

Development and Validation of a Single-Entry Information Platform in Primary Education

Ilham Pratama^{1*}, Herlinawati², Marwa³

¹ Universitas Lancang Kuning, Indonesia; ilhampratama42@admin.sd.belajar.id

² Universitas Lancang Kuning, Indonesia; herlinawati@unilak.ac.id

³ Universitas Lancang Kuning, Indonesia; marwa@unilak.ac.id

ARTICLE INFO

Keywords:

Keyword 1: Platform
Elementary
Education
Keyword 2: Validity
Keyword 3: Practicality
Keyword 4: Single-entry
System

Article history:

Received 2026-03-15

Revised 2026-04-12

Accepted 2026-04-17

ABSTRACT

This study aimed to develop and evaluate the validity and practicality of the Student Card Platform, a web-based single-entry digital learning information system designed to centralize access to learning resources for elementary school teachers, students, and parents. The study was motivated by the widespread use of multiple digital platforms in schools, which often resulted in fragmented information, missed learning announcements, inefficient communication, and inconsistent access to learning resources. This study employed a Research and Development (R&D) approach using the 4D development model (Define, Design, Develop, and Disseminate). The platform was developed through a systematic process of needs analysis, product design, expert validation, product revision, and limited implementation involving teachers, students, and parents. The validation results indicated that the platform was highly feasible, with mean scores of 3.5 (87.5%) from subject matter experts and 3.6 (90%) from Information Technology experts. Practicality testing also produced positive results, with scores of 88.25% from students, 93.75% from parents, and 91.3% from teachers, all categorized as highly practical. These findings demonstrate that the Student Card Platform is a valid and practical solution for improving centralized learning information management and facilitating efficient communication in elementary school settings.

This is an open access article under the [CC BY-NC-SA](https://creativecommons.org/licenses/by-nc-sa/4.0/) license.



Corresponding Author:

Ilham Pratama

Universitas Lancang Kuning; Pekanbaru, Indonesia ilhampratama251211@gmail.com

1. INTRODUCTION

The rapid advancement of digital technology has transformed educational practices by expanding access to learning resources and increasing instructional flexibility (Rodiah & Sholih, 2024). However, the widespread use of multiple digital platforms has also created fragmented learning environments in which learning materials, assignments, and communication are distributed across separate, non-integrated systems, reducing the efficiency of information access and management.

In many schools, platforms such as WhatsApp, Google Drive, YouTube, and online meeting applications are simultaneously used to support teaching and learning (Wityastuti et al., 2022; Mailisa et al., 2022). Although these technologies enhance learning opportunities, the lack of integration often complicates the organization and retrieval of educational information (Sucipto, 2024). This issue was also identified at SD JR Primary Pekanbaru through preliminary observations, informal surveys, and classroom observations conducted during the 2024/2025 academic year. Reports from six homeroom teachers and seven subject teachers indicated that approximately 78% of students experienced difficulties accessing learning information consistently, while 50% of parents reported challenges in monitoring their children's learning because of fragmented communication channels. In addition, supervision reports showed that about 40% of teachers experienced inefficiencies caused by repeatedly distributing the same information across multiple platforms.

These findings can be explained by Cognitive Load Theory (Sweller, 1988), which suggests that fragmented information increases extraneous cognitive load and reduces learners' ability to process information efficiently. To address this issue, SD JR Primary Pekanbaru developed the Student Card Platform, a Carrd.co-based single-entry learning information system designed to centralize learning materials, assignments, announcements, and educational resources within a simple, mobile-friendly interface. The platform design also reflects Nielsen's usability principles (1993), emphasizing ease of learning, efficiency, and accessibility for users with different levels of digital literacy. Previous studies have discussed centralized learning platforms and digital learning environments (e.g., Jewitt et al., 2011; Selwyn, 2011; See et al., 2020). However, most have focused on technological integration or parental engagement rather than on lightweight, single-entry systems specifically designed to simplify daily learning information management in elementary schools. Consequently, limited attention has been given to practical solutions that provide centralized access for teachers, students, and parents through a simple and user-friendly interface.

Therefore, this study develops and evaluates the Student Card Platform as a single-entry learning information system for primary education. Unlike previous studies that emphasize complex digital ecosystems, this platform prioritizes simplicity, accessibility, and centralized information management for non-technical users. The novelty of this study lies in the development and evaluation of a lightweight digital platform that addresses fragmented educational communication while improving the accessibility and management of learning information in elementary school settings. Accordingly, this study aims to evaluate the validity and practicality of the Student Card Platform as a centralized digital learning information system for primary education.

2. METHODS

This study employed a Research and Development (R&D) design with descriptive quantitative analysis to develop and evaluate the feasibility of the Student Card Platform, a web-based single-entry learning information system designed to provide centralized access for teachers, students, and parents (Borg & Gall, 2003; Sugiyono, 2019). The study adopted the 4D Development Model (Define, Design, Develop, and Disseminate). However, the Disseminate stage was limited to implementation within the research setting because the primary focus was to evaluate the platform's validity and practicality (Winaryati et al., 2021).

The study was conducted at JR Primary School, a private elementary school, during the development period from June 2025 to May 2026, covering needs analysis, product design, expert validation, product revision, and limited practicality testing. The population consisted of 67 students and 22 teachers. Using purposive sampling, the practicality trial involved 7 Grade 4 students, 7 teachers, and 7 parents. Product validity was evaluated by three Information Technology experts and two subject matter experts.

3. FINDINGS AND DISCUSSION

The Student Card Platform was developed using the 4D Development Model proposed by Thiagarajan, which consists of four stages: Define, Design, Develop, and Disseminate. The Define stage was conducted at the end of the 2024/2025 academic year through a needs analysis of learning information management within the school. The research then proceeded

to the Design stage, during which the initial prototype of the Student Card Platform and the research instruments were developed based on the identified needs. Subsequently, the Develop stage involved expert validation and practicality testing to evaluate the quality and usability of the platform. Finally, the Disseminate stage focused on introducing and implementing the finalized platform more broadly within the school environment.

The implementation timeline spanned from June 2025 to May 2026. The Define and Design stages were completed during the first semester of the 2025/2026 academic year, while the Develop and Disseminate stages were carried out during the second semester. The findings from each stage of the 4D development process are presented in the following sections.

3.1 Define Stage

The Define stage served as the initial phase of the development process to identify the educational needs, challenges, and learning information management practices at JR Primary School. Conducted in June 2025, this stage involved academic supervision records, teacher evaluation meetings, classroom observations, user observations, and analyses of the school's technological conditions. The findings obtained during this stage provided the basis for determining the design specifications of the Student Card Platform.

a. Front-End Analysis

The front-end analysis revealed that learning information at the school was not yet centralized within a single integrated system. Learning materials, assignments, announcements, and classroom information were distributed across multiple platforms, including messaging applications, cloud-based learning tools, and other digital channels, resulting in fragmented communication. School supervision activities and end-of-year evaluation meetings confirmed this issue, with teachers reporting that approximately 78% of students frequently missed learning announcements because important information was buried among messages or dispersed across different applications. Consequently, parental responses were delayed, student engagement declined, and communication among teachers, students, and parents became less effective.

This fragmented information delivery also affected the implementation of home-based learning activities, as some students and parents did not consistently access instructional materials before class. As a result, several planned learning activities could not be implemented optimally, and some students arrived unprepared. These findings, documented in the teachers' evaluation meeting at the end of the 2024/2025 academic year, highlighted the need for a centralized digital learning information system.

b. User Characteristics Analysis

The user characteristics analysis examined the digital habits, technological familiarity, and accessibility needs of students, teachers, and parents as the primary users of the platform. Although users demonstrated different levels of digital literacy, observations indicated that most parents were familiar with simple website-based navigation commonly used in daily digital activities. These findings suggested that a single-entry web-based interface would be more practical and accessible than a complex multi-platform system.

Accordingly, the Student Card Platform was designed as a lightweight web-based system that provides centralized access to learning materials, assignments, announcements, and other school information through a single page. Carrd.co was selected as the development platform because of its user-friendly interface, lightweight structure, organized visual design, and compatibility across smartphones, tablets, and laptops without requiring additional application installation.

c. Task Analysis

The task analysis identified the learning activities, information categories, and communication processes that needed to be integrated into the platform. Classroom observations and administrative evaluations indicated that learning resources and educational information were previously distributed across multiple platforms, making access inefficient. Therefore, the platform was designed to integrate teacher-developed

learning modules, student portfolios, digital books, literacy resources, assignments, learning exercises, grade-level academic information, and digital resources provided by Kemendikdasmen, including *Sumber Belajar*, *Latihan Soal*, *BUDI Digital Books*, and national curriculum textbooks.

The analysis also identified recurring challenges, including repeated searches for learning materials, inconsistent communication channels, and difficulties locating important announcements. Consequently, the platform adopted a centralized navigation system to improve the accessibility and efficiency of learning information management.

d. Concept Analysis

The concept analysis stage focused on identifying theoretical foundations relevant to the educational problems encountered during the preliminary analysis process. In this stage, the researcher reviewed various theories and studies related to learning information systems, usability, digital educational communication, and technology-supported learning environments. Particular attention was given to Cognitive Load Theory and usability principles, as both concepts were closely related to the difficulties experienced by students, parents, and teachers during information access activities.

The researcher also reviewed studies concerning learning information systems in schools and the importance of accessible digital communication between schools and families. These references strengthened the conceptual understanding that educational information should be organized in a more centralized, clear, and user-friendly manner to support more effective learning interactions. Through this conceptual review, the researcher concluded that a simplified single-entry access platform could reduce information complexity, improve accessibility, and support more efficient communication among teachers, students, and parents.

e. Formulation of Initial Product Specifications

Based on the findings obtained from the previous analyses, the researcher formulated the initial specifications of the Student Card Platform as an integrated web-based learning information system. The platform was designed to function as a centralized access point for various educational resources and school-related information within the elementary school environment. The initial product specifications included the organization of learning menus, centralized navigation structures, grade-level information categories, teacher access systems, assignment information pages, digital portfolios, reading resources, and school communication features. The platform was also designed to emphasize simplicity, accessibility, and practical usability for users with varying levels of digital competence.

In addition, the platform specifications considered the technological conditions of the school environment, including internet accessibility, cross-device compatibility, and ease of implementation in daily educational activities. Through these specifications, the Student Card Platform was expected to support a more organized, efficient, and user-friendly learning information system for teachers, students, and parents at the elementary school level.

3.2 Design Stage

a. Product Design

The product design phase focused on organizing learning information and educational resources into a centralized single-entry platform. Based on the findings from the Define stage, the Student Card Platform was designed to integrate student and teacher portfolios, teacher-developed learning modules, national curriculum textbooks, national and international literacy resources, learning exercises, assignments, and classroom academic information. Integrating these resources into one platform was intended to simplify information access and reduce users' reliance on multiple digital applications.

To accommodate users with varying levels of digital literacy, the platform adopted a simple, lightweight, and user-friendly interface with a single-entry navigation concept. The design structure served as a blueprint for organizing the integrated learning components according to the needs of teachers, students, and parents, ensuring that the platform remained practical, accessible, and easy to use. The initial product design is presented in the following diagram.

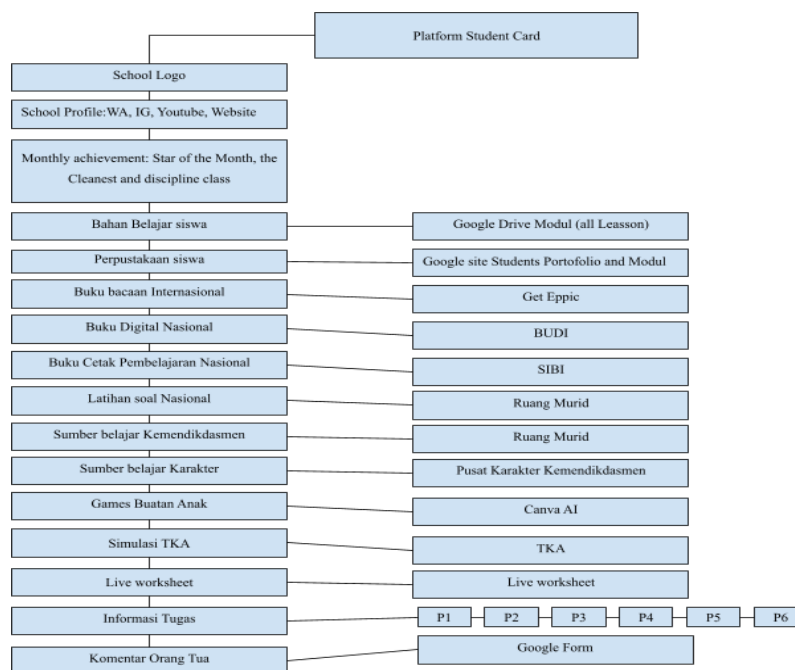


Diagram 1 Student Card Platform Design Structure

b. Instrument Design

Following the product design process, the researcher developed a set of instruments to evaluate the validity and practicality of the Student Card Platform. The instruments were developed based on usability principles and Cognitive Load Theory to address both technological and educational aspects. Product validity was evaluated by five expert validators, consisting of three Information Technology experts and two subject matter experts. The Information Technology validation instrument comprised 11 indicators related to usability, navigation, accessibility, and interface design, while the material validation instrument included 10 indicators focusing on the clarity, organization, accessibility, and appropriateness of learning information.

Practicality was assessed using separate questionnaires for the platform's primary users, consisting of 9 indicators for teachers, 8 indicators for parents, and 7 indicators for students, covering ease of access, information clarity, efficiency, usability, and user convenience. After the instruments were confirmed to be valid and reliable, practicality testing was conducted using purposive sampling involving seven Grade 4 students, seven homeroom teachers, and seven parents from Grades 1–4.

1. Expert Validation Sheet Validity Testing

Prior to the practicality assessment, the research instruments underwent expert judgment to evaluate the content validity, relevance, and feasibility of each indicator. The validation focused on ensuring that all instrument items were aligned with the research objectives, theoretical foundations, and the characteristics of the Student Card Platform. Two validation instruments were assessed: the Information Technology Expert Validation Sheet and the Material Expert Validation Sheet.

The Information Technology Expert Validation Sheet was evaluated by three experts specializing in information technology, communication, and computer systems, while the Material Expert Validation Sheet was assessed by two experts in education and English language teaching. The validation process was conducted using Google Forms on May 18, 2026, for the Information Technology experts and May 20, 2026, for the

material experts. The results of the Information Technology expert validation are presented in the following table.

Table 1 Results Validation of Technology Expert and Material Expert

Item	Average score	Maximum score
Technology Expert	39,6	44
Material Expert	33	40

Based on Table 1, the expert validation results indicate that both validation instruments achieved a high level of content validity. The Information Technology Expert Validation Instrument obtained an average score of 39.6 out of 44, indicating that the instrument was highly feasible and appropriate for evaluating the technical aspects of the Student Card Platform. Meanwhile, the Material Expert Validation Instrument obtained an average score of 33 out of 40, demonstrating that it was appropriate for assessing the pedagogical and content-related aspects of the platform. Based on the expert judgment and content validity evaluation, both instruments were considered valid and suitable for use in the subsequent stages of the study, following minor revisions suggested by the validators.

2. *Validity and reliability testing for all Questionnaire*

After the expert judgment process, the researcher conducted validity and reliability testing of the practicality questionnaires for teachers, parents, and students. The questionnaires were distributed via Google Forms to 30 teachers and staff members, 22 parents (Primary 5–6), and 24 students (Primary 5–6) at JR Education Foundation between May 19 and May 23, 2026. Item validity was analyzed using Corrected Item–Total Correlation (CITC) in SPSS. The results showed that all questionnaire items exceeded the required *r*-table values (0.361 for teachers, 0.423 for parents, and 0.404 for students), indicating that all items were valid.

Reliability was evaluated using Cronbach's Alpha, and all questionnaires obtained coefficients above the acceptable threshold of 0.70, demonstrating good internal consistency. Therefore, the teacher, parent, and student practicality questionnaires were considered both valid and reliable, making them suitable for evaluating the practicality of the Student Card Platform in this study.

3.3 *Develop Stage*

In the Develop stage, the development of the Student Card Platform was carried out based on expert feedback to ensure that the product met both technical and pedagogical standards. At this stage, the platform was evaluated by five experts, consisting of three Information Technology experts and two material experts. The validation process aimed to refine the product through systematic revisions based on expert suggestions and recommendations. The Information Technology expert validation and feedback process was conducted on May 19th–20th, 2026. During this period, the experts reviewed the platform and provided suggestions related to system functionality, interface design, accessibility, and overall technical performance. The detailed results of the expert suggestions and revisions are presented in the following table:

Table 2 Results of Product Validation Revisions

Validators	Suggestions	Revisions
Information technology Expert	1. Add an introductory landing page before the main platform interface to improve user orientation and navigation.	Before:  The platform initially did not include a landing or front page before entering the main interface.
	2. Provide a dedicated Carrd.co link for	

teachers at the bottom of the platform to facilitate access to teacher-specific features.

3. Replace the existing background with a more visually appealing design to enhance the platform's aesthetics and overall user experience.

After:

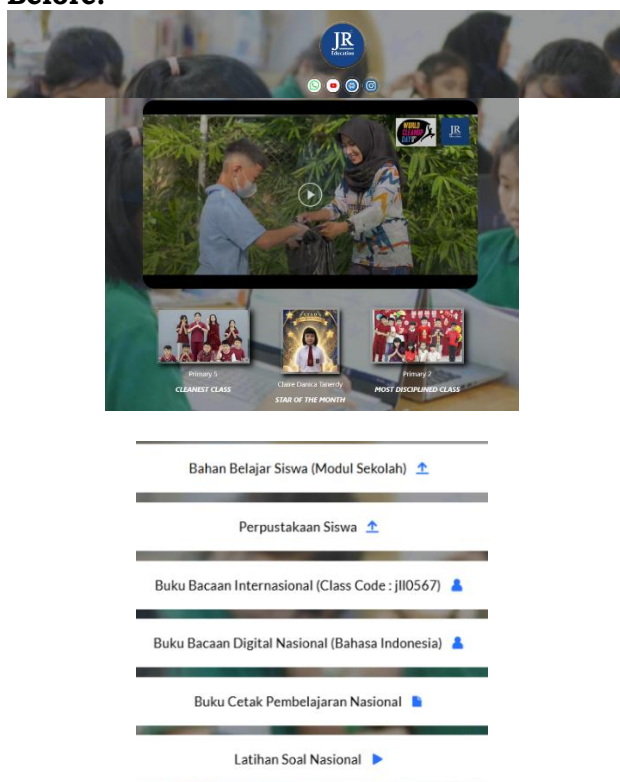


The platform was revised by adding an introductory landing page to improve user orientation before accessing the main interface. In addition, the background was redesigned with a more visually appealing layout, and a dedicated link to the teachers' Carrd page was added at the bottom of the platform to facilitate access to teacher-specific resources.

Subject Matter Expert

1. Provide a brief introduction on the homepage and add clear headings for each section so that users can easily understand the function of each part, along with simple usage instructions.
2. Organize the learning resources section by adding appropriate titles and restructuring the content. The student learning materials should be placed within a folder originally named "Library," which is then revised into "JR Education Learning and Creative Center." In addition, student-created games should also be included in this folder. Meanwhile, national exam practice questions are repositioned in a separate section at the bottom, along with other practice activities such as TKA and Live Worksheet.

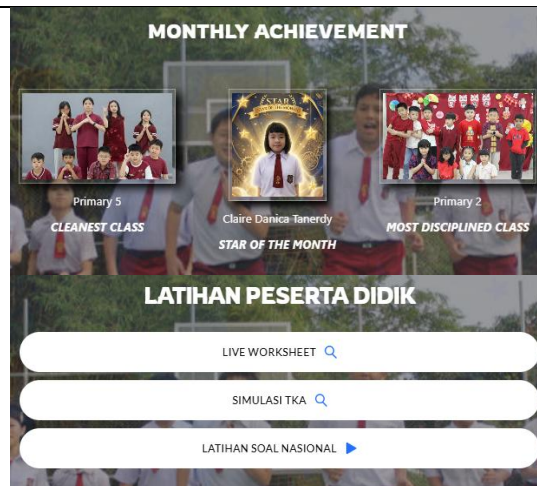
Before:



Previously, there were no explanatory titles for each section or item in the platform, which made it less clear for users to understand the function of each part.

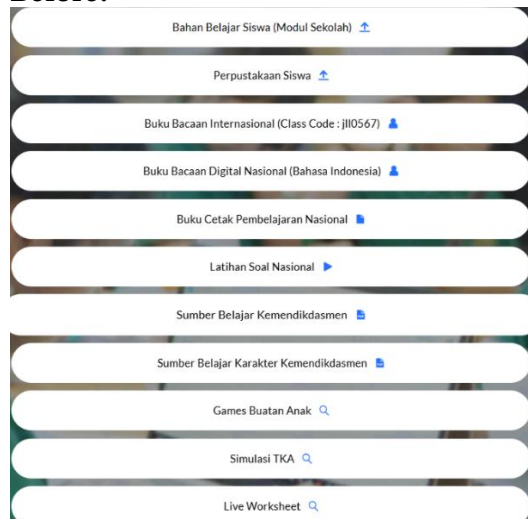
After:





The researcher added clear titles to each section of the platform to improve user understanding of the function of every part.

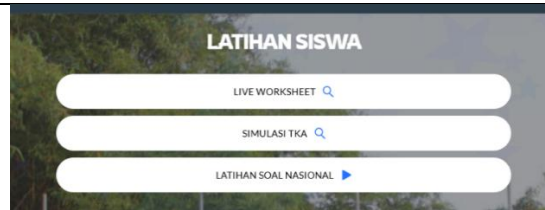
Before:



The arrangement and naming of folders were initially less organized, making navigation less structured for users.

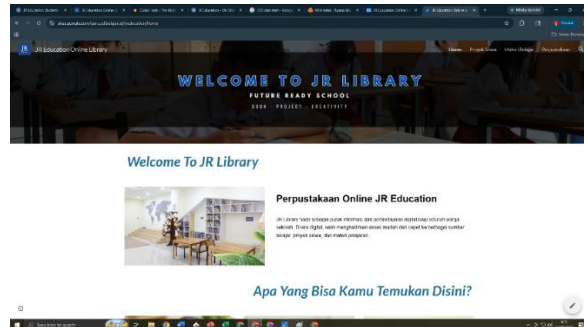
After:





The researcher reorganized several folders according to the expert's recommendations by integrating student-created games into the "JR Education Learning and Creative Center," which was previously labeled as the library section. In addition, teacher learning modules were relocated to this section, as they are categorized as teacher-produced materials from JR teachers, ensuring a more logical and structured content organization. And Practice exercises were repositioned to the lower section of the platform to create a more logical and user-friendly content structure.

Before:



After:



Previously, this section was labeled as the school library. It was then revised and renamed, while the Games folder and teacher-created modules, which were previously placed outside this section, were integrated into it to create a more organized and centralized learning space.

Before:



After:

The games made by students and modules designed by JR teachers were relocated to this section to improve content organization and centralize all learning resources in one place.

Before:**After:**

The label was previously written as "Assignment Information" and was revised to "Student Assignment Information" to clearly indicate that this section is intended for students.

After the revisions were completed based on the experts' recommendations, a final validation was conducted by the same Information Technology and material experts to evaluate the revised Student Card Platform. The detailed results of the final expert validation are presented in the following table.

Table 3 Final Results of Expert Validation after Product Revision

Validators	Score	Validity
Information Technology expert 1	3.9	Highly Feasible
Information Technology expert 2	3.5	Highly Feasible
Information Technology expert 3	3.5	Highly Feasible
Subject matter expert 1	3.5	Highly Feasible
Subject matter expert 2	3.5	Highly Feasible

Based on Table 3, the final validation results indicate that the revised Student Card Platform achieved a "Highly Feasible" rating from all five expert validators, consisting of three Information Technology experts and two subject matter experts. Information Technology Expert 1 awarded the highest score (3.9), while the remaining four experts each assigned a score of 3.5. All scores fall within the 3.26–4.00 range, meeting the established criteria for the Highly Feasible category.

These consistent ratings indicate that the revisions successfully improved the platform and that it met the required technical and pedagogical standards. The findings confirm that the Student Card Platform demonstrates high feasibility in terms of system functionality, usability, content relevance, and instructional design, making it suitable for implementation in the elementary school learning environment.

3.4 Disseminate Stage

a. Distribution to students and their practicality testing

The Student Card Platform was initially introduced through a one-to-one practicality trial involving three students on May 22, 2026, to evaluate usability, navigation, and the overall user experience. During the trial, the researcher observed how students interacted with the platform and identified any difficulties encountered during use. The findings indicated that the students were able to navigate the platform with minimal difficulty, providing preliminary evidence that the revised platform was ready for broader practicality testing.

Following the initial trial, a limited practicality test was conducted with seven Grade 4 students. Before the activity, the researcher explained the improvements made to the Student Card Platform based on expert feedback and guided the students through its main features to ensure they understood the platform's functions and navigation. After completing the hands-on session, the students completed the Student Practicality Questionnaire to evaluate the usability of the platform. The results of the student practicality assessment are presented in the following table.

NO	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Total	Percentage
1	4	4	3	4	3	3	3	24	85.7%
2	4	4	3	3	3	3	3	23	82.1%
3	3	4	3	3	2	3	4	22	78.6%
4	4	4	4	4	3	3	3	25	89.3%
5	4	4	4	3	3	4	3	25	89.3%
6	4	4	4	4	4	4	4	28	100%
7	4	4	3	4	4	3	4	26	92.9%
Average	3.8	4.0	3.4	3.5	3.1	3.2	3.4	24.71	88.25%

Practicality data were analyzed using descriptive quantitative analysis by converting the average score into percentage form using the formula: Practicality Percentage = (Obtained Score / Maximum Score) × 100%. The resulting percentages were then interpreted using the following criteria: ≥ 80% = Highly Practical, 61%–79% = Practical, and ≤ 60% = Less Practical. As shown in Table 13, the overall average score obtained from students is 24.71 and the maximum score is 28. This corresponds to a practicality percentage of 88.25%. This result indicates that the Student Card Platform falls into the “Highly Practical” category. Furthermore, the average scores of each item ranged from 3.1 to 4.0. The highest score was found in item Q2 (4.0), indicating that students found this aspect very easy and highly practical. Meanwhile, the lowest score was found in item Q5 (3.1), although it still remained within a positive and acceptable category.

b. Distribution to parents and their practicality testing

The Student Card Platform was introduced to seven parents during a limited dissemination session conducted on May 25, 2026. The participants represented different grade levels, consisting of two parents from Primary 1, three from Primary 2, and two from Primary 4, with one Primary 4 parent also having a child in Primary 3. The session began with an explanation of the research objectives, followed by a discussion of the challenges identified during the previous academic year, particularly the fragmented use of multiple digital learning platforms. The researcher then introduced the revised Student Card Platform and demonstrated its main features and functions.

After the demonstration, parents completed the Parent Practicality Questionnaire to evaluate the platform's usability and practicality. The researcher also collected participants' feedback and suggestions regarding their experience using the platform. The results of the parent practicality assessment, collected on May 26, 2026, are presented in the following table.

Table 5 Results of Parent Practicality Questionnaire

No	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Total	Mean	%	Category
1	4	4	4	4	4	4	4	4	32	4.0	100.0	Very Practical
2	4	4	4	4	4	4	4	4	32	4.0	100.0	Very Practical
3	4	4	4	4	4	4	4	4	32	4.0	100.0	Very Practical
4	4	4	4	3	4	3	3	3	28	3.5	87.5	Very Practical
5	4	4	3	4	4	3	3	3	28	3.5	87.5	Very Practical
6	4	3	3	3	4	3	3	3	26	3.3	81.3	Very Practical
7	4	4	4	4	4	4	4	4	32	4.0	100.0	Very Practical
Avg.	4.0	3.9	3.7	3.7	4.0	3.6	3.6	3.6	30.0	3.75	93.75	Very Practical

Based on Table 5, the parent practicality questionnaire showed that the Student Card Platform was perceived as highly practical. The total scores ranged from 26 to 32, with an average score of 30.0 out of 32, equivalent to a mean of 3.75 (93.75%), indicating a high level of parental acceptance of the platform. At the indicator level, the mean scores ranged from 3.6 to 4.0. Q1 and Q5 obtained the highest mean score (4.0), while Q6, Q7, and Q8 received slightly lower scores (3.6). Nevertheless, all indicators remained within the Highly Practical category, demonstrating that parents considered the platform easy to use, accessible, and effective in supporting communication and their children's learning activities.

c. Distribution to teachers and their practicality testing

The Student Card Platform was introduced to seven teachers, consisting of the homeroom teachers of Grades 1, 2A, 2B, 3, 4, 5, and 6, during a dissemination session held on May 26, 2026. The researcher explained the development process of the platform, including the revisions made based on expert feedback, and demonstrated how the platform could support teachers in distributing assignments and providing learning resources more effectively.

Following the demonstration, the teachers completed the Teacher Practicality Questionnaire, which had previously been validated and tested for reliability. The questionnaire was administered through Google Forms, and a presentation link was provided to facilitate further exploration of the platform's features. Data collection was conducted from May 27 to May 28, 2026, and the results of the teacher practicality assessment are presented in the following table.

Table 6 Results of Teachers Practicality Questionnaire

No	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9*	Total	Mean	%	Category
R1	3	4	3	3	3	3	3	3	4	29	3.2	80.6	Practical
R2	4	4	4	4	4	4	4	4	4	36	4.0	100.0	Very Practical
R3	4	4	4	4	3	4	3	4	3	33	3.7	91.7	Very Practical
R4	3	3	3	3	3	4	3	3	4	29	3.2	80.6	Practical
R5	4	4	4	4	4	4	4	4	4	36	4.0	100.0	Very Practical
R6	4	4	4	4	4	4	4	4	4	36	4.0	100.0	Very Practical
R7	4	3	4	4	4	3	3	3	3	31	3.4	86.1	Very Practical
Avg.	3.7	3.7	3.7	3.7	3.6	3.7	3.4	3.6	3.7	32.86	3.7	91.3	Very Practical

Based on Table 6, the teacher practicality data were analyzed using descriptive quantitative analysis. The questionnaire consisted of nine items rated on a four-point Likert scale, with a maximum possible score of 36 for each respondent. Because Q9 was negatively worded, it was reverse-coded before analysis to ensure that higher scores consistently represented more positive perceptions of the platform's practicality.

After reverse coding, the total scores ranged from 29 (80.6%) to 36 (100%), with an average score of 32.86 out of 36, equivalent to a mean of 3.7 (91.3%). These results indicate that the Student Card Platform was perceived as highly practical by teachers. The indicator analysis showed mean scores ranging from 3.4 to 3.7. Items Q1, Q2, Q3, Q4, Q6, and the reverse-coded Q9 obtained the highest mean score (3.7), while Q7 recorded the lowest mean (3.4), although it remained within the highly practical category. Overall, the findings demonstrate that the platform was considered easy to use, useful, and effective in supporting the delivery of learning materials, assignments, and school information through a centralized digital system.

This study was conducted at JR Primary School Pekanbaru, where learning information was previously distributed through multiple digital platforms, creating fragmented communication among students, parents, and teachers. The findings demonstrate that the Student Card Platform is both valid and highly practical, indicating that its design successfully addressed the school's need for a centralized learning information system. The expert validation results confirmed the platform's feasibility from both technical and pedagogical perspectives. Information Technology experts rated the platform 3.6 (90%), indicating that its interface, navigation, accessibility, and functionality met usability standards for elementary school users. These findings are consistent with Nielsen (1994), who emphasizes that simple navigation and organized interfaces improve usability. Subject matter experts awarded a mean score of 3.5 (87.5%), indicating that the learning content and information organization were appropriate for elementary students and supported meaningful learning experiences. Similar findings have been reported by Bond et al. (2021), who argue that educational platforms should integrate technological functionality with pedagogically meaningful content.

The practicality results further demonstrate that the platform functioned effectively in authentic educational settings. From the perspective of Cognitive Load Theory (Sweller, 1988), the single-entry design reduced unnecessary cognitive effort by allowing users to access learning materials, assignments, announcements, and school information through one centralized platform. Rather than spending time searching across multiple applications, users could focus on learning activities. This finding supports previous studies showing that simplified digital environments reduce extraneous cognitive load and improve learning efficiency (Mutlu-Bayraktar et al., 2019).

Students perceived the platform as highly practical (88.25%), particularly for accessing learning materials and assignments. The simple navigation, clear organization, and compatibility across different devices enabled students to locate information efficiently without complicated procedures. Recent studies also indicate that interface simplicity, navigation clarity, and organized digital structures significantly influence students' usability experiences and accessibility in educational platforms, particularly for younger learners who require straightforward digital interaction (Al-Samarraie, 2019). These findings support previous research indicating that younger learners show higher engagement when educational platforms are easy to navigate and visually organized (Chen et al., 2021). Parents reported the highest practicality score (93.75%), highlighting the importance of centralized communication in supporting home-based learning. The platform enabled parents to monitor assignments and school information through a single access point, reducing uncertainty caused by multiple communication channels. These findings align with studies emphasizing that integrated digital communication strengthens parental involvement and improves school-home collaboration (Epstein, 1995; Goodall, 2020; Garbe et al., 2020).

Teachers also perceived the platform as highly practical (91.3%). They reported that the platform simplified the distribution of learning materials, assignment management, and communication with parents. The centralized structure reduced repetitive administrative tasks previously required across multiple applications, supporting more efficient instructional communication. These findings are consistent with Trust and Whalen (2020),

who reported that digital platforms can improve teachers' efficiency in managing learning information and communication.

Overall, the findings indicate that the Student Card Platform successfully addressed the practical challenges of fragmented learning information by providing a centralized, accessible, and user-friendly digital environment. Unlike many previous studies that focused primarily on Learning Management Systems and learning outcomes, this study emphasizes the importance of simplicity, accessibility, and centralized information management for elementary school communities. The results suggest that effective educational technology does not necessarily require complex systems; instead, a lightweight single-entry platform can effectively support communication, information management, and learning activities for students, parents, and teachers in elementary education.

4. CONCLUSION

This study successfully developed the Student Card Platform, a web-based single-entry learning information system for elementary schools, using the 4D Research and Development (R&D) model consisting of the Define, Design, Develop, and Disseminate stages. The platform was designed to address the problem of fragmented learning information by providing centralized access to learning materials, assignments, announcements, and school communication.

The expert validation results indicated that the platform was highly feasible, with mean scores of 3.6 (90%) from Information Technology experts and 3.5 (87.5%) from subject matter experts. Practicality testing also demonstrated positive user acceptance, with scores of 88.25% from students, 93.75% from parents, and 91.3% from teachers, all categorized as highly practical.

Overall, the findings indicate that the Student Card Platform is a valid, feasible, and practical digital solution for improving centralized learning information management and strengthening communication among teachers, students, and parents in elementary school settings. The platform may also serve as an alternative model for schools seeking a simple, accessible, and user-friendly digital information system without relying on complex learning management platforms.

REFERENCES

- Al-Samarraie, H. (2019). The impact of learning environment design on cognitive load and engagement in online learning systems. *Education and Information Technologies*, 24(5), 1–15. <https://doi.org/10.1007/s10639-019-09895-2>
- Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021). Emergency remote teaching in higher education: Mapping the first global online semester. *International Journal of Educational Technology in Higher Education*, 18(1), 1–24. <https://doi.org/10.1186/s41239-021-00282-x>
- Borg, W. R., & Gall, M. D. (2003). *Educational research: An introduction* (7th ed.). Allyn & Bacon.
- Chen, C. M., Wu, C. H., & Yang, Y. T. C. (2021). Effects of digital learning interface design on student engagement and learning performance. *Computers & Education*, 168, 104211. <https://doi.org/10.1016/j.compedu.2021.104211>
- Epstein, J. L. (1995). School/family/community partnerships: Caring for the children we share. *Phi Delta Kappan*, 76(9), 701–712.
- Garbe, A., Ogurlu, U., Logan, N., & Cook, P. (2020). Parents' experiences with remote education during COVID-19 school closures. *American Journal of Qualitative Research*, 4(3), 45–65. <https://doi.org/10.29333/ajqr/8471>
- Goodall, J. (2020). Parental engagement and deficit discourses: Absolving the system and solving parents. *Educational Review*, 72(4), 1–16. <https://doi.org/10.1080/00131911.2018.1559801>
- Rodiah Nasution & M Sholih Salimul Uqba. (2024). Preparing For Tomorrow's Challenge: Tren Teknologi & Media Dalam Pendidikan Masa Depan. *KIRANA : Social Science Journal*, 1(2), 76–86. <https://doi.org/10.61579/kirana.v1i2.167>

- Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, 28(2), 189–199. <https://doi.org/10.70725/307718pkpiuu>
- Jewitt, C., Clark, W., & Hadjithoma-Garstka, C. (2011). The Use Of Learning Platforms To Organise Learning In English Primary And Secondary Schools. *Learning, Media and Technology*, 36(4), 335–348. <https://doi.org/10.1080/17439884.2011.621955>
- Mailisa Firma Putri, & Wirawati, D. (2022). Penerapan Teknologi Digital sebagai Media Pembelajaran Bahasa Indonesia Kelas VII SMP Negeri 5 Banguntapan. *BELAJAR BAHASA: Jurnal Ilmiah Program Studi Pendidikan Bahasa dan Sastra Indonesia*, 7(2), 285–300. <https://doi.org/10.32528/bb.v7i2.102>
- Mutlu-Bayraktar, D., Cosgun, V., & Altan, T. (2019). Cognitive load in multimedia learning environments: A systematic review. *Computers & Education*, 141, 103618. <https://doi.org/10.1016/j.compedu.2019.103618>
- Nielsen, J. (1993). Usability Heuristics. Dalam *Usability Engineering* (hlm. 115–163). Elsevier. <https://doi.org/10.1016/B978-0-08-052029-2.50008-5>
- See, B. H., Gorard, S., El-Soufi, N., Lu, B., Siddiqui, N., & Dong, L. (2020). A systematic review of the impact of technology-mediated parental engagement on student outcomes. *Educational Research and Evaluation*, 26(3-4), 150–181. <https://doi.org/10.1080/13803611.2021.1924791>
- Selwyn, N., Banaji, S., Hadjithoma-Garstka, C., & Clark, W. (2011). Providing a platform for parents? Exploring the nature of parental engagement with school Learning Platforms. *Journal of Computer Assisted Learning*, 27(4), 314–323. <https://doi.org/10.1111/j.1365-2729.2011.00428.x>
- Sucipto. (2024). Tantangan Dan Peluang Implementasi Pembelajaran Berbasis Teknologi Di Era Digital. *Jurnal Ilmiah Pendidikan Citra Bakti*, 11(3), 902–916. <https://doi.org/10.38048/jipcb.v11i3.4192>
- Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D* (2nd ed.). Alfabeta.
- Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4
- Winaryati, E., Mardiana, M., Munsarif, M., & Suwahono. (2021). *Circular model RD&D (Model RD&D pendidikan dan sosial)*. KBM Indonesia.
- Wityastuti, E. Z., Masrofah, S., Haqqi, T. A. F., & Salsabila, U. H. (2022). Implementasi Penggunaan Media Pembelajaran Digital di Masa Pandemi COVID-19. *Jurnal Penelitian Inovatif*, 2(1), 39–46. <https://doi.org/10.54082/jupin.39>