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# Development of Flash Card Media for Early Reading Student

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Abstract: This research aims to study how first-gradestudents improve their reading skills by using digital picture word cards. This study uses the ADDIE development model and is a development research. The sampling technique in this study used simple random sampling by using the Slovin formula in determining the sample. The onegroup posttest technique used in this study the experimental class followed the same experimental methodology. Normality and homogeneity tests were used in qualitative and quantitative data analysis methodology. The results of the analysis showed that with a percentage of 92.73%, the professional assessment of learning media design. With a percentage of 90%, the expert assessment of the learning media content is included in the very correct category. With a proportion of 95%, the linguist's assessment of educational media is included. With excellent criteria, the overall validation level of linguists, design experts, and material experts is 92.58%. This digital flash card media turned out to be feasible to use as a learning tool and can improve students' reading skills. The results showed a significant difference between students' initial reading test scores on the pretest and posttest. This conclusion is reinforced by the results of the Piered Sample Test which shows the variance in students' initial reading using digital picture word card media between pretest and posttest with a significance level of 0.000 <0.05. Therefore, it can be said that the use of digital flash card media can help children in elementary schools acquire basic reading skills.

Keywords: Early Reading; Flash Card; Research Development

## Introduction

Media used to convey information to students is known as learning media, which enables them to grasp, and interpret messages effectively comprehend, (Kustandi & Darmawan, 2020). Early development of reading skills is pivotal for language and social development. Hence, incorporating media into education is essential for success. Reading is a cognitive process that involves seeking information from written works (Coiro, 2021; Shanahan, 2020). Education is structured to inculcate a culture of reading, writing, and mathematics in every individual. Integrating media and beginning reading skills are key factors for educational success. Close reading plays an important role in comprehension development. All students should be able to read. Law No. 20 of 2003 emphasizes the importance of early childhood education and instilling a culture of reading, writing, and math. Beginning reading helps develop reading skills and comprehension abilities. It introduces children to interpretation techniques and expands their understanding of language sounds and words.

A successful educational experience must have various components to function effectively (Priyatin, 2021; Sukaryanti et al., 2023). These components include learners, teaching staff, learning materials, learning encouragement, an environment that supports learning, and media or learning aids (Sudrajat et al., 2023). Learning, as understood from this perspective, is a process that involves an intraction cycle between the student and their current situation, with the aim of bringing about positive changes in behavior and achieving favorable learning outcomes (Plass & Pawar, 2020).

Media as refers to physical tools used to convey educational messages to students. Media serves as a communication tool for educators and students alike, as highlighted (Alipah & Putra, 2023; Hadian et al., 2018). Therefore, media plays a crucial role in facilitating

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learning activities. Given the abundance of learning media available, teachers must exercise caution when selecting which media to incorporate into their lesson plans, as advises (Ulfa, 2020). When evaluating progress and selecting appropriate learning media, student learning outcomes and their relationship to the material must be taken into account.

Learning materials fall into three categories based on their type, scope, and method of use, as noted by Mardiyanti et al. (2022). Graphics, pictures/photos, diagrams, charts, and graphs are examples of properties that learning materials may possess, according to Maimunah (2016). The use of learning media is a critical aspect of the teaching process in the education sector. It can motivate students to reflect on their educational experiences, disseminate ideas, and stimulate thoughts, feelings, and concerns. Moreover, it can help students support a conscious, deliberate, and controlled educational experience, as highlighted by (Mehmed, 2022).

The development process described by Borg and Nerve involves creating and testing educational products on software. This research approach is iterative, involving the study of research findings, product creation based on those findings, field testing of the product, and updating the results of the field test (Setyosari, 2016).

Digital picture word cards are a useful tool for grade one elementary school teachers to improve their students' beginning reading skills. The flash cards contain visuals related to the primary language, making it easier for students to grasp the material (Nakata, 2019). Picture word cards can also trigger creativity and improve learning activities. To make them, teachers need to plan and find relevant pictures before printing them out. By using flash card learning media, educators can attract students' attention and stimulate their thoughts and interests, leading to effective learning experiences.

According to the researcher's observations, some of the problems include the presence of grade 1 students who cannot read, the media used by the teacher is not diverse, and the techniques used to help students read carefully remember that they have learned to arrange letters, words, or sentences on the blackboard, then the educator reads the letters, words, or sentences, then the students read them. In addition, students' basic comprehension skills such as difficulty in distinguishing letters, lack of subject matter, and teachers' boring teaching techniques make learning less interesting for students. Also, some students are often confused because they do not remember letters in the same structure. A solution is needed to overcome this problem to solve the current problem. One approach is to incorporate media into the learning process to train students' reading skills in a non-monotonous way. The researcher suggests using flash cards as the right media. Creating picture word cards or flash cards as a means of teaching students to read requires a new approach to education in today's world.

This time digital flash cards will be designed to make the learning process less monotonous against the background of the problems mentioned above and the importance of incorporating media into the learning process. It is intended that through increased student engagement and interest in the teaching and learning process, early reading skills will be improved. The author intends to conduct research on the creation of digital flash cards for 1st grade students of beginner readers. She will explain how these flash cards were created to help students improve their reading skills as well as the efficacy of digital flash cards as a teaching tool for beginning readers. overview of 1 elementary school.

## Method

The research used Research and Development proposed, concerning to ADDIE model (Habib et al., 2023). R&D is chosen by researcher as empirical basis for creating new product for instructional or noninstructional purpose. The ADDIE model consists of five stages: Analysis, Design, Development, Implementation, and Evaluation (Rini, 2023). These stages will create an efficient, effective, and practical instructional product (Astra & Halimah, 2022). The development procedure of the product can be seen in Figure 1.



Figure 1. The ADDIE Model

The subject of this study is primary students in firstgrade one of the elementary school Pekanbaru, who will do the trials to get the validity for the created product. Expert judgment is also involved in this study, as the expert who assesses the product can create an excellent instructional product. The researcher did an observation, interview, expert judgment, and user evaluation to collect the data needed. Digital flash card media is the final result of this research. In order for this material to be suitable for use by first-grade elementary school students, it must pass through several stages, including Analysis, Design, Development, Implementation, and Evaluation.

The quantitative analysis will be described descriptively regarding the process of developing the flash card as the product, including the analysis stage, design, and development result (Juhansar, 2022). Meanwhile, the qualitative one is done by analyzing the product's validity based on expert judgment and user evaluation (Wulan & Rahma, 2020). The procedures to collect the data needed in this study.

#### Analysis

The researcher did an observation and interview in this first stage to obtain preliminary data to get deeper information about the students' condition in the school, the problem, and how the learning process is done (Indahsari et al., 2023; Samsiana & Eka, 2023). The data and several materials are needed to create an appropriate learning media for students in the class. The researcher used instruments to collect all of this data, namely observation sheets and interview guidelines.

## Design

Flash card design is done by creating images and text that students use to learn to read (Hatiningsih & Adriyati, 2019). Design is an important step that must be carried out by product developers, which contains how the product is used, and what the product contains (Fitriani et al., 2021).

#### Development

Development is an activity where everything in the design begins to be realized into a product. To developed these flash cards, researchers used an online design and publishing tool called Canva. Thus, media validity has been conducted at this stage by expert assessment to check whether there are any errors or problems that need to be revised. Media revision carried out by following the advice given by experts before the media was used in schools. Product criteria validation can be seen at Table 1 (Setyawan & Ibrahim, 2019).

Table 1.	Validity	Level	Criteria
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Percentage (%)	Validity Criteria
84 - 100	Vary Valid
68 - 83	Valid
52 - 67	Sufficient
36 - 51	Invalid
20 - 35	Vary Invalid

#### Implementation and Evaluation

The implementation stage is an activity where the flash card that has been developed is applied in real life. In this case, the product will be implemented in the target school whose users are the first-grade students. The researcher needs several students to do the trial of the product. Furthermore, after students do their trial to learn with the flash card, they will fill out a questionnaire that has been prepared before hand.

#### Population and Sample

In this research, the steps in determining the sample in the simple random sampling technique are simple random sampling, which means that as many as n samples are taken from N populations and each member of the population has an equal chance of being taken. There are three ways to determine the sample using this technique, namely: (1) how to draw, (2) how to table random numbers, (3) by using a computer to randomize, for example with the help of spss. In determining the number of research samples, researchers used the Slovin formula. Where the tolerance value (error) is expressed in 5% percentages the formula 1 (Rohmatin et al., 2023).

$$n = \frac{N}{1 + Na^2} \tag{1}$$

Description: N = population n = samples a = tolerance value

The sample used is 58 students based on the Slovin sampling calculation and 24 students who will be taken from the rest of the population for validity data testing. In this study using Likert scale measurement techniques, then data processing was carried out through SPSS.

This research involved six validators, students, and educators as research subjects in elementary schools. Using the necessary and additional information in this investigation. Educators and validators contributed significant data. While additional data were collected from papers, novels, and diaries related to the exploration. Interview and validation were the two methods of collecting information. Descriptive quantitative methods were used to categorize the information collected. Likert scale was used as the methodology of testing the information in this investigation. The Likert scale was used to create a tool to measure attitudes, perceptions, product design, and manufactured goods (Millenniloper, 2022).

The research instrument consists of an instrument for assessing the validity, practicality and effectiveness of the learning media developed. The design expert validity assessment instrument consists of 22 questions, the material expert validity assessment instrument consists of 15 questions and the language expert validity assessment instrument consists of 8 questions. The validity and practicality instruments use a Likert scale with five answer choices. Furthermore, to see whether the learning media is effective, which is able to improve students' beginning reading skills through digital picture word card media in the form of initial and final tests. The initial test and the final test of students' beginning reading ability are different questions but use the same indicators, namely indicators of students' beginning reading ability using digital picture word card media. The formula 2 used to determine the score of each component of the validation assessment of design experts, and material experts (Mawarni, 2021).

$$P = \frac{\sum x}{SMI} \times 100\%$$
(2)

Description:

P = Percentage score  $\sum x$  = Total score of data collection results

SMI = Ideal Maximum Score

The following product validity criteria are determined by researchers based on the percentage value of feasibility obtained in Table 2.

Table 2. Research Validity	V Criteria Score and Descript	ion
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Score	Level of Achievement	Qualification	Description
5	84.00 - 100.00	Very Valid	No need for revision
4	64.00 - 83.90	Valid	No need for revision
3	53.00 - 63.90	Moderately Valid	Needs revision
2	36.00 - 51.90	Less Valid	Need revision
1	0.00 - 35.90	Not Valid	Need revision

After the media is said to be valid, the next step uses an experimental method with a one-group-postest type of approach which aims to determine the comparison of posttest scores with pretest scores after being treated (Saadah & Yulia, 2022). The research methodology of this study of One-group prestest-postest design:

$$0_1 \ x \ 0_2$$
 (3)

Description:

 $0_1$ . Pretest scores before being treated with digital

picture word card (flash card) media

 $0_2$ . Pretest scores after being treated with digital picture word card (flash card) media.

## **Result and Discussion**

#### **Development Process**

In this study, the method used by researchers is called the development stage to improve learning media, especially by agreeing with experts (validators) who are competent in their fields and can contribute ideas or innovations. Based on the evaluation, suggestions, and inputs from the validators, the expert modifies the learning materials to produce the learning media. The approval form has three corners: plan or show layout approval, content approval, and language approval.

Based on these three angles, the expert makes a validation instrument in the form of a learning media approval sheet that integrates the three angles and evaluates each of them according to the needs of the scientist (Nafsiah et al., 2019). Six expert validators-one design expert, two design experts, one material expert, two material experts, one language expert, and two languages experts-then completed the validation procedure. (1) Design Expert: The design component of the digital flash cards earned an average score of 81.36% in the "Very Valid" category during the initial validation. After the digital flash cards were improved according to the suggestions and comments from the first validation results, a second validation was carried out and an average score of 92.73% was obtained in the highly valid category. (2) Material Experts The material component of digital flash card media obtained an average score of 66.67% in the "Valid" category during the initial validation. After upgrading the digital flash card media based on ideas and comments from the first validation results, an average score of 90% was obtained with a very valid category in the second validation. (3) Linguist: The language component of digital flash cards obtained an average score of 76.25% in the "Valid" category during the initial validation. After upgrading the digital flash card media based on ideas and comments from the first validation results, the average score was 95% with a very valid category in the second validation. Based on some descriptions of the information data above, digital flash card media is considered to have premium materials, good design quality, and appropriate language.

#### Validity Result

After summarizing the overall results of digital flash card media, researchers obtained an overall average result for six validators in the first validation of 74.76% in the Valid category, and in the second validation of 92.58% in the "Very Valid" category. " category. The validation results for each aspect obtained from validators are shown in Table 3.

Table 3. The results of the overall validation of the media aspects of picture word cards d	igita
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Assessed Aspects	Validation 1			
	Percentage (%)	Category	Percentage (%)	Category
Design	81.36	Valid	92.73	Very Valid
Material	66.67	Valid	90.00	Very Valid
Language	76.25	Valid	95.00	Very Valid
Average	74.76	Valid	92.58	Very Valid

The findings from the verification of the three components of the digital picture word card media on the design, material, and language experts-at the two validations are presented in Table 3. As can be observed, for validation I, the design aspect had the highest average percentage in the "Valid" category (81.36%), while the material aspect had the lowest average percentage (66.67%). The language part of validation II which got the highest overall score fell into the "Very Valid" category with a percentage of 95%, while the material aspect got the lowest percentage in this area at 90%.

The results of the assessment of all aspects of learning media by design experts, material experts and linguists in the first validation and second validation can be presented in Figure 2.



Figure 2. Diagram of All Aspects Validity Results of Digital Picture Word Card Media

Based on the Table 3 the results of the overall assessment of the media aspects of digital flash cards, namely the design aspects, material aspects and language aspects of this digital flash card media which obtained an average assessment score in the first validation of 74.76% and in the second validation obtained an average assessment score of 92.58%. From these results it can be seen that there was a significant increase from the first validation to the second

validation of 17.84%. The comparison of the results of the assessment of digital media can be presented Figure 3.



Figure 3. Comparison Diagram of the Assessment Results of Digital Picture Word Card Media

Based on Figure 2, the average difference in the Valid category in the first validation was 74.74%, while the very valid category in the second validation was 92.58%. This increase may have occurred because a series of revisions from the validators were used to develop Very Valid digital picture word card media.

Based on the explanation above, it can be concluded that the researcher's product in the form of digital flash cards has an average validity value of 92.58%. In line with Nieveen's opinion (Millenniloper, 2022) states that the quality of the learning media developed must meet the feasibility and must be based on the material and all components must be consistently linked to one another. If the learning media developed meets all of the above statements, then the learning media developed can be said to be very valid.

The research product in the form of digital flash card media has an average validity value of 92.58%, in accordance with the justification given above. Agreeing with Nieveen's view, (Millenniloper, 2022) asserts that the nature of learning media must be qualified, must be based on material, and must have all the elements related to each other. Learning materials produced to meet these requirements can generally be considered very authentic or valid.

At the implementation stage, testing is only allowed on the specialized digital flash card media which is the product to be developed. A total of 24 grade 1 elementary school students participated in this media trial. The standard minimum value for Indonesian language subjects is 75, as is known. Six students' scores have not reached the standard minimum value, while 18 students' scores before the use of media.

In this study using simple random sampling technique which is a sampling technique that is done simply to each population that is used as a sample in the study. This study uses simple random sampling where there are two classes of students, namely class 1A and class 1B, totaling 58 people, which from this study were randomly selected. In this study, the techniques and samples that researchers use are random, without looking at samples on the basis of strata or social status of any kind. So that after the calculation results are obtained there are 24 students who can be used as samples in this study.

#### Effectiveness Assesment

Teacher and student responses consisting of two teachers and six first-grade students were conducted after being evaluated by design experts, material experts, and language experts. Here are some examples of teacher and student responses as seen in Table 4 and Table 5.

Assessment Aspect	Percentage of respond (%)		
Assessment Aspect	Percentage of res Teacher I 90.00 e 95.00 100.00 85.00 93.00	Teacher II	
Material Organization	90.00	92.00	
Evaluation and Exercise	95.00	95.00	
Product	100.00	92.80	
User Effects	85.00	95.00	
Average	93.00	94.00	
Criteria	Very Valid	Very Valid	

Researchers also conducted an evaluation to find out how the media affected students. The following table shows the results of student responses as shown in Table 5.

Table 5.	Grade 1	Learners'	Response
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	1			
Name	Amount	Maximum Score	Percentage (%)	Criteria
AEPR	8	10	80.00	Interesting
ANF	10	10	100.00	Very Interesting
AKZ	9	10	90.00	Very Interesting
AM	9	10	90.00	Very Interesting
GWR	10	10	100.00	Very Interesting
HFAP	10	10	100.00	Very Interesting
Total Score	56	60	93.33	Very Interesting

The results of the small-scale field trial conducted by 6 students are presented in the table above, and show that the overall score is 56. The maximum score for this statement is 60. In addition, it is known that most of the students' answers in this small-scale study meet the criteria of "Very Interesting" with an average rating of 93.33%. This is in accordance with the viewpoints held by the students who took part in the small-scale investigation; they believe that this media is interesting if used in learning early reading skills. They claim that it is very appealing due to the wide variety of visuals it contains and the fact that it helps students recognize vowels, consonants and letters of the alphabet. In addition, the music included in the digital flash card media can help students understand the information provided in relation to their first reading.

The first reading lesson involved four implementations of using digital flash cards to carry out the lesson. Table 6 contains the results of the pretest and posttest.

#### **Table 6.** Descriptive Statistics

	Ν	Minimum	Maximum	Mean	Std. Deviation
Gain	24	0.51	0.98	0.77	0.12
Valid N (listwise)	24				

Based on these findings, the experimental class digital flash card media data was calculated to have an N-Gain score of 0.77 in the high category and an N-Gain percent value of 77% in the effective category, which indicates that the data should be understood as word card media. Elementary school students' reading skills can be improved with digital flash cards. While the descriptive data on the results of the analysis on the pretest and posttest experimental as seen in Figure 4.



Figure 4. Analysis of pretest and posttest experimental class

Based on the descriptive data findings in Figure 3, the pretest data of students' beginning reading in the experiment group obtained the number of children (N) as many as 24 students, the mean score is 60.54, the median is 59, the variance is 22.09, the std. deviation is 4.70, the minimum value or the lowest value is 54 while the highest value is 73.00. While the posttest data of students' beginning reading in the experiment group obtained the number of children (N) as many as 24 students, the mean score was 90.75, the median was

91.50, the variance was 28.63, the std. deviation was 5.35, the minimum value or the lowest value was 81 while the highest value was 99. Furthermore, the data description is presented in the form of a histogram of the pretest and posttest scores of the experimental group's beginning reading as shown in Figure 5.



Figure 5. Comparison of pretest and posttest scores in beginning reading

Based on the data presented in the experimental class, there is an increase between the posttest and pretest results of early reading learning with digital flash card media. The N-gain test result as represented in Table 7.

Table 7. N-Gain Test Results

Class	Aver	age Value	Enhancoment	N-Gain	Description	N Coin Porcont $(\%)$	Description
Class	Pretest	Posttest	Ennancement	Score	Description	N-Galli i elcelii (%)	Description
Experimen	60.54	90.75	30.21	0.70	Tinggi	70.00	Efektive

Based on the results of research on the development of digital picture word card media for reading grade I students, it can be concluded that there are 24 students in one class involved in this study. The results of this study are data obtained from learning media obtained through research instruments in the form of questionnaires. The average results of the posttest showed that early reading after the application of digital picture word card media increased in the experimental group that was given treatment. The average posttest result of the experimental class showed 90.75.

Based on the explanation above, it can be concluded that the research product in the form of digital flashcard media has an average validity value of 92.58%. In line with Nieveen's opinion (in Milleniloper, 2022: 74) states that the quality of the learning media developed must meet feasibility and must be based on material and all components must be consistently connected to each other. If the learning media developed fulfills all the statements above, then the learning media developed can be said to be very valid.

The advantages of digital picture word card (flashcard) learning media in learning are developed as follows: First, digital picture word card (flashcard) learning media can attract students' interest so they don't get bored easily in learning. Second, in learning digital picture word cards (flashcards), students can practice accuracy and patience in observing the learning of digital picture word cards (flashcards). Third, it can be read repeatedly both at home and at school. Fourth, this digital picture word card (flashcard) media can be accessed because this media is in the form of a soft file which can also be sent through class groups. Fifth, this learning media contains sounds and images which can make it easier for students to learn digital picture word cards (flashcards), especially starting reading material about alphabet letters, vowels, and diphthongs. Sixth, this learning media also has exercises and reading texts that students can read and work on. Apart from having advantages, this media also has disadvantages, namely that in initial reading learning the product cannot be

tested at school because the initial reading material is late.

The use of flashcards as an educational tool for primary school students presents a unique opportunity to enhance their learning experience (Maimanah et al., 2020). With careful consideration of the challenges faced by target schools, these learning media are designed to be effective for both educators and students. The results of research studies demonstrate that flashcards are highly valid and feasible in enhancing reading skills for first-graders. In fact, data analysis conducted on the effectiveness of this educational game showed impressive results, with expert validation and user evaluation yielding scores of 93% and 94%, respectively.

The research findings of Muryanti (2019) also support the validity and feasibility of flashcard media in enhancing students' reading skills. Moreover, Astuti et al.'s learning media development has been shown to enhance students' number sense and has received favorable feedback from both experts and students. Overall, creating these learning media for primary school students has the potential to make learning more fun and engaging, while helping teachers overcome obstacles in the classroom. By utilizing flashcards as a tool for learning, educators can help students develop important skills while keeping them motivated and interested in their studies.

## Conclusion

Based on the results of the research conducted, it can be concluded that flash card learning media is suitable for use in the teaching and learning process, where the pretest score was 60.53% and the posttest score was 90.75% with a difference increased by 30.045%. Based on the calculation results above, it can be seen that the sig. 0,000. the sign value is smaller than 0.05. Thus, it is proven that there is a difference in students' initial reading abilities between the pretest and posttest using picture word card media in the experimental class. The average posttest results show that initial reading ability after the application of digital picture word card media increased in the experimental group that was given treatment. This proves that flash card media is able to improve the quality of students and teachers in the teaching and learning process. The benefits of this study for students are, helping students develop their early reading skills, can make it easier for students to learn and be more effective in the classroom. For educators, adding educators' understanding of how to use digital picture word card learning materials in reading learning methods for beginners, facilitating the implementation of early reading learning for educators. For schools, it can be used as an innovative learning media to help children learn to read. As for researchers, it provides an overview and continues research in more depth.

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#### **Author Contributions**

This paper was prepared by S.A.M and Z.H.R. Both authors completed this paper together.

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#### **Conflicts of Interest**

The authors declare no conflict of interest.

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