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# Development of Literacy Interactive Flashcards to Enhance Indonesian Vocabulary Competence in Primary Schools

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## ABSTRACT

Indonesian vocabulary learning in primary schools is hindered by students' limited contextual comprehension and the lack of interactive, integrated educational resources. This research aims to develop and validate Literacy Interactive Flashcard (Litraflash) as an alternative medium for fourth-grade Indonesian language instruction. Using the Research and Development (R&D) approach with the ADDIE model (Analysis, Design, and Development stages), the study involved fourth-grade students and teachers as research subjects. Data collection instruments included needs analysis questionnaires and validation sheets for material, media, and practitioner experts. To ascertain the feasibility of the media, data were examined using descriptive quantitative and qualitative methods. The results demonstrated high validity across all sectors: material expert validation (87%), media expert validation (89%), and practitioner validation (87%). These scores categorize Litraflash as "very valid," indicating it is relevant, practical, and beneficial for classroom use. This study's innovation lies in the hybrid integration of physical flashcards with QR codes linked to Google Sites, instructional videos, and gamification platforms such as Wordwall and Quizlet. This innovation bridges the gap between traditional text-based learning and digital media, providing an easily implementable solution for primary education. This study contributes to the field of literacy media development and Indonesian language pedagogy.

**Keywords**: primary school, learning media, Litraflash, research and development, vocabulary.



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## INTRODUCTION

The development of science and technology in the 21st century requires the education system to focus not only on mastering academic knowledge but also on developing life skills relevant to modern societal needs. One essential skill students must possess is communication, which encompasses the ability to convey ideas orally and in writing, comprehend messages, and interact effectively in various social contexts (Wahyuni, 2022). These communication skills are closely linked to proficiency in language, as language is the primary tool for human interaction and socialization.

Language skills comprise four main aspects: writing, reading, speaking, and listening, which are interconnected and inseparable. Language learning plays a strategic role in developing these skills from the primary to the secondary school levels. The Republic of Indonesia's Ministry of Education, Culture, Research, and Technology (2024) states that the goal of the Indonesian language course is to equip students with the skills to communicate critically, creatively, and across a variety of contexts, while simultaneously strengthening literacy within the appropriate sociocultural context.

The capacity to read and write is not the only definition of literacy; it also encompasses the ability to understand, evaluate, solve problems, and reflect on information presented in both textual and visual forms (Endraswara, 2017; Hudha, 2019). A vital component of literacy is vocabulary mastery, as the quality and quantity of an individual's vocabulary directly influence their language proficiency (Tarigan, 2021). Consequently, individuals with a rich vocabulary repertoire tend to be better equipped to comprehend texts, express ideas, and communicate effectively.

However, vocabulary mastery among primary school students remains a significant issue in the field. Daily assessment data for fourth-grade students at SD Negeri Talang 02, Tegal Regency, indicate that most students have difficulty interpreting new vocabulary in reading texts. Approximately 65% of students have not yet accurately understood vocabulary meanings, which affects their reading comprehension and the quality of their writing. This condition is consistent with the National Assessment (Asesmen Nasional) results, which show that students' literacy skills at the school are at a moderate level and have stagnated over the last three years. Similar issues were also found in several other primary schools in Tegal Regency, according to interviews with fourth-grade teachers. This requires special attention, as reading comprehension plays a critical role in students' academic success (Sulistiowati et al., 2024).



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The issue of low vocabulary comprehension can be explained by Information Processing Theory, which posits that new information must be processed meaningfully to be stored in long-term memory (Atkinson & Shiffrin, as cited in Banar et al., 2021). Furthermore, Schema Theory emphasizes that comprehension is strengthened when new information is linked to prior knowledge (Slavin in Banar et al., 2021). Learning that focuses solely on providing vocabulary definitions without meaningful activities or appropriate media tends to be less effective at helping students build robust vocabulary schemas.

Learning media play a vital role as a vehicle for delivering messages from teachers to students and as a support for the information-processing mechanism. Relevant and engaging media can help students focus their attention, clarify meaning, and improve retention of the material being studied (Daryanto, 2016). In Indonesian language instruction, particularly for vocabulary interpretation, flashcards are considered highly relevant because they present visual and verbal information concisely and clearly. Numerous studies indicate that flashcards are effective for helping students learn and remember vocabulary, especially when designed to be contextual and interactive (Fitriani et al., 2022; Muftisany, 2023).

These conditions necessitate developing innovative learning media that help students interpret vocabulary more deeply and meaningfully. Therefore, this study aims to develop Literacy Interactive Flashcard (Litraflash), an interactive flashcard medium that integrates visual illustrations, sentence contexts, and simple technological support to enhance fourth-grade primary school students' vocabulary interpretation competence.

### Research Questions

1. How is the needs analysis conducted for the development of Litraflash media to enhance the ability of fourth-grade students to interpret Indonesian vocabulary?
2. How is the design of Litraflash media structured to enhance the ability of fourth-grade students to interpret Indonesian vocabulary?
3. How is the development of Litraflash media executed to enhance the ability of fourth-grade students to interpret Indonesian vocabulary?

## LITERATURE REVIEW

### Media in Language Learning

Learning media serves as a primary vehicle for delivering messages from teachers to students, ensuring that learning remains effective and meaningful. Media functions not only as a



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technical tool but as an integral part of instructional strategies designed to stimulate students' attention, interest, cognitive processes, and emotional engagement (Kristanto, 2016; Suryani et al., 2018). In the context of language instruction, learning media have a vital semantic function: they help make the meaning of words or concepts more easily understood by students (Asyhar, 2011, as cited in Suryani et al., 2018).

Numerous studies assert that effective learning media can simultaneously support students' cognitive, affective, motivational, and imaginative functions (Daryanto, 2016). Media relevant to the material's characteristics and students' needs also help strengthen information processing and long-term retention. Therefore, the selection and development of learning media must consider alignment with learning objectives, students' characteristics, and underlying learning theories (Miarso, 2004, in Suryani et al., 2018).

**Flashcards as Vocabulary Learning Media**

Flashcards are graphic learning media in the form of two-sided cards that present information concisely through text, symbols, and/or images. Numerous studies have found that flashcards are an effective medium for helping students recognize, remember, and understand basic information, particularly for vocabulary learning (Fitriani et al., 2022; Muftisany, 2023). The primary characteristics of flashcards include a brief presentation of information, engaging visuals, and flexibility for use in both individual and group learning settings.

In language instruction, flashcards have proven effective in increasing student attention and strengthening the association between word forms and their meanings. The simultaneous presentation of visual and verbal information makes flashcards highly relevant for vocabulary learning, which demands semantic comprehension rather than rote memorization. However, the effectiveness of flashcards depends heavily on their design, the context of use, and their integration with meaningful learning activities.

**Literacy and Vocabulary Mastery**

Literacy is understood as an individual's ability to understand, use, evaluate, and reflect upon texts to achieve specific goals and participate actively in society (OECD, 2015, as cited in Hudha, 2019). Literacy includes more than just reading and writing abilities; it also includes speaking, vocabulary comprehension, and background knowledge (Stewart, 2014, as cited in Dewayani, 2019).



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According to the National Reading Panel, as cited in Read Naturally (2025), vocabulary is one of the primary components of literacy and the foundation of language skills. Adequate vocabulary mastery contributes significantly to the ability to comprehend texts, convey ideas, and achieve academic success (Alexander, 2013, as cited in Kurniawati & Karsana, 2020). In the context of Indonesian language learning in primary schools, the competence to interpret vocabulary requires not only the ability to know the meaning of a word but also the ability to understand and use the word contextually according to the communication situation.

The Kurikulum Merdeka (Independent Curriculum) positions vocabulary interpretation as a vital component of Indonesian language learning outcomes, particularly within the elements of reading, viewing, and writing for fourth-grade students. This indicates that vocabulary instruction must be designed to be contextual, meaningful, and oriented toward language use in real-life situations.

**Theoretical Framework for Vocabulary Media Development**

The development of effective vocabulary learning media can be explained through several learning theories. Information Processing Theory emphasizes that new information will be stored in long-term memory if it receives attention, repetition, and meaningful processing (Atkinson & Shiffrin in Banar et al., 2021). Schema Theory explains that comprehension is strengthened when new information is linked to prior knowledge (Slavin, 2009, as cited in Banar et al., 2021).

In addition, Connectionism Theory asserts the importance of learning readiness, repeated practice, and enjoyable learning experiences in strengthening the stimulus-response relationship (Thorndike in Setiawan, 2017). Dual Coding Theory also demonstrates that the integration of verbal and visual information can strengthen cognitive representation and enhance student memory retention (Paivio, 2010 in Rabbani et al., 2023). These four theories provide a solid conceptual foundation for the development of interactive flashcard media for vocabulary learning.

**Previous Studies and Research Gaps**

A number of previous studies indicate that flashcard media, in both printed and digital formats, are effective in enhancing the language skills of primary school students, such as early reading, writing, speaking, and vocabulary mastery.



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Development research conducted by Maharani and Ramadan (2023) focused on creating flashcard media to improve students' early reading abilities. The flashcards developed were in a digital format containing words and images. Expert validation results showed a very high level of feasibility across design, material, and linguistic aspects. These findings confirm that digital flashcards are capable of improving the quality of early reading instruction while supporting student and teacher engagement in the learning process.

Research by Cahyanti et al. (2023) developed e-flashcard media to improve the early reading skills of first-grade primary school students. This media combined physical cards with barcodes linked to letter recognition videos. The results of validity and effectiveness tests indicated that the media was highly feasible and effective for use. This study demonstrates that the integration of simple technology into flashcards can enrich students' learning experiences.

Sidiasih (2023) developed digital flashcard media to enhance the Indonesian language writing skills of second-grade students. The flashcards were displayed via an LCD projector and used as a visual stimulus in writing instruction. The research results showed that the flashcard media had a very high level of validity and was considered practical and effective based on field trials. These findings indicate that flashcards can be used not only for reading but also to support productive skills such as writing.

Development research conducted by Rifqi (2024) examined the use of flashcard media to improve the Javanese script (Aksara Jawa) reading skills of fourth-grade students. The flashcards were designed with a focus on recognizing script symbols and their meanings. The study's results indicated very high levels of validity and effectiveness.

In the context of foreign language instruction, Sahetapy et al. (2023) developed digital flashcard media to enhance the English-speaking skills of primary school students. The flashcards were utilized to introduce vocabulary, phrases, and sentence structures. The research findings showed that digital flashcards were highly feasible and effective in improving students' speaking skills. This study reinforces the finding that flashcards are effective for cross-linguistic vocabulary learning.

Ni’mah et al. (2024) developed flashcard media integrated with the traditional game Ular Tangga (Snakes and Ladders) to enhance primary school students' literacy skills. This media proved to be valid and effective in improving student literacy, achieving a high-category increase. This study demonstrates that integrating game elements can boost students' learning motivation and engagement.



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A comparative study conducted by Wen et al. (2020) compared the effectiveness of flashcards with educational board games in beginner-level Mandarin language learning. The results showed that the group using flashcards exhibited higher levels of motivation and learning engagement, as well as superior vocabulary learning outcomes. These findings reinforce the role of flashcards as an effective visual-verbal medium in vocabulary instruction.

Experimental research by Pratiwi et al. (2023) examined the influence of using flashcard media on the Indonesian vocabulary mastery of Madrasah Ibtidaiyah (Islamic Primary School) students. The flashcards used contained images and word definitions. The results of the study indicated that the use of flashcards had a significant effect on improving students' vocabulary.

Research by Novasyari (2024) investigated the use of printed flashcards to enhance the English vocabulary mastery of fifth-grade students. The findings showed that flashcards not only improved vocabulary mastery but also had a positive impact on speaking, writing, and listening skills. These findings demonstrate the potential of flashcards as a cross-language skills medium.

A critical review of these previous studies reveals several research gaps. First, most studies still utilize flashcards with simple designs limited to two-dimensional images and text, lacking the integration of interactive features that could enrich the student learning experience. Second, previous research has generally focused on early-stage reading and writing skills rather than specifically addressing the competence of interpreting vocabulary within a textual context—a key requirement of the Kurikulum Merdeka learning outcomes for fourth-grade Indonesian language instruction. Third, prior studies have rarely integrated simple instructional technology, such as QR codes linked to contextual videos and gamification elements, as an inherent part of the flashcard media. Fourth, the theoretical approaches employed have generally not explicitly linked media development to an integrated framework of Information Processing Theory, Schema Theory, Connectionism, and Dual Coding Theory.

**Research Position and Contribution**

Based on the aforementioned gaps, this study positions itself to develop Literacy Interactive Flashcards (Litraflash), an interactive flashcard medium specifically designed to enhance the Indonesian vocabulary interpretation competence of fourth-grade students. Litraflash integrates contextual visuals, applicative text, and interactive features in the form of QR codes linked to instructional videos and gamification elements. Through this approach, the research is expected to provide both theoretical and practical contributions to the development of



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literacy learning media that align with current curriculum requirements and the learning needs of primary school students.

## METHODOLOGY

### Research Design

This study is a Research and Development (R&D) project aimed at producing an instructional medium in the form of Literacy Interactive Flashcards (Litraflash) to enhance the Indonesian vocabulary interpretation competence of fourth-grade students. The development model employed is an adaptation of the ADDIE model. Due to existing constraints, this research focuses on three primary stages: analysis, design, and development.

### Research Subjects and Location

The research was conducted at six public primary schools located in the Talang District, Tegal Regency. The research subjects included fourth-grade students and their respective teachers, who served as respondents for the needs analysis. Additionally, this study involved several experts as validators for the instructional media product.

Purposive sampling was used to choose the schools depending on factors such as shared challenges in vocabulary instruction, the availability of basic supporting infrastructure (QR code scanners and projectors), and the schools' willingness to participate in the study.

### Research Procedures

This study was conducted through several development stages adapting the ADDIE model, specifically the analysis, design, and development phases. In the analysis phase, learning needs were identified through classroom observations, teacher interviews, and the distribution of needs analysis questionnaires to students. This stage aimed to uncover the vocabulary learning challenges faced by students and to identify the instructional media requirements relevant to the characteristics and context of primary school learning.

The design phase focused on planning the Litraflash media based on the results of the needs analysis. Activities in this stage included determining the learning competencies to be achieved, selecting and organizing vocabulary materials, and designing the media interface to align with student characteristics and instructional goals. The media design was developed by considering visual aspects, material clarity, and ease of use.



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The development phase involved realizing the planned designs into the final Litraflash product. At this stage, material and media experts verified the developed media to assess the feasibility of content, interface design, and practicality. Before moving on to later phases, the media was revised and improved based on the validation results.

**Developed Product**

The product developed in this study is Literacy Interactive Flashcards (Litraflash), an instructional medium for vocabulary learning consisting of printed cards equipped with visual illustrations, vocabulary text, and QR codes. These QR codes are linked to digital content hosted on Google Sites, which features vocabulary definitions, contextual text examples, short instructional videos, and interactive vocabulary games created using Wordwall and Quizlet. This media is designed to support vocabulary learning through a multimodal and contextual approach.

The hardware utilized in this research includes Windows-based laptops, Android smartphones for QR code scanning, LCD projectors, and laminated printed flashcards. The software employed includes Google Sites as the digital content delivery platform, Wordwall and Quizlet as interactive gaming media, and standard QR code generators.

**Instruments and Data Collection Techniques**

A 4-point Likert scale questionnaire was used to collect data. The research instruments included needs analysis forms for students and teachers, as well as validation rubrics for media experts, material experts, and practitioners.

**Instrument Validity and Reliability Testing**

Expert judgment and Pearson Product-Moment correlation analysis were used to evaluate instrument validity, while the Cronbach's Alpha coefficient was used to evaluate instrument reliability. Statistical data processing was performed using JASP software version 0.17. An instrument is declared valid if the calculated r-value (r-count) is $\geqslant$ the r-table value and the p-value is $\leqslant 0.05$. If the alpha coefficient value is more than 0.50, the instrument is deemed dependable.

**Data Analysis Techniques**

The needs analysis data was analyzed using quantitative descriptive analysis by converting questionnaire scores into percentages and necessity categories, supplemented by qualitative



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descriptive analysis of field findings. Validation data from experts and practitioners were analyzed using quantitative descriptive analysis by converting assessment scores into feasibility percentages, complemented by qualitative descriptive analysis of the validators' suggestions as a basis for product revision.

## RESULTS AND DISCUSSION

### Results of Student Needs Analysis

The findings of the student needs analysis show that more visual, interactive, and contextual instructional materials are needed to assist the teaching of Indonesian language in fourth-grade primary school. The student needs analysis questionnaire—having undergone content validity, empirical validity, and reliability testing—demonstrated adequate internal consistency (Cronbach's Alpha = 0.684), confirming its suitability for identifying student needs. Data collected using the Likert scale were analyzed quantitatively as percentages, computed using the formula below:

$$\mathbf{P} = \frac{\sum X}{\sum Xi} \text{ x } 100\%$$

Description:

**P**: The Percentage Score being sought, which determines the level of media feasibility or the intensity of student needs based on established criteria.

$\sum X$ : The Total Empirical Score, representing the sum of all actual responses obtained from the participants

$\sum X\,i$ The Total Ideal Score represents the maximum possible score if all respondents selected the highest value on the Likert scale for every item.

The resulting percentages are categorized based on the following table:

**Table 1:** *Needs Category*

| Percentage Range | Category |
|---|---|
| 0% – 20% | Very Low |
| 21% - 40% | Low |
| 41% - 60% | Medium |
| 61% - 80% | High |
| 81% - 100% | Very High |



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Based on the distribution of questionnaires to 109 fourth-grade students across five primary schools, the findings are as follows. The aspect of initial conditions and vocabulary learning experience achieved a score of 87%, placing it in the "Very High Need" category. The highest score within this aspect was found in the statement that students are significantly helped when teachers present images related to vocabulary, highlighting the critical importance of visual elements in vocabulary instruction.

The aspect of learning media habits and preferences obtained a score of 89%, also categorized as a "Very High Need." Students demonstrated a strong preference for instructional media that integrates images, audio, and simple gamification elements. Furthermore, the aspect of motivation and expectations for new instructional media achieved a score of 88%, which similarly falls into the "Very High Need" category. Students expressed a desire for engaging media that allows for repetitive use and assists them in constructing original sentences from the vocabulary they have learned.

Based on the student needs analysis for each of the three assessed aspects, it can be concluded that all dimensions fall within the "Very High Need" category, with scores ranging from 87% to 89%. These findings indicate that fourth-grade primary school students have a significant demand for visual, interactive, and user-friendly vocabulary learning media. The results of this percentage-based needs analysis provide a robust empirical foundation for developing Litraflash as a relevant instructional medium that aligns with students' needs in Indonesian vocabulary learning.

**Results of Teacher Needs Analysis**

Based on the distribution of questionnaires to five fourth-grade teachers across five primary schools, the aspect of current vocabulary instruction conditions received a score of 78%, placing it in the "High Need" category. This indicates that teachers are generally aware of existing challenges in classroom vocabulary instruction. Specifically, teachers reported that students frequently struggle to understand the meaning of vocabulary within reading texts and tend to quickly forget the words they have been taught. Furthermore, the aspect of learning media requirements obtained a score of 98%, which falls into the "Very High Need" category. This remarkably high percentage demonstrates that teachers have an exceptionally strong demand for more effective vocabulary learning media.

The aspect of knowledge and experience regarding flashcard media yielded a score of 85%, falling into the "Very High Need" category. Teachers expressed a need for flashcards to function



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more effectively through technological integration, thereby supporting more contextual and engaging vocabulary instruction. The aspect of perceptions toward Litraflash received a score of 96%, which is categorized as a "Very High Need." This indicates an overwhelmingly positive perception among teachers of the flashcard innovation. Teachers believe that QR code-based flashcard innovations have the potential to boost student motivation, support long-term vocabulary retention, and help teachers deliver more varied instructional activities. Furthermore, the implementation support factor reached a score of 98%, categorized as a "Very High Need." This finding indicates that, in general, school conditions and student readiness are highly conducive to implementing Litraflash for vocabulary learning.

The findings of the comprehensive analysis of teacher needs indicate that most dimensions fall within the "High Need" to "Very High Need" categories, with scores ranging from 78% to 98%. The results of this analysis provide strong empirical support for the development of Litraflash as a relevant and necessary instructional media innovation, with high potential for effective implementation in fourth-grade primary school classrooms.

**Litraflash Media Design**

The learning objectives for fourth-grade students (Phase B), in accordance with the Kurikulum Merdeka, specifically regarding vocabulary comprehension, are as follows: It is expected of students to be able to comprehend new vocabulary and/or Indonesian loanwords from regional languages found in reading texts or audiovisual content concerning interesting topics in their surrounding environment. Based on the needs analysis and these learning objectives, the Litraflash media design was developed as follows:

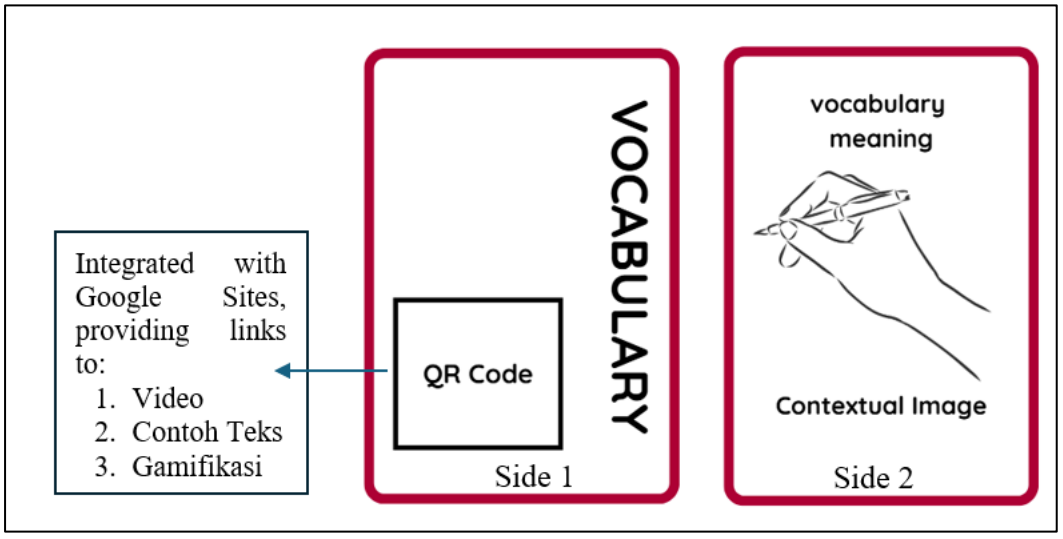


***Figure 1:*** Litraflash Media Design



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Litraflash consists of physical flashcards designed with a double-sided functional layout. The front side displays the target vocabulary and a QR code that connects users to a Google Sites platform. This digital hub provides direct links to instructional videos, contextual text examples, and gamified activities tailored to the specific vocabulary on the card. Conversely, the back side provides the vocabulary's definition accompanied by a contextual illustration.

The following are samples of the physical Litraflash media, finalized and ready for implementation according to the aforementioned product design:


***Figure 2:*** Litraflash Physical Design

If the QR code on Litraflash is scanned, the user will be directed to the Google Sites display as in the following example:

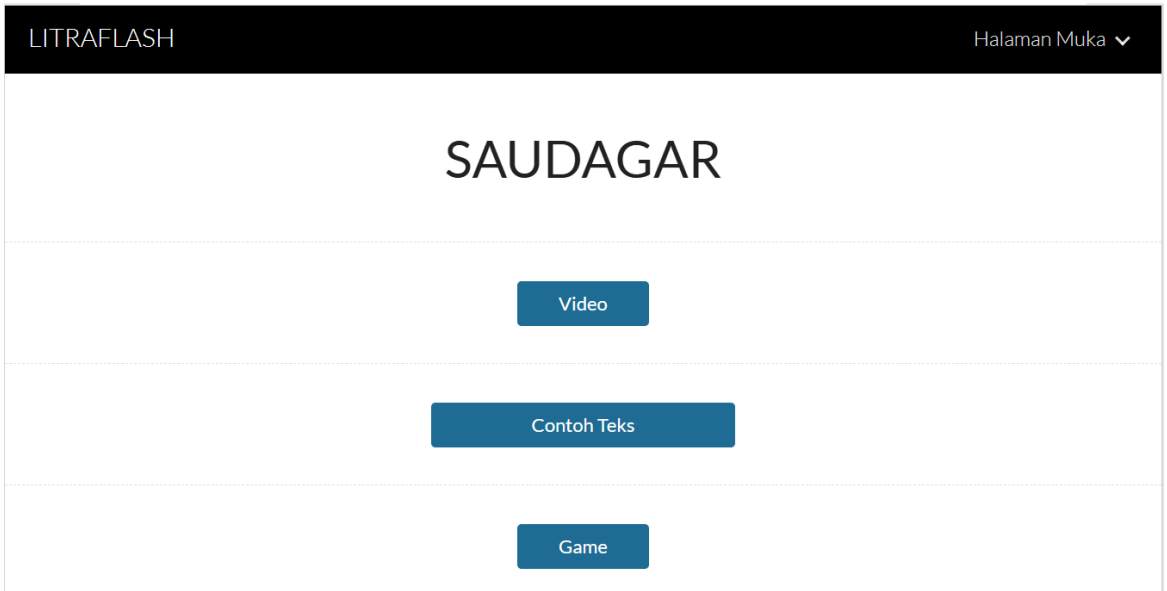


***Figure 3:*** Google Sites View



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The Google Sites page features three interactive buttons designed to direct users to specific learning activities. The Video button displays audiovisual content related to the target vocabulary; the Text Example button presents contextual passages containing the relevant words; and the Game button launches gamified exercises specifically aligned with the selected vocabulary.


***Figure 4:*** Video View


***Figure 5:*** Example Text Display

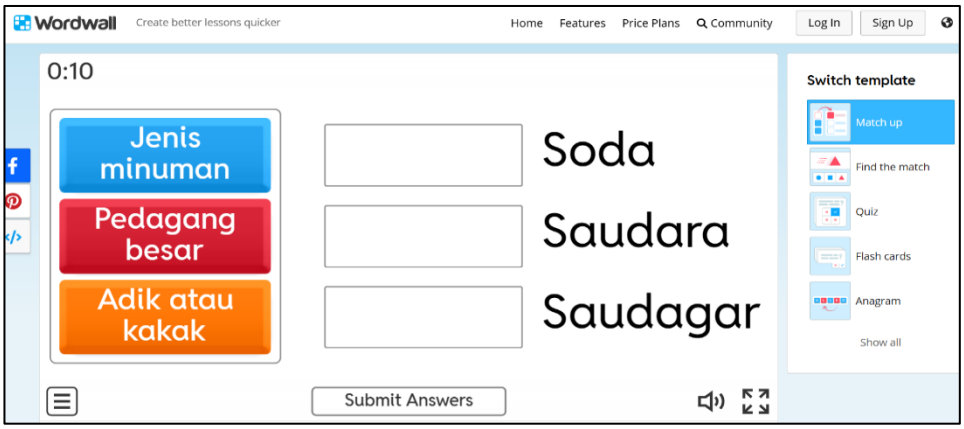


***Figure 6:*** Gamification Display



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**Alternative Procedures for Using Litraflash Media**

The implementation of Litraflash media in the classroom begins with the teacher presenting a thematic reading text containing target vocabulary that corresponds to the Litraflash cards. Students are instructed to read the text to gain initial context regarding the vocabulary to be studied. Subsequently, the students are divided into four learning groups to facilitate collaborative activities throughout the learning process.

Each group receives a set of Litraflash cards relevant to the reading text. These cards serve as tools for vocabulary exploration, conducted through both group discussions and teacher-facilitated card exchange activities between groups. The exchange of cards is carried out in a structured manner to ensure that every group has the opportunity to become familiar with a diverse range of vocabulary.

As a form of reinforcement and to encourage active student engagement, the teacher facilitates a word-guessing game involving representatives from each group. Two students from each group perform in pairs: one student reads the vocabulary definition found on the Litraflash card, while the other student guesses the intended word. This activity is designed to practice oral comprehension of vocabulary meanings and to enhance learning motivation through gamification elements.

The group that achieves the highest score is given the opportunity to access the Litraflash digital content collectively using the teacher's laptop, which is connected to a projector and external speakers. By scanning the QR code, students can watch instructional videos, read text examples, and engage in vocabulary games available for each card. Meanwhile, other groups may continue to access the Litraflash content independently or in small groups using their own devices.

In the final stage, the Litraflash cards are once again exchanged between groups to ensure that all students receive equitable learning experiences with the presented vocabulary. Through this series of activities, the Litraflash media is utilized in an integrated manner to support the comprehension, reinforcement, and application of vocabulary in Indonesian language learning.

**Litraflash Media Product Development**

The findings of teacher and student needs analyses served as the foundation for the creation of the Litraflash instructional media through the planning and development stages. The resulting



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product consists of physical flashcards equipped with QR codes linked to a Google Sites platform, featuring instructional videos, contextual text examples, and vocabulary gamification. The initial Litraflash prototype underwent validation by material experts, media experts, and practitioners. The validation results were subsequently categorized according to the following product feasibility analysis table:

**Tabel 2:** *Product Feasibility Analysis*

| Feasibility Criteria (%) | Level of Feasibility |
|---|---|
| 85,01-100 | Very Feasible, Highly Valid / Implementation without revision |
| 70,01-85,00 | Feasible, Valid / Implementation with minor revision |
| 50,01-70,00 | Less Feasible, invalid / use is not recommended due to the need for major revisions |
| 01,00-50,00 | Not Feasible, invalid / may not be used |

**Material Expert Validation Results**

Material validation was conducted by two Indonesian language experts. The aspect of curriculum alignment achieved a feasibility score of 88%, placing it in the "Very Valid" category. This result indicates that the vocabulary content developed within the Litraflash media is well-aligned with curriculum requirements and the developmental characteristics of primary school students. The contextual aspect obtained a feasibility score of 83%, which falls into the "Feasible/Valid" category. This finding demonstrates that, in general, the vocabulary material in Litraflash has been presented contextually, although there remains room for improvement to ensure that vocabulary meanings are presented more clearly and to avoid potential ambiguity.

The aspect of material accuracy achieved a feasibility score of 81%, falling into the "Valid" category. This result indicates that the vocabulary material in the Litraflash media is sufficiently accurate and representative, although refinements to the vocabulary text examples are necessary to optimize each learning theme. The aspect of material appropriateness obtained a feasibility score of 88%, categorized as "Very Valid." This shows that the content within the Litraflash media has met the linguistic standards and content accuracy required for Indonesian language instruction. Furthermore, the aspect of usefulness achieved a feasibility score of 97%, which falls into the "Very Valid" category. This finding demonstrates that Litraflash is



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considered highly beneficial for both students as the primary users and teachers as learning facilitators.

Based on the calculation of the average percentage across all evaluation aspects by the material experts, an overall average score of 87% was obtained. This value falls within the "Very Valid" category, demonstrating that the material in the Litraflash instructional media overall possesses a very high level of feasibility and is highly suitable for classroom use.

**Media Expert Validation Results**

Two experts in instructional media carried out media validation. The visual design aspect achieved an average feasibility score of 81%, placing it in the "Valid" category. The evaluation results indicate that, in general, the visual design of the Litraflash media is well-organized, consistent, and proportional. The usability aspect obtained a feasibility score of 88%, which falls into the "Very Valid" category. Litraflash was deemed safe for student use and durable; furthermore, it is supported by QR code technology that functions effectively.

The presentation aspect achieved a feasibility score of 92%, placing it in the "Very Valid" category. This media is considered capable of capturing students' attention and creating an enjoyable learning atmosphere. The practicality aspect obtained a feasibility score of 94%, which also falls into the "Very Valid" category. These findings demonstrate how effective and useful Litraflash material is for assisting with learning.

Based on the media experts' validation of the Litraflash instructional media, an overall average feasibility score of 89% was obtained. This value is within the "Very Valid" category, demonstrating that, overall, Litraflash possesses excellent quality in terms of design, usability, presentation, and practicality. Consequently, the Litraflash instructional media is declared highly valid and suitable for implementation.

**Practitioner Validation Results**

Practitioner validation was conducted by four fourth-grade teachers, each possessing over 10 years of teaching experience. The evaluation focused on four primary aspects: instructional alignment, practicality, media usefulness, and media attractiveness. The validation results show that the instructional alignment aspect achieved a score of 90%, categorized as "Very Valid." This finding indicates that the developed media meets both curriculum requirements and the pedagogical characteristics of the students. The practicality aspect obtained a score of 85%, which also falls into the "Very Valid" category. Teachers evaluated the Litraflash media as being



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easy to understand and use without requiring complex instructions, for both educators and students alike.

The media usefulness aspect achieved the highest score of 91%, placing it in the "Very Valid" category. Practitioners evaluated that Students' enthusiasm and interest in studying vocabulary can be increased with Litraflash media, as well as helping students understand vocabulary meanings more clearly. The media attractiveness aspect obtained a score of 81%, categorized as "Valid." The evaluation results indicate that the media satisfies the requirements for visual feasibility and instructional innovation, although design refinements are required for optimal results.

Based on the practitioners' evaluation of the Literacy Interactive Flashcard (Litraflash), an overall average feasibility score of 87% was obtained, which falls into the "Very Valid" category. This result confirms that the Litraflash media has met the feasibility standards for classroom use and can proceed to the broader implementation stage or effectiveness testing in learning.

**Discussion**

The study's findings show that the development of Literacy Interactive Flashcard (Litraflash) media is a relevant response to the challenges of teaching Indonesian vocabulary in fourth-grade primary school classrooms. The needs analysis of both students and teachers highlights a gap between the demands of vocabulary instruction—which emphasizes contextual meaning comprehension—and the instructional media currently in use. The significant demand for visual, interactive, and user-friendly media strengthens the argument that vocabulary learning for primary school students requires instructional support that aligns with their cognitive developmental characteristics.

According to cognitive development theory, primary school pupils are at the concrete operational stage, and our finding supports that notion; therefore, learning is more effective when supported by visual representations and concrete examples. By integrating physical flashcards with digital content via QR codes, Litraflash provides a multimodal learning experience, assisting students in associating word forms with their meanings and usage within meaningful contexts. Consequently, this media has the potential to mitigate students' difficulties in comprehending and retaining new vocabulary.



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The validation results from both material and media experts, which fall into the "Very Valid" category, indicate that the Litraflash media has met feasibility standards in terms of both content and interface design. The alignment of the material with the Learning Outcomes (Capaian Pembelajaran) of the Kurikulum Merdeka demonstrates that the development of this media is not only oriented toward technical innovation but also prioritizes curricular harmony. Furthermore, the media design, which was rated as user-friendly and engaging, reinforces the view that the success of instructional media is determined not only by material accuracy but also by its practicality and classroom usability.

Practitioner validation provides additional empirical evidence that the Litraflash media is feasible for implementation in real-world learning environments. An average practitioner validation score of 87% indicates that teachers consider this media highly valid and beneficial in supporting vocabulary instruction. The high score in the usefulness aspect confirms that this media is capable of increasing learning interest, aiding in the comprehension of vocabulary meanings, and supporting student vocabulary retention. This demonstrates that Litraflash is not only conceptually sound but also pedagogically effective from the users' perspective.

Although the media attractiveness aspect received a relatively lower score than the other aspects, it remains in the "Valid" category and indicates that the media has introduced a novel variation in vocabulary instruction. This finding can be interpreted as an opportunity for further development, specifically to refine the visual design and diversify interactive activities to better align with students' learning preferences. In the context of Research and Development (R&D), these results demonstrate that the product has reached the feasibility stage, while remaining open to continuous revision and refinement.

Overall, the discussion of these research findings confirms that the Litraflash media is capable of bridging the gap between vocabulary learning needs and the limitations of conventional media. The simple yet functional integration of physical and digital media positions Litraflash as an innovative alternative relevant to the primary school context. These findings reinforce previous research emphasizing the importance of visual and interactive media in vocabulary instruction, while simultaneously providing a novel contribution through the utilization of practical and easily accessible QR code technology.

Consequently, the Litraflash media has the potential for broader implementation in Indonesian language instruction in primary schools and can be further developed through effectiveness testing or by applying it across different contexts and educational levels.



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## LIMITATIONS OF THE STUDY

When interpreting the findings and their implications, it is important to consider the many limitations of this study. First, this study uses a Research and Development (R&D) design with a primary focus on product validation; consequently, it has not yet reached the stage of experimental effectiveness testing. The validation was limited to expert and practitioner assessments; therefore, the findings emphasize the feasibility of the media rather than its direct impact on improving student learning outcomes.

Second, the research subjects were limited to fourth-grade students and teachers in a few primary schools with relatively homogeneous characteristics. This contextual limitation means that the research findings cannot be generalized to other grade levels or to schools with different social, cultural, and facility conditions. Differences in student characteristics and the availability of technological infrastructure may influence the success rate of implementing the Litraflash media.

Third, this study has not directly compared the Litraflash media with other vocabulary learning media currently used in schools. The absence of a control or comparison group means that the research results cannot yet demonstrate the relative advantages of Litraflash media over conventional or other digital media.

With these limitations in mind, it is anticipated that the findings of this study will provide a basis for further investigations into the efficacy of Litraflash media through experimental or quasi-experimental designs, involving more diverse subjects, and observing the long-term impact of its use.

## CONCLUSION

This study concludes that the development of Literacy Interactive Flashcard (Litraflash) media represents a feasible, relevant, and necessary innovation for Indonesian vocabulary instruction within the context of fourth-grade primary education. Based on the needs analysis, a gap was identified between the demands of vocabulary learning—which emphasizes contextual meaning comprehension—and the limitations of the instructional media currently utilized in the classroom. Litraflash was developed as a response to these needs by integrating physical flashcards with QR code technology in a simple yet functional manner.

Validation results from both experts and practitioners indicate that the Litraflash media falls into the 'Very Valid' category across various aspects, including content alignment, practicality,



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usefulness, and media attractiveness. The average practitioner validation score of 87% confirms that this media is not only conceptually sound but also highly applicable and well-received by teachers as direct users in real-world learning environments. These findings demonstrate that Litraflash has the capacity to improve the caliber of vocabulary instruction through visual, interactive, and contextual presentation.

Significantly, this study provides an empirical contribution to the development of Indonesian vocabulary instructional media in primary schools by offering an integration model of physical and digital media that is easy to implement. The relevance of this research lies in its ability to address actual learning needs in primary education while opening opportunities for further development through effectiveness testing and broader implementation. Consequently, Litraflash has the potential to become an innovative alternative in supporting meaningful and sustainable vocabulary learning.



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