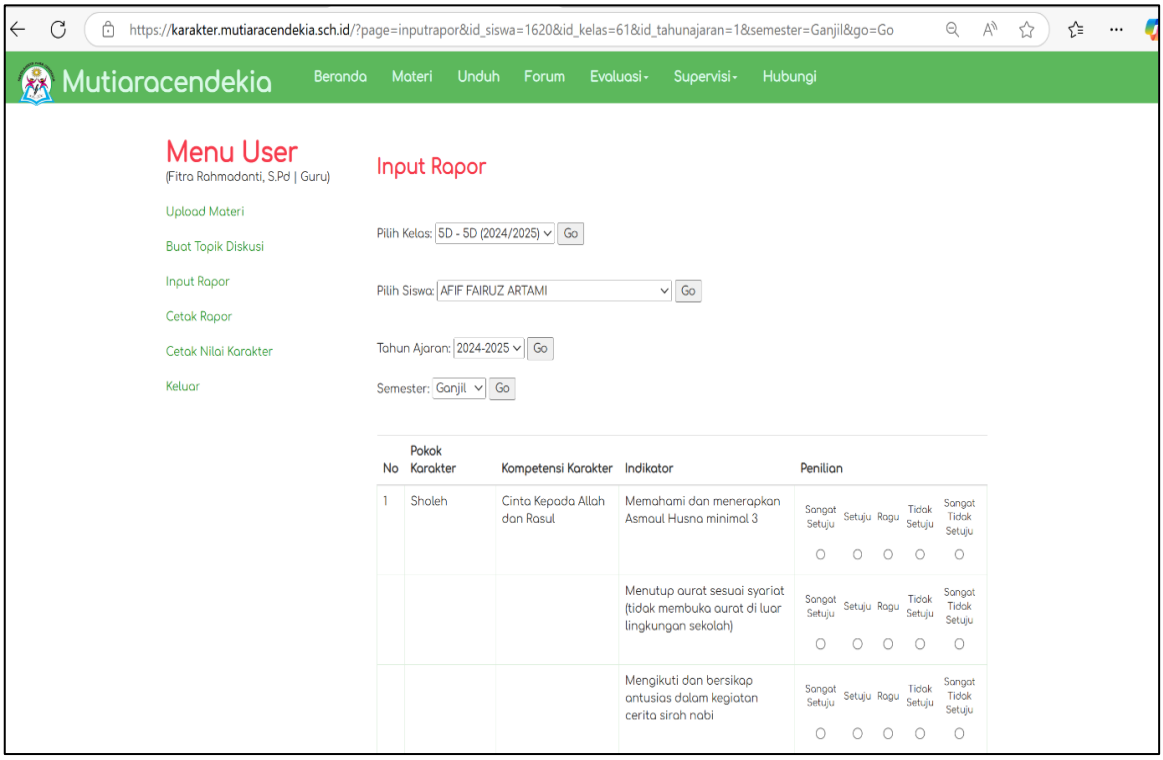

Figure 4. Value Input Display

System Testing

Software testing is conducted in three phases: reliability, portability, and maintainability assessments. The reliability test using the Blackbox system is conducted by executing the admin system application, inputting data, and monitoring the output. The findings of the black box test indicate that the application has functioned effectively and aligned with the anticipated outcomes. The portability aspect test is conducted by executing the e-report web across various prevalent desktop browsers, specifically Internet Explorer, Mozilla Firefox, Google Chrome, Opera, and Safari, as well as three mobile browsers: Google Chrome, Opera Mini, and Firefox for Mobile. The test findings are deemed satisfactory or applicable. Based on the aforementioned facts and analysis, it can be concluded that this e-report system has satisfied the criterion of portability. The evaluation of this maintainability feature is conducted operationally in the field: (1) Login Test: Warning If the login and password do not correspond with the provided admin credentials, a red warning message will be displayed. Warning When a Captcha entry does not correspond with the expected results, a red warning letter will indicate that the Captcha is incorrect; thus, the findings of the maintainability assessment can be deemed to satisfy *maintainability criteria*.

Final Products

The report card is a document detailing the progress of student learning outcomes derived from assessments conducted by teachers over a certain timeframe. The report card is a document detailing the development of student learning outcomes derived from assessments conducted by teachers over a specified timeframe (Siregar, 2024). The evaluation results encompass the attitudes or actions

evaluated by two teachers for each child. Engaging in processing, reasoning, and presentation within both concrete and abstract domains pertaining to the independent application of acquired knowledge from school, demonstrating effective and creative action, and executing particular tasks under direct supervision. The assessment report is presented as a description categorizing each need as developing, starting to develop, or well developed. Presentation of the e-report card printout as illustrated in Figure 5.

During the development phase, Mutiara Cendekia Integrated Islamic Elementary School designed a web-based e-report card model that encompasses instruments and web-based e-report media. Media specialists conducted validation to assess usability, functionality, and visual communication elements. At this juncture, the validation of media testing was conducted by media experts, specifically Mr. Dr. Hermawansa, M.TPd, a lecturer in computer education, and Mr. Fadlul Amdhi Yul, M.Pd.T, the head of the Computer Education Study Program at Dehasen University Bengkulu. Validation was conducted with a Likert scale ranging from 1 to 5. Score 5 = SS for Strongly Agree, score 4 = S for Agree, score 3 = RG for Doubt, score 2 = TS for Disagree, and score 1 = STS for Strongly Disagree. The validator for media experts comprises two lecturers from the Faculty of Education at Dehasen University, both of whom are specialists in learning media.

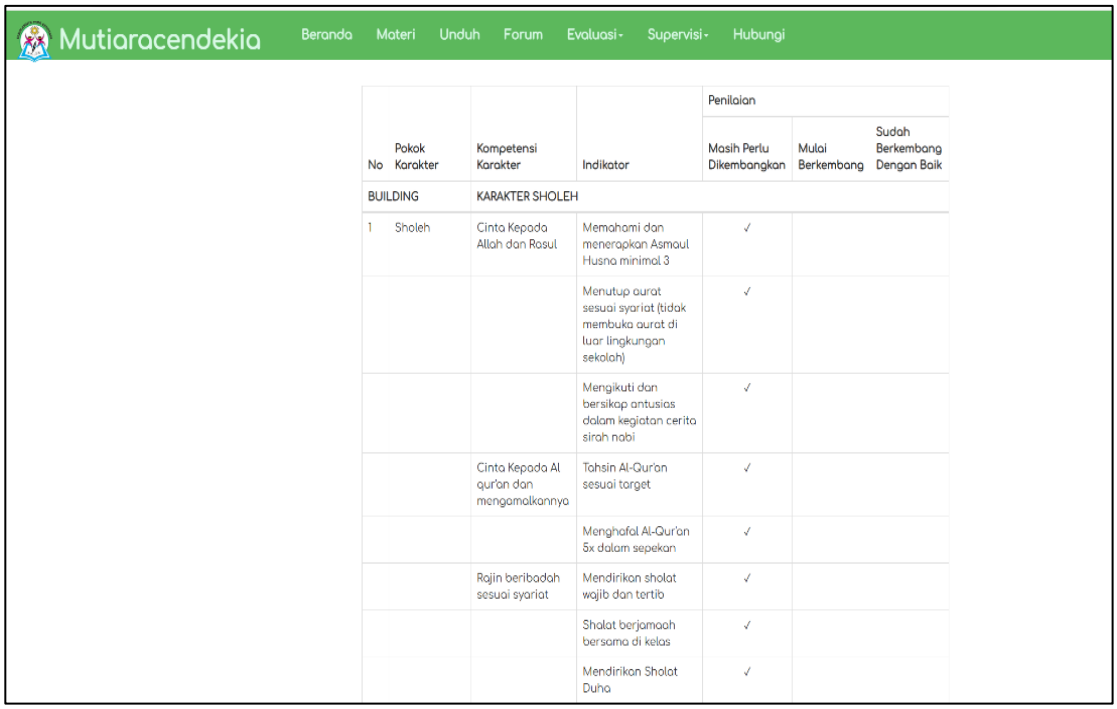

Figure 5. Display of E-Report Card Printouts

The assessment of learning media by media experts yielded a usability feasibility percentage of 81.25%, a functionality percentage of 94.61%, and a visual communication percentage of 79.17%, resulting in an average feasibility percentage of 85.75%. The web-based e-report media was categorized as "Very Feasible" according to the feasibility criterion. This study conducted beta testing to evaluate the quality of learning media from a usability perspective. The instrument employed is the Computer Usability Satisfaction Questionnaire, created by IBM to assess software usability standards (Lewis, 1993), with modifications to suit the evaluated medium. The testing was conducted on Friday, November 22, 2024, and was evaluated by 75 teachers acting as observers. The product trial involved completing a questionnaire following the teacher's attempt to utilize the evaluated e-report application. The questionnaire comprises 19 items derived from the Computer Usability Satisfaction Questionnaires (Lewis, 1995). The subsequent outcomes of the product trial conducted by the teacher are presented in Table 1.

Table 3. Beta Testing Results

Respondent Assessment	Assessment Score	Score	∑ Score
Very Agree (SS)	857	5	4285
Agree (S)	323	4	1292
Doubtful (RG)	225	3	675
Disagree (TS)	20	2	40
Very Disagree (STS)	0	1	0
SUM			6292

The assessment results from students using the web-based e-report card, consisting of 19 questions, yielded a score of 6292 out of 7125, equating to a percentage of 88.31%. According to the eligibility category in Table 1, it is designated as "Highly Valuable". It may be stated that the web-based e-report on this topic is effective and serves as a medium for evaluating teachers for the observation of student attitudes and behaviors. The subsequent phase involves a practical assessment to see whether the teacher finds the generated application beneficial, as indicated by the t-test results. Practicality refers to the convenience inherent in a product regarding preparation, usage, interpretation, and storage. Products deemed practical can be assessed by implementation indicators, wherein an average difference test is conducted to determine any disparity in practicality between the initial product and the final prototype. A normality test was conducted before the t-test. The study was deemed significant if the calculated t-value exceeded the table t-value at a 5% significance level, and the p-value was less than 0.05.

The t-test is conducted under the assumption of equal variances. The t-test yielded a calculated t-value of 1.867 with a significance level of 0.067 for the same variance. The t-value for a table with degrees of freedom (df) equal to 54 at a 5% significance level is 1.674. The t-calculated result exceeds the t-table value at the 5% significance level (1.867 > 1.674). The description indicates a disparity in the execution of the initial manual report card product compared to the final web-based e-report card utilized by teachers. This may indicate that the web-based e-report model is practicable, facilitating teachers in composing report cards from any location at any time due to its online nature. In addition to being valid and practical, web-based e-report solutions must be evaluated for their effectiveness. The effectiveness is evidenced by the teacher's feedback, as the web-based e-report model garnered a favorable response, achieving a score of 85.60%, categorizing it as very good.

Per Regulation of the Minister of Education and Culture Number 23 of 2016, which governs Educational Assessment Standards, educational evaluation at the elementary and secondary levels encompasses the assessment of learning outcomes conducted by teachers, educational institutions, and the government. The objective is to oversee and evaluate the process, student advancement, and ongoing growth in educational results. Educators do assessments by designing and assembling assessment instruments, executing evaluations, analyzing and utilizing data, and disseminating results, which constitute the initial phases in assessing learning outcomes (Pantiwati et al., 2023). The utilization of e-report websites is frequently implemented to enhance educational standards.

The web-based tool, e-report card, has been developed to facilitate teachers in assessing pupils, including functionalities for printing and evaluating student learning results. E-report cards are anticipated to positively impact the education sector and facilitate the advancement of educational growth and development in the contemporary digital age (MacGregor Pelikánová, 2019). The implementation of this web-based report card application aims to enhance its functionalities to encompass value and information management while also enabling effective data storage and access (Miller, 2008). The e-report card application is a web-based software designed to construct student performance reports based on grade level and learning unit established by the curriculum team of Sekolah Mutiara Cendekia Lubuklinggau. This process entails the teacher entering extracurricular grades, student attendance records, accomplishment metrics, attitude assessments, and special remarks from the teacher. Additionally, the e-report will aggregate the data into student scores and

descriptions based on each student's performance in the examined fundamental competencies (Amilia et al., 2024).

The performance of the school rests greatly on the speed with which information is obtained (Newmann & Wehlage, 1995). Consequently, it is essential for educational institutions to possess a system capable of rapidly generating information. It is essential to guarantee precision in documenting values for the creation of electronic reports, necessitating the utilization of many fundamental competencies. For computers to evolve as an internal tool, they must also serve as the primary catalyst. Interviews conducted with curriculum representatives and various teachers at Mutiara Cendekia Integrated Islamic Elementary School Lubuklinggau revealed that the implementation of e-report cards has yielded a remarkably positive impact. This technique enhances efficiency in grade management and facilitates complete monitoring of student development (Yao et al., 2021). Furthermore, electronic report cards facilitate the communication of information to parents in a more transparent and comprehensive manner (Hung et al., 2010).

Significant changes to the administration of grades and student progress, as previously said, that managing grades and student progress reports, will have an influence on the long and time-consuming procedure as well as the accuracy of grade accumulation by using handwritten report cards. Nonetheless, the introduction of e-report cards has enhanced efficiency and organization. Educators can now input grades instantaneously, while parents can effortlessly access their child's progress reports in real-time, facilitating a more dynamic and informative communication experience. The utilization of e-report cards facilitates a more comprehensive understanding of student progress (Maulana & Sudarmilah, 2024). The evaluation process becomes more open and can deliver feedback to parents more promptly. Teachers must adapt to new technology, as initial challenges emerged, particularly concerning technical comprehension in the implementation of e-report cards (Siram et al., 2024).

Nonetheless, via continuous training and technical assistance, educators feel significantly more adept and assured in utilizing electronic report cards. They often favor e-report cards due to their exceptional usefulness in streamlining the assessment and reporting of student progress. Consequently, the beneficial effect extends beyond teachers to include students' parents, as the ability for parents to access children's progress reports online fosters enhanced communication transparency and facilitates a more dynamic and interactive information exchange. Consequently, enhancing cooperation between educators and parents to foster a more thorough comprehension of student growth within the educational setting (Munthe & Westergård, 2023).

The user level in the e-report is categorized into numerous classifications, specifically: 1) Administrator: A person appointed by the principle to oversee the data within this electronic report card application.An individual chosen by the principal to manage the data in this e-report card application. Administrators bear direct accountability to the principal. 2) Observer or Subject Teacher: An educator designated by the principal to assess student attitudes and behaviors. Furthermore, the Observer is responsible for documenting variations in student test scores from one semester to the next. 3) Educator: Faculty members authorized to produce and complete student report cards. 4) Principal: The person responsible for supervising all facets of the evaluation. The principal is permitted to utilize administrative access to oversee the evaluation methods conducted by the instructor. 5) Parents and Guardians: Parents and guardians of pupils possess the rights to monitor the academic performance of their children. This provides them with insight into their children's academic performance through electronic report cards. In conclusion, the dimension of data governance capabilities indicates that the e-report website application extends beyond merely inputting learning outcomes; it also encompasses features that facilitate user access to various activities. The implementation of the student grade information system enables educators to efficiently and effortlessly input student grade data into a computerized system.

The implementation of a web-based student grade information system enhances the efficiency of processing student reports, providing users with convenience in data collection and reporting. This system not only streamlines grade input but also presents the average results for each student,

categorized by class and semester. Furthermore, it generates teacher registration reports for student guardians to better comprehend student performance (Rasul et al., 2023). The utilization of web-based e-report cards aids observers and educators in managing report cards, facilitating the identification of student talents through both numerical data and qualitative information. To optimize teacher performance and expedite report card completion, a web-based e-report system has been developed to clarify teacher evaluations and streamline report card creation (Guskey, 2023).

The author asserts that to sustain proficiency in adapting to technological advancements, it is essential to focus on the professional development of educators and the education sector. This is accomplished by engaging in seminars or workshops pertaining to educational technology and digital report card management. Moreover, establishing a specialized team or working group tasked with overseeing the newest technical advancements and executing innovations in digital report card management might serve as an efficient technique. Through persistent training, mentoring, and professional growth, it will be capable of surmounting the challenges posed by rapid technological change. Educators and educational personnel will retain pertinent competencies and be capable of maximizing the efficacy of digital report cards in enhancing student proficiency and academic endeavors within schools.

The author asserts that, given the rising utilization of school-owned online media to facilitate teaching and learning, it is imperative to conduct security assessments of the information system to counteract the pervasive hacking threats faced by schools, which can lead to information breaches or disruptions in system services. One approach involves employing penetration testing techniques to identify numerous vulnerabilities that are currently challenging to discover, along with recommendations for enhancement. Utoro et al., (2020) state that the Penetration Testing Execution Standards (PTES) is a penetration testing framework established in 2010, offering a systematic and thorough approach to testing.

The resolution to equip educators with proficiency in managing student grades via e-Report Cards involves promoting skill enhancement in the utilization of the e-Rapor system through training and technical support on electronic assessment reporting services as outlined in the Shape the web page (Samsudding et al., 2024). The implementation of E-Report applications throughout Indonesia must consider the criteria and educational goals set by each educational institution (Masrur, 2024). This can indirectly enhance self-sufficiency and competence in digital literacy abilities. The creation of this character report card constitutes an adjustment pertaining to character assessments for kids. Curriculum revisions coincide with technology improvements in schooling. The curriculum comprises a compilation of subjects and educational programs provided by an institution, including lesson plans designated for participants at a specific educational level, thus serving as a crucial component of the educational system. The curriculum in Indonesia has experienced several revisions (Sirajuddin & Saleka, 2024).

Conclusion

Creation of a legitimate, practical, and effective web-based character e-Rapor system, which undergoes software testing from a product viewpoint, encompassing dependability, maintainability, and portability elements. The author's study and development indicate that utilizing web-based e-report cards for assessments aids teachers in managing report card results, providing a more practical and efficient means of articulating students' talents in descriptive form. The designed web-based e-Report System facilitates the identification of excellent educators and the composition of Report Cards, hence enhancing teacher performance in completing these documents. This approach can be advanced in the future by including character education media into the educational implementation process in schools, serving as a tool for parents to monitor their children's conduct and attitudes at home.

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