Jurnal Pendidikan Progresif

Development of Canva-Based *SUKA SASA* Interactive Multimedia to Improve Elementary School Early Reading and Numeracy Skills

Zainnur Wijayanto[1,*], Siti Rochmiyati[2], Rosidah Alim Hidayat[3], & Yuni Karsih Asmi[2]

[1]Mathematics Education, Sarjanawiyata Tamansiswa University, Indonesia
[2]Master of Elementary Education, Sarjanawiyata Tamansiswa University, Indonesia
[3]Primary Teacher Education, Sarjanawiyata Tamansiswa University, Indonesia

*Corresponding email: zainnurw@ustjogja.ac.id

Abstract: Development of Canva-Based *SUKA SASA* Interactive Multimedia to Improve Elementary School Early Reading and Numeracy Skills. Technological developments encourage innovations in learning media that can facilitate the delivery of material and create more engaging learning experiences. This study aims to describe the results of the analysis of teachers' and students' needs, as well as to test the feasibility and effectiveness of Canva-based *SUKA SASA* interactive multimedia in improving the early reading and numeracy skills of first-grade elementary school students. The research employed a research and development (R&D) approach using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. The study involved 65 first-grade elementary school students in Karanganyar Regency selected by purposive sampling. Data collection techniques included interviews, observations, and learning outcome tests on early reading and foundational numeracy skills. The data were analyzed quantitatively using descriptive statistics and inferential testing, and were also supported by qualitative analysis. The findings show that the developed Canva-based *SUKA SASA* multimedia is valid, feasible, and effective in improving both early reading and foundational numeracy skills. The media's feasibility was supported by expert assessments: media experts (80.60%), material experts (95.40%), practitioner experts (95.40%), and positive student responses (84.38%), all of which indicate that the media is classified as very feasible. The effectiveness test yielded a significance value of 0.000, indicating a significant improvement in learning outcomes after using the media. The effect size test result was 1.39, showing a strong impact. Therefore, Canva-based *SUKA SASA* interactive multimedia is effective in supporting first-grade students' literacy and foundational numeracy skills. The integration of visual and interactive technology, such as Canva, can be an innovative strategy in fostering active, enjoyable, and meaningful learning.

Keywords: early reading skills, foundational numeracy skills, interactive multimedia, addie, elementary school.

To cite this article:

■ **INTRODUCTION**

Education plays an important role in improving the quality of human life (Ramadhana & Meitasari, 2023). In Indonesia, education is developed through a curriculum based on the philosophy of holistic human development, focusing on individuals who are able to maximize their potential and respond to social, economic, political, and cultural changes (Kemendikbud, 2024). The curriculum is created to align the interaction between pedagogical skills and abilities that make students the center (Indarta et al., 2022;

Kartini & Rusman, 2019; Wu et al., 2023). In this case, teachers play a strategic role as creative, innovative, and collaborative learning managers (Hoesny & Darmayanti, 2021; Noermanzah & Friantary, 2019).

The concept of long life education, as stated in Law No. 20 of 2003 concerning the National Education System, is an important foundation in facing rapid changes in this era. The concept of lifelong learning, or long life education, is considered an important educational concept in facing the current rapid flow of change. However, fundamental changes are made to improve the quality of life of society in the 21st century (Meyer & Norman, 2020; Nurhayati & Lahagu, 2021; Oktaviany, 2023). Ki Hadjar Dewantara's thoughts also emphasize the importance of lifelong learning to form independent and responsible individuals from an early age (Yunus & Wedi, 2018). In the context of education, Information and Communication Technology (ICT) plays an important role in supporting effective and efficient learning processes. The Indonesian language learning curriculum invites students to develop and master skills and knowledge that can be implemented in everyday life (Ansoriyah & Rahmat, 2018; Suprihatin & Hariyadi, 2021).

One of the essential skills in 21st-century education is communication skills, which include language skills: listening, speaking, reading, and writing (Pamuji & Setyami, 2021; Rahim et al., 2022; Ulfah et al., 2023). Reading skill plays an important role in the world of education, followed by writing and arithmetic skills. In introducing these skills to students, cooperation between parents and schools is needed (Astuti et al., 2019). At the elementary school level, in grades I and II, initial reading instruction is given to stimulate, foster, and grow students' interest in reading. At the same time, the development of basic numeracy skills, such as recognizing numbers, counting, comparing quantities, and understanding simple mathematical concepts, is also essential as a foundation for more complex mathematical thinking in higher grades.

However, the lack of variety in learning media contributes to students' low interest in reading and math activities. Low interest in reading and numeracy can lead to difficulties in mastering these foundational skills, which are crucial for students' academic success. Therefore, innovation in learning media is necessary, especially media that can capture students' attention and involve them in both reading and numeracy activities. Technology-based learning media is seen as a strategic solution in today's digital age to promote active, meaningful, and enjoyable learning experiences. (Anggraeny et al., 2020; Bua et al., 2016; Pridasari & Anafiah, 2020).

In the digital era, technology-based media is an effective learning alternative because it is able to integrate audio, visual, and interactivity elements (Irwansyah et al., 2025; Khairunnisa et al., 2023). According to (Çelik & Özdemir, 2020) highlighted that the integration of digital learning media significantly improves students' academic success by encouraging personalized learning experiences. Technology in learning allows students to visualize abstract concepts concretely, including in reading skills. One form of such media is interactive digital textbooks, namely digital-based media that allows for two-way interaction between students and learning materials (Abdulatif & Muh. Husen Arifin, 2023; Astriyandi, 2016; Pratama et al., 2021).

Technology-based interactive learning media provide a non-rigid and monotonous impression in the learning process (Ockta et al., 2024; Yeºilyurt & Vezne, 2023). Studies have shown that interactive digital tools significantly increase student motivation and active participation in the learning process (Fonseca & García-Peñalvo, 2019; Mou et al., 2023). The use of interactive learning media encourages the

creation of an innovative educational environment and increases student engagement (Lana et al., 2023). In the context of teaching and learning, "interactive media" refers to digital goods or services or multimedia that instructors offer to students through the presentation of educational materials such as text, audio, video, video games, and moving images or animations (Marpaung et al., 2024)**.**

In addition to being relevant to the needs of 21st-century students, the use of technology-based media can also be combined with local values to prevent the erosion of culture due to globalization (Joyo, 2019). The use of Canva-based digital media in elementary school learning is one of the effective innovations in improving the quality of the learning process (Vidiawati, 2023)**.** According to (Biassari et al., 2021), interactive media such as Canva allow educators to design interesting materials using templates, while interactive videos integrate sound, movement, and visuals to enrich the learning experience. Canva, as an easy-to-use graphic design platform, allows teachers to create various types of engaging and interactive learning materials for learning (Anam et al., 2023)**.**

Teachers can use Canva as an interesting learning medium by creating a creative and fun learning atmosphere according to their creativity. This learning media is essential to increase student interest and facilitate understanding of abstract subjects, thereby improving educational outcomes (Darmayanti et al., 2022)**.** In designing media on Canva, it can not only be used on laptops but can also be used on smartphones (Asnur et al., 2023; Ilham et al., 2023)**.** Tools like Canva allow educators to design engaging materials using templates, while interactive videos integrate sound, movement, and visuals to enrich the learning experience (Biassari et al., 2021)**.** Researchers have developed interactive media assisted by Canva called "SUKA SASA" (*Susunan Kata-Angka Sampai Bisa*).

The advantages of *SUKA SASA* interactive multimedia lie in its flexible and diverse features, enabling teachers to design engaging and interactive learning materials tailored to students' needs. This multimedia combines visual, audio, and video elements, encouraging innovation in using learning media and improving its overall effectiveness in the classroom. By incorporating *SUKA SASA* multimedia into learning activities, educators can create a more dynamic, creative, and student-centered environment that significantly improves student engagement and learning outcomes. What sets *SUKA SASA* apart from other media is its unique structure, which includes a vowel page display featuring reading exercises for vowels *a, i, u, e, o*; a spelling page; and an exercise page containing interactive spelling buttons, sentence-building activities, and guided writing through pen tours. In addition to supporting early reading skills, *SUKA SASA* is also enriched with basic numeracy components, such as number recognition, simple counting exercises, and matching quantities with numbers. These features allow students to simultaneously develop foundational literacy and numeracy skills in an integrated and enjoyable way.

According to Hafidh & Lena (2023)**,** the development of media using the Canva application obtained very significant results, covering the aspects of media, language, teachers, and students. Hidayatullah et al. (2023) explained that the use of the Canva application by grade V teachers at SDN 02 Sambirejo Semarang can make students more confident, active, and creative in learning. Furthermore, Mahyudin (2023) stated that teachers can use Canva to create engaging, creative, and innovative learning in elementary schools.

The novelty of this study lies in its focus on assessing the effectiveness of Canva-based interactive multimedia in improving both early reading and foundational numeracy skills in elementary school students. While numerous

studies have explored the impact of digital tools and multimedia on general student engagement and academic performance (Solas & Sutton, 2018; Susila et al., 2019; Vargas-Cumbicus et al., 2024), limited research has specifically examined their use in supporting foundational skills such as reading and numeracy at the early grade level. This study addresses that gap by investigating how Canva's interactive features such as visual design, audio-visual integration, and interactive elements can be effectively adapted to suit the cognitive and developmental needs of early learners in Indonesian elementary schools. Furthermore, this study provides a new perspective on the integration of digital media in Indonesian language and mathematics instruction. A major limitation of previous studies is that the learning media developed often did not adhere to effective message design principles, resulting in materials that were less engaging and less pedagogically impactful. In addition, there has been no prior research specifically examining the use of Canva-based multimedia for improving reading and numeracy skills simultaneously. Therefore, this study contributes original insights to the field of early childhood education and digital learning innovation.

Although research on the use of interactive media and animation in education has shown positive results (Jeno et al., 2019; Lin et al., 2017; Nurpiani et al., 2024), there is still a significant gap in the existing literature, especially regarding the use of Canva as a platform for developing media that can improve students' reading and numeracy skills. Some students recognize letters but cannot read them (Astri & Amalia, 2024; Rohimah, 2021). If students have low cognitive ability combined with an inability to understand learning problems, it will affect their academic achievement (Castillo-Merino & Serradell-López 2014). Based on the results of observations, there are still students who are not able to read syllables because the media used is still common, such as

pictures (Alfiyah Rohmah Atstsaniyah & Arif Widagdo, 2024).

The current issue in elementary school education is that many teachers have not yet optimized the use of learning media to support student learning. Based on the results of observations and questionnaires distributed to elementary school teachers in Karanganyar Regency, it was found that the majority of teachers (70%) had not used interactive multimedia in Indonesian language learning, particularly in developing students' reading skills. Moreover, the integration of basic numeracy content into digital learning media remains very limited. One of the main obstacles identified is teachers' limited ability to design engaging and interactive media that align with students' developmental needs and the demands of 21st-century learning. Previous studies have also confirmed that many teachers continue to face challenges in selecting and developing appropriate learning media for students (Puspitarini & Hanif, 2019). In addition, a lack of adequate media infrastructure in schools is another factor that hinders the facilitation of effective and meaningful student learning (Muslim et al., 2021; Setiyaningsih et al., 2019). These findings highlight the urgent need for practical, accessible, and innovative learning media such as Canva-based interactive multimedia that can help improve both early reading and numeracy skills in primary education.

■ METHOD

This study uses the Research and Development (R&D) method. Research and development is a research method used to produce a particular product, test the effectiveness of the product, and make improvements to a product (Marpaung et al., 2024). According to Supartini et al. (2020), development research is a process used by researchers to develop and validate educational products. The purpose of this study is to develop

and test the effectiveness of a new product, namely Canva-based SUKA SASA Interactive Multimedia, designed to improve early reading and numeracy skills in elementary schools.

Participants

This study was conducted in elementary schools in Karanganyar Regency, Central Java Province, involving 65 first-grade students who were divided into two groups. In small-scale trials, samples were taken using random sampling techniques, so that 15 students were selected from all students. The sample in the large-scale trials amounted to 50 students. Proportional random sampling is a method used to obtain samples by taking them randomly, which is proportional to the size of each sampling unit (Fitri & Efendi, 2024).

Research Design and Procedure

This study uses the ADDIE model, which has five stages that are interrelated and systematically structured. Each stage must be carried out sequentially as an effort to solve problems related to learning resources and is adjusted to the needs and characteristics of students (Arumugam et al., 2019). According to (Alodwan & Almosa, 2018; Maxnun et al., 2024) the steps of the ADDIE model are analysis, design, development, implementation, and evaluation. The integration of technology in this model increases the flexibility and effectiveness of learning, creates a more interactive experience, and is adjusted to student needs and technological developments (Abuhassna et al., 2024; Castro, 2019).

Development Procedure:
1. Analysis

The analysis stage functions to analyze the need for developing teaching materials in the learning process, analyzing the feasibility and what is included in the development requirements
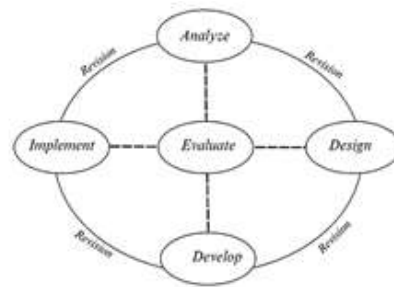
Figure 1. ADDIE model research procedure

(Tarigan et al., 2021). At this stage, preliminary research was conducted to obtain information that it was necessary to develop learning media in the form of interactive multimedia SUKA SASA based on Canva to improve the initial reading and numeracy skills of grade I elementary school students.

2. Design

The second stage in this research model is design. At this stage, the researcher carried out several activities, including: Visualization in the form of a storyboard or flowchart.
a) The researcher designs images and writings that will be poured into interactive multimedia by combining attractive colors through Canva.
b) The researcher creates designs for command buttons that are easy for students to understand.
c) The researcher creates designs for menus for students' needs in the initial reading and numeracy learning stage.

3. Development

At this stage, the researcher developed interactive multimedia products containing Indonesian language learning materials focused on early reading components, including recognizing letters, vowels, syllables, and sentence structures. In addition, elements of basic numeracy were also integrated into the media, such as number recognition, simple counting, and matching numbers with quantities, to support the

simultaneous development of foundational literacy and numeracy skills.

During the development process, the researcher collected supporting materials relevant to the instructional goals and user needs to guide the creation of effective interactive multimedia. The resulting product was then subjected to expert validation, involving media experts, material experts, and practitioner teachers, to assess its quality, accuracy, and alignment with the curriculum. After revisions based on expert input, the multimedia was uploaded via an accessible digital link and implemented in classroom learning. Students were then given the opportunity to interact with the multimedia, and their responses were collected to evaluate the practicality and user engagement of the product.

4. Implementation

At this stage, a limited trial of the Canva-based SUKA SASA interactive multimedia was conducted in elementary schools that had been previously selected as research sites. This phase served as a field test to evaluate the effectiveness of the developed digital teaching materials. The researchers collaborated with classroom teachers to observe the impact of the multimedia on students' early reading and basic numeracy skills. Data were collected through interviews, classroom observations, and learning outcome tests administered before and after the intervention.

The study began with a pre-test in both schools. The experimental group received instruction using SUKA SASA interactive multimedia, while the control group received instruction using conventional concrete media. After the treatment, a post-test was administered to both groups to assess their learning outcomes.

The instructional process in the experimental group consisted of three stages. The first stage was the introduction, which connected students' prior knowledge with the early reading and numeracy materials through apperception activities. This was followed by initial reading practice focusing on the vowels a, i, u, e, o, and basic numeracy tasks such as recognizing and counting numbers. The second stage was the core activity, in which SUKA SASA interactive multimedia was implemented. This included problem orientation, structured learning activities using multimedia, group discussions, and student presentations. The third stage was the closing activity, where teachers and students engaged in reflective analysis, evaluated learning solutions, reviewed the content, assessed student work, and concluded the lesson with feedback and discussions on follow-up learning.

5. Evaluation

At this stage, final revisions are made to the interactive multimedia that has been developed. Revisions refer to input obtained from response questionnaires or observation results.

Instrument

Interview guidelines, observation sheets, and questionnaires were employed as research instruments to collect relevant data. The interviews were conducted to identify instructional needs, explore the challenges faced by both teachers and students in implementing early grade literacy and numeracy learning (Gracella et al., 2025), and evaluate the practicality of the Canva-based *SUKA SASA* interactive multimedia. The interview protocol consisted of questions related to the use of learning media, students' early reading skills, numeracy development, and learning motivation. In addition, observations were carried out to identify problems during the preliminary stage of the research (Hanif, 2020). A structured non-participant observation method was used to document the learning process. The observations focused on the instructional delivery, student engagement, and the integration of reading and numeracy tasks during the use of the

SUKA SASA multimedia. The results provided insights into how the content and design of the Canva-based interactive media contributed to students' understanding of early reading and basic numeracy concepts, as well as how effectively it facilitated student-centered learning in classroom.

The questionnaire was used to collect direct information about students' and teachers' experiences in using previous learning media, the extent to which the media helped them master it, and the level of satisfaction with this new interactive media. This study also used a needs analysis questionnaire, expert validation, teacher, and student responses. The results of the needs questionnaire analysis were used as consideration in designing SUKA SASA interactive multimedia. The validation instrument was used to collect feedback from media, language, and material experts (Montes et al., 2023). The response instrument, in the form of a questionnaire, was distributed directly to teachers, students, and experts to collect their input.

Table 1. Instrument grid

Type of Instrument	Aspect/Indicator	Number of Items
Material Expert	Accuracy of content, completeness, sequence, and motivation	10
Media Expert	Media quality, language, and layout	23
Teacher Response	Effectiveness, efficiency, relevance, usefulness	15
Student Response	Attention, activeness, understanding	13

All instruments were initially tested for validity and reliability. Validity testing is used to determine whether an instrument is valid or not. According to Taherdoost & Hamta (2017), validity is the level of items in an instrument reflecting the content that will be generalized by the instrument. In this study, to determine the validity of the test instrument, the product-moment correlation coefficient from Karl Pearson was used (Sugiyono, 2021). The reliability is the level of consistency of a test, namely the extent to which a test can be trusted to produce scores that remain unchanged even when tested in different situations (Pandey & Pandey, 2021). The formula used to measure the reliability of the multiple-choice test instrument is Cronbach's Alpha.

Data Analysis

The data analysis technique in this development used quantitative and qualitative descriptive techniques. Quantitative analysis involves data from expert team validation (materials, media, and practitioners) to find out the average score, then analyzed qualitatively. All results in the form of comments, suggestions, and feedback are explained in a descriptive description. The measurement scale used in this study is a Likert scale. The amount of each data is also changed into a percentage, with the formula:

$$P = \frac{F}{n} \times 100\%$$

Description:
P = percentage of questionnaire data
F = number of scores obtained
n = maximum number of scores

In this study, data analysis was used to test the proposed hypothesis. The data analysis of this study includes prerequisite and hypothesis tests processed using SPSS version 23. The prerequisite test includes normality and

Table 2. Media eligibility categories (Arikunto, 2014)

Percentage	Category
81% – 100%	Very feasible
61% – 80%	Feasible
41% – 60%	Decent enough
21% – 40%	not feasible
<21%	Very unfeasible

homogeneity tests. The normality test aims to determine whether the samples taken come from a normally distributed population or not (Creswell & Creswell, 2022). The normality test in this study used the Kolmogorov-Smirnov test with Lilliefors Significance Correction with a significance level of á = 5%. The homogeneity test is an assumption test with the aim of proving whether the data analyzed comes from a population that has the same variance or not. The homogeneity test was carried out using the Bartlett test with the chi-square test statistic.

Meanwhile, hypothesis testing is used with the experimental design, namely by comparing the conditions before and after using the module (Before-After Design). Before-after design is known as one-group pretest-posttest design (Gower & Shanks, 2014). Before implementing the *SUKA SASA* interactive media, students take a pretest to determine their initial abilities. After students understand learning using interactive media, students take a posttest to find out the final results. The results are compared using a paired t-test and effect size using SPSS 23. The t-test is used to compare the pretest and posttest scores of the experimental and control groups with success criteria based on a significant increase in scores and positive student involvement (Fitriyah et al., 2024; Rahayu & Ansori, 2025)**.** In addition to using the paired t-test, an N-gain analysis test was also carried out to determine the effectiveness of the PjCAR learning model guidebook that is oriented towards national insight.

■ **RESULT AND DISCUSSION**
Result

The results of this development research discuss two main things, namely product design and product validation. Product development is carried out using the ADDIE development model, which includes the analysis stage (analyze), design stage (design), development stage (development), implementation stage (implementation), and evaluation stage (evaluation). In designing the *SUKA SASA* product, the following five stages of the ADDIE development model were used. The needs analysis stage, namely (1) interviews involving teachers from 22 schools in Kapanewon Ngemplak and 1st grade elementary school students from three different elementary schools; and (2) observations, was conducted by observing the teaching and learning process of teachers and students in three different elementary schools. Interviews were conducted to find out about the use of interactive multimedia in reading learning activities in Indonesian language learning, with the results that 12 out of 22 schools had utilized it. Observations were conducted to strengthen the interview data. The results of the observations obtained an average score of 36.11% or included in the less category in the use of interactive multimedia.

Design Stage activities carried out include: (1) Preparing learning devices according to learning achievements and learning objectives; (2) Preparing *SUKA SASA* interactive multimedia for use in learning the Indonesian language for class I by utilizing the Canva platform; and (3)

Characteristics of Canva-based *SUKA SASA* interactive multimedia to improve elementary school students' learning. The results of interactive multimedia development can b Seen at Figure 2.

After the product is developed, it undergoes several stages of testing, which include: (1) the feasibility test of the teaching module; (2) analysis of media expert validation data; and (3) analysis of learning material expert validation data. The feasibility test of the teaching module is validated by material expert validators and media experts using a questionnaire. The validation questionnaire contains an assessment of the material and media to obtain information regarding the feasibility of the content of the Canva-based SUKA SASA interactive learning media. The results of the validation by media and material experts are presented in Table 3.

Figure 2. Results of interactive multimedia development

Table 3. Assessment of eligibility by validator

Validator	Percentage	Category
Media	80.60%	Very Feasible
Material	95.40%	Very Feasible

Media validation includes aspects of media, language use, and layout that obtain feasible criteria, while material validation includes aspects of content accuracy, completeness, coherence, and motivation quality that obtain very feasible criteria. The validators appreciate the quality of the design and ease of use of the media. The use of Canva produces professional and attractive presentations with intuitive navigation. High scores for media validation reflect the ease of use of *SUKA SASA* interactive media. Overall, the assessment of expert media and material validators shows that the design of the learning media that is designed and developed is in accordance with the needs of teachers and students to be applied in learning Indonesian in early reading material.

Furthermore, the activities carried out at this implementation stage are product trials for first-grade teachers and students with student response questionnaires. Furthermore, limited product trials were conducted on first-grade students of Pencar State Elementary School in the 2024/2025 academic year, totaling 16 students using Canva-based SUKA SASA interactive learning media. The results of the limited trial assessment are in Table 4.

Table 4. *SUKA SASA* media limited trial assessment results

Evaluator	Percentage	Category
Student	84.38%	Very Feasible
Teacher	83.33%	Very Feasible

The recapitulation of the results of the product assessment by students and limited trials conducted by teachers is included in the very feasible category. The interactive learning media *SUKA SASA* based on Canva, is feasible to use by adjusting the conditions of the school and students in the classroom. At the evaluation stage, a large-scale trial was conducted. The results of the assessment and reflection of students and accompanying teachers of class I SDN Ngemplak 1 were used to make improvements and revisions to the product. The results of the large-scale trial assessment can be seen Table 5.

Based on the practice data by the first-grade teacher of Ngemplak 1 Elementary School, the total score was 86.67, meaning it is feasible for use. The average assessment value in the large-scale trial by 21 grade I students and teachers of SDN Ngemplak 1 was included in the very adequate category. Then, from the results of large-scale trials on students, interactive learning media can improve students' beginning reading and numeracy skills.

The results of the product trial were carried out with limited trials and large-scale trials. The limited trial was carried out on first-grade students of Pencar State Elementary School and involved 16 students. The results of the assessment of the early reading and foundational numeracy skills of first-grade students of Pencar State Elementary School increased before and after receiving treatment. The initial reading and numeracy skill score of first-grade students of Pencar State Elementary School before learning to use the interactive learning media *SUKA SASA*, based on Canva was 64.06 and increased to 78.91 after using the interactive learning media. The results are presented in Table 6.

Table 5. Result of the large-scale trial assessment of *SUKA SASA* media

Evaluator	Percentage	Category
Student	86.54%	Very Feasible
Teacher	86.67%	Very Feasible

Table 6. Pre-test and post-test results for limited trial

Test	Number of Students	Average Value
Pre-Test	16	64.06
Post-Test	16	79.91

The average increase in value measured from the pre-test (64.06) to the post-test (78.91) is 14.84. The results of this assessment can be used as a benchmark for the interactive learning media *SUKA SASA* based on Canva, which was developed, and can be used for large-scale trials.

Large-scale trials were conducted in the control class and the experimental class. In the control class, it was conducted in the first grade of Karanganyar State Elementary School with 28 students. Learning is carried out using lecture methods and using concrete media, such as alphabet cards, word cards, and syllables. The results of the students' pre-test and post-test are in Table 7.

The average pre-test score for the control class based on the table above was 65.18 and increased to 70.98 during the post-test. This shows an increase in early reading and numeracy skills of 5.80. In the next stage, the experimental class test was conducted simultaneously with the control class test. The experimental class test was conducted in the first grade of Ngemplak 1 Elementary School with 21 students. In the experimental class, learning was carried out using interactive learning media *SUKA SASA* based on

Table 7. Pre-test and post-test results for control class

Test	Number of Students	Average Value
Pre-Test	28	65.18
Post-Test	28	70.98

Table 8. Pre-test and post-test results for experiment class

Test	Number of Students	Average Value
Pre-Test	21	65.77
Post-Test	21	81.55

Canva, which had been developed previously. The results of the students' pre-test and post-test are shown in Table 8.

The average pre-test score for the experimental class based on the table above was 65.77 and increased to 81.55 during the post-test. This shows that there was an increase in early reading and numeracy skills of 15.77. The average post-test score of the experimental class was also higher when compared to the average post-test score of the control class, so that quantitatively it can be said that the use of interactive learning media *SUKA SASA* based on Canva can improve early reading and numeracy skills. The improvement of early reading and numeracy skills occurs due to several factors, such as students becoming more courageous to try spelling and practicing on their own. The

innovation and development of this interactive multimedia lies in a structured learning approach that integrates various stimuli to increase student engagement and understanding. Students become motivated to try spelling continuously to follow the next level. In addition, interactive educational games are included to encourage students to think, making learning feel fun, like playing.

The normality test was conducted in this research and development using the pre-test and post-test values of both classes in the large-scale trial. The normality test used was the Shapiro-Wilk test, where the data used was less than 30. The normality results showed $p > 0.05$, so the data used in the large-scale trial came from normally distributed samples. The results of the Shapiro-Wilk test from the large-scale trial data are presented in Table 9.

Table 9. Results of data normality test in scale-large trial

		Tests of Normality					
		Kolmogorov-Smirnova			Shapiro-Wilk		
	Class	**Statistic**	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Pre test	Control	.188	28	.012	.935	28	.084
	Experimen	.192	21	.042	.931	21	.145
Post test	Control	.194	28	.008	.937	28	.091
	Experimen	.180	21	.074	.928	21	.125
a. Lilliefors Significance Correction							

The sig. value in the normality test table for the control class above shows $p = 0.084$ in the pre-test and $p = 0.091$ in the post-test. The sig. value in the normality test table for the

experimental class above shows $p = 0.145$ in the pre-test and $p = 0.125$ in the post-test. This shows that the p-value of all classes tested has a significance value greater than 0.05, so it can be

concluded that the reading and numeracy skills data of grade I elementary school students are normally distributed.

The homogeneity test is used to determine whether the data used in the extensive trial of this research and development comes from a population with the same variance or not. The data tested is the data in the large-scale trial, namely by comparing the pre-test value of the control class and the pre-test value of the experimental class. The homogeneity test in this study was conducted using *SPSS 25 for Windows*. The following are the results of the homogeneity test with *SPSS 25 for Windows*.

Table 10. Results of data homogeneity test in large-scale trial

Levene's Test of Equality of Error Variancesa,b

		Levene Statistic	df1	df2	Sig.
Pre test	Based on the Mean	.002	1	47	.968
	Based on the Median	.000	1	47	.998
	Based on Median and with adjusted df	.000	1	46.828	.998
	Based on the trimmed mean	.001	1	47	.970

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: *Pre-test*

b. Design: Intercept + Class

The significance value (sig) based on the mean based on the results of the homogeneity test above is 0.968 (p > 0.05), so it can be concluded that the variance of the control class and experimental class data is the same or homogeneous. Based on the results of the homogeneity test, this study can be continued at the post-test.

The t-test used in this study is an independent sample t-test using post-test data in the control class and the experimental class. The t-test is used to test the significance of the difference in mean values between the control class and the experimental class. The following are the results of the independent sample t-test with *SPSS 25 for Windows*. The result of independet sample t-test is presented in Table 11.

The number of students in the control class was 28, while the number in the experimental

Table 11. Independent sample t test results in large-scale trial

Group Statistics

	Class	N	Mean	Std. Deviation	Std. Error Mean
Post test	Control	28	71.01	7.06	1.33
	Experimen	21	81.57	8.03	1.75

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% CI of the Diff. Lower	Upper
Post test	Equal variances assumed	.004	.953	-4.888	47	.000	-10.560	2.160	-14.906	-6.213

	t	df	Sig.	Mean Diff.	Std. Error Diff.	Lower	Upper
Equal variances not assumed	-4.797	39.962	.000	-10.560	2.201	-15.008	-6.111

class was 21. The average post-test score for the control class was 71.01, and the average post-test score for the experimental class was 81.57. These results indicate a difference in the average post-test score between the control class and the experimental class, so that descriptively it can be said that there is a difference in the results of early reading and numeracy skills between the control class and the experimental class.

The significance value of the T-test results obtained a result of **0.000**, and this value is less than 0.05 (**0.000 < 0.05**), so **H$_0$ is rejected and H$_a$ is accepted** so that it can be concluded that there is a significant difference in the early reading and numeracy skills of the control class and the experimental class, which means that the use of interactive learning media *SUKA SASA* based on Canva is effective for improving the early reading and numeracy skills of first-grade elementary school students. The t-test used in this study uses a paired sample t-test using pre-test and post-test data in the experimental class. The t-test is used to test the significance of the difference in mean values between before and after treatment. The following are the results of the independent sample t-test with *SPSS 25 for Windows*.

Table 12. Paired sample t-test results in large-scale trials

T-Test

Paired Samples Statistics				
	Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1 *Pre test*	65.8000	21	7.02816	1.53367
Post test	81.5667	21	8.02567	1.75134

Paired Samples Correlations				
		N	**Correlation**	**Sig.**
Pair 1	*Pre-test & Post-test*	21	.883	**.000**

Paired Samples Test								
		Paired Differences					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Pair 1	*Pre-test - Post-test*	15.76667	3.76249	.82104	-17.47933	-14.05400	-19.203	20	**.000**

The average pre-test score of the experimental class was 65.80, and the average post-test score of the experimental class was 81.57. These results indicate a difference in the average pre-test and post-test scores, so that descriptively it can be said that there is a difference in the results of early reading and numeracy skills between before and after using interactive learning media. The significance value of the t-test results obtained was 0.000 and the value was less than 0.05 (0.000 < 0.05) so H$_o$ was rejected and H$_a$ was accepted so that it can be concluded that

there is a significant difference in early reading and numeracy skills between before and after using interactive learning media. The effectiveness of *SUKA SASA* interactive multimedia in improving reading and numeracy skills, using a pre-test and post-test design with data analysis using the effect size test. Based on the test results along with the Cohen D effect, the results obtained were d = 1.39672, so the magnitude of the effect between the two groups was at a large level, because it was more than 0.8. So it is concluded that the use of Canva-based SUKA SASA interactive learning media is effective in improving the early reading and numeracy skills of grade I elementary school students.

Discussion

The results of the needs analysis of Indonesian language learning activities for first-grade elementary school students, especially in early reading and numeracy skills, were obtained from the initial stage of this research and development. Based on interviews with first-grade teachers, interviews with students, and learning observations in three elementary schools in the *Kapanewon Ngemplak* area, it was found that students need digital-based learning media, such as interactive multimedia. In addition, a learning approach is needed that can support the improvement of early reading and numeracy skills in a fun and meaningful way. These needs are the basis for the development of Canva-based *SUKA SASA* interactive multimedia designed to improve the early reading and numeracy skills of first-grade elementary school students.

The use of the Canva platform as a basis for developing interactive media shows a holistic and progressive approach to the use of technology in education. These findings are consistent with previous studies that highlight the important role of technology in improving the quality of education and learning in the digital era (Royani & Muslim, 2014; Salsabila et al., 2020). In interactive media, the material is presented clearly and in a structured manner, supported by various examples such as images, animations, audio, and videos that are relevant to the material being studied (Mustadi et al., 2022; Pratiwi & Wiarta, 2021).

In terms of the content of the *SUKA SASA* interactive media, the results of the questionnaire and instruments showed that of the three main indicators evaluated, all statements obtained good qualifications. This is due to the suitability of the material with the learning objectives in the initial reading and numeracy material in learning Indonesian. In addition, this media is effective in encouraging student interaction, attracting attention, and providing the necessary encouragement from both teachers and students, thus creating a comfortable learning atmosphere (Celik, 2023; Oktafiani et al., 2020). The content of the media focuses on practicing reading and numeracy, vowels, consonants, spelling the names of body parts, names of objects, names of animals, names of fruits, names of colors, spelling words, spelling sentences, and pen tours. The content of the *SUKA SASA* media is more complex, with the uniqueness of questions packaged in the form of images and videos.

Meanwhile, in previous studies that used other interactive media, such as Zoom or PowToon. Both platforms facilitate direct interaction between teachers and students, but need to be improved in providing visually appealing and interactive elements. Zoom mainly focuses on real-time verbal and audiovisual interactions, but lacks the dynamic visual stimulation offered by Canva-based interactive animations (Wardana et al., 2023). On the other hand, PowToon, which is also an animation creation platform, creates visually appealing content (Suprianti, 2020). However, these two platforms are not like Canva, which offers a more user-friendly interface and greater flexibility to create materials tailored to curriculum needs and student interests.

The level of suitability of *SUKA SASA* interactive multimedia was tested through validation by media experts, material experts, and responses from teachers and students as

practitioners. The validation results showed that the assessment from media experts was 80.60% in the "feasible" category, while from material experts, 95.40% were in the "very feasible" category. Responses from teachers and students also showed that this product was considered interesting, systematic, and easy to understand. The design and presentation of materials on Canva-based interactive learning media can be used as a learning resource for students in the teaching and learning process (Marpaung et al., 2024). This is in accordance with the theory that the use of interactive multimedia in learning can display real objects visually and increase student involvement directly, thus having an impact on increasing interest and comfort in learning (Fonseca & García-Peñalvo, 2019; Ghofur & Youhanita, 2020; Mou et al., 2023). Interactive media provides a dynamic learning environment that facilitates better understanding and allows students to express their ideas more confidently, as seen in the experimental class (Fitriyah et al., 2024).

The effectiveness of the product was tested through large-scale trials involving two classes, namely the experimental class that used *SUKA SASA* interactive multimedia and the control class that did not use the product. Both classes were given reading and numeracy skills tests in the form of pre-tests and post-tests to determine the effect of product use on learning outcomes. Before the effectiveness test was carried out, normality and homogeneity tests were first carried out to ensure the feasibility of the data in the parametric test. Based on the results of the independent sample t-test, a significance value of 0.000 was obtained, which means that there is a significant difference between the post-test results of the experimental class and the control class. This finding is consistent with previous studies that have shown the positive effects of interactive media on student engagement and motivation (Mayer, 2022). The results of the Effect Size test show that the

magnitude of the effect between the two groups is at a large level.

The results of the Effect Size test show that the magnitude of the effect between the two groups is at a large level. Thus, it can be concluded that the use of Canva-based SUKA SASA interactive multimedia can effectively improve the early reading and numeracy skills of first-grade elementary school students. This shows that Canva interactive media can improve understanding of the material and provide a more effective and meaningful learning experience, thereby increasing students' interest in learning (Fitriyah et al., 2024). Interactive media developed using Canva has proven to be very effective in improving student learning outcomes with high validity and practicality ratings (Fitriyah et al.,2024; Rahayu & Ansori, 2025; Sari, 2018).

The results of this study provide a significant contribution to the development of interactive learning in the context of early reading and numeracy. The main implication is the recognition of the effectiveness of SUKA SASA interactive media in improving student learning outcomes. With positive results from media experts, materials, and practitioners, this media has been proven to be suitable for use in learning. This strengthens the argument about the importance of integrating technology in education to create an engaging and interactive learning environment. Canva-based interactive learning media has a positive impact on a teacher, one of which is building students' reasoning so that they can think creatively and actively. The benefits for students are helping their reasoning become real (Hardina et al., 2024; Rahayu & Ansori, 2025; Rosyada Ayu Fatimah et al., 2023). The designs produced by Canva are not only in the form of images but also audio and video, which encourages innovation in learning media, thereby increasing the effectiveness of its use as a learning medium (Amri, 2023; Ikhlas et al., 2023; Melinia & Nugroho, 2022).

However, there are several other technical, pedagogical, and learner-related barriers. Technical issues such as limited internet access, device compatibility, and limitations to Canva's premium features can hinder accessibility. Pedagogically, teachers may not have the necessary training to create effective reading and numeracy materials, and students may focus more on visuals than comprehension. Additionally, assessing reading and numeracy progress through Canva can be challenging. On the learner side, distractions, cognitive load, and varying levels of motivation or proficiency in early reading and numeracy can impact engagement and comprehension. In addition, this study has limitations, including the limited scale of the trial and the focus on only one age group.

Therefore, for further research, it is recommended to conduct a wider trial involving different age levels and different learning contexts. In addition, further research can explore specific aspects of the *SUKA SASA* interactive media that have a significant impact on student learning outcomes. Thus, further research can provide a deeper understanding of the potential and effectiveness of interactive media in improving early reading and numeracy skills.

■ **CONCLUSION**

This study concludes that the development of Canva *SUKA SASA* interactive media is proven to be valid, feasible, and effective in improving elementary school students' early reading and foundational numeracy skills. The results of the product feasibility test validated by media, material, and practitioner experts are included in the feasible category. Furthermore, the results of the effectiveness test using the independent sample t-test showed a significance value (sig. 2-tailed) of 0.000 and an effect size test of 1.39672, indicating that the use of Canva-based *SUKA SASA* interactive multimedia is effective in improving the early reading and

foundational numeracy skills of grade I elementary school students.

These findings suggest that digital tools, such as Canva, can significantly enhance the learning experience. This is a valuable insight for educators who are constantly looking for innovative methods to engage students and improve learning outcomes. From a theoretical perspective, this study contributes to the existing literature by providing empirical evidence on the effectiveness of specific digital tools in elementary education. Regarding policy implications, the results of this study suggest the need to integrate digital learning tools into the education curriculum. This requires education policymakers to consider investing in and supporting technology-based learning tools in the classroom, especially at the elementary level.

The limitations of this study were that it focused specifically on first graders and the Indonesian language subject area, potentially limiting the generalizability of the findings to different age groups or subjects. In addition, the study was conducted in a controlled environment, which may need to accurately reflect the dynamics and challenges of a typical classroom environment. Several other recommendations for practice and future research are provided. Educators are encouraged to incorporate Canva-based interactive media into their teaching methods and should pilot it across subjects. Training for teachers to use digital tools effectively is also recommended.

■ **REFERENCES**

Abdulatif, S., & Muh. Husen Arifin. (2023). *Pengembangan media buku cerita digital pada pembelajaran ips materi kerajaan islam kelas iv sekolah dasar. Jurnal Elementaria Edukasia*, *6*(4), 1610–1623. https://doi.org/10.31949/jee.v6i4.7200

Abuhassna, H., Alnawajha, S., Awae, F.,

Mohamed Adnan, M. A. Bin, & Edwards, B. I. (2024). Synthesizing technology integration within the ADDIE model for instructional design: A comprehensive systematic literature review. *Journal of Autonomous Intelligence*, 7(5), 1546. https://doi.org/10.32629/jai.v7i5.1546

Atstsaniyah, A. R., & Widagdo, A. (2024). Improving students' initial reading skills through canva application-based picture word card media. JPI (Jurnal Pendidikan Indonesia), 13(3), 403-414.

Alodwan, T., & Almosa, M. (2018). The effect of a computer program based on analysis, design, development, implementation and evaluation (addie) in improving ninth graders' listening and reading comprehension skills in english in Jordan. *English Language Teaching*, 11(4), 43. https://doi.org/10.5539/elt.v11n4p43

Amri, Z. (2023). The use of the Canva application learning media in the Fiqh learning process. *Jurnal Inovasi Dan Teknologi Pembelajaran*, *10*(1), 1. https://doi.org/10.17977/um031v10i12023p001

Anam, C., Churiyah, M., & Pratama, N. Z. (2023). Improving learning outcomes and self-regulated learning through the development of web-based learning media with canva platform. *International Journal of Multicultural and Multireligious Understanding*, *10*(5), 376. https://doi.org/10.18415/ijmmu.v10i5.4820

Anggraeny, D., Nurlaili, D. A., & Mufidah, R. A. (2020). *Analisis teknologi pembelajaran dalam pendidikan sekolah dasar.* Fondatia, *4*(1), 150–157. https://doi.org/10.36088/fondatia.v4i1.467

Ansoriyah, S., & Rahmat, A. (2018). *Peningkatan kemampuan menulis populer mahasiswa melalui pendekatan whole language dengan pembuatan media story board. AKSIS: Jurnal*

Pendidikan Bahasa Dan Sastra Indonesia, *2*(1), 29–46. https://doi.org/10.21009/aksis.020103

Arikunto, S. (2014). *Prosedur penelitian suatu pendekatan praktik* (15th ed.). PT RINEKA CIIPTA.

Arumugam, S., Eng Hock, K., & Mohamed Isa, Z. (2019). Methodology of developing symptomatic behavior screening tool (symbest) for children aged 3-4 years old with behavior problems. *Muallim Journal of Social Science and Humanities*, *July*, 324–341. https://doi.org/10.33306/mjssh25

Asnur, F., Amalia, A., Rahmayani, N., Nurdin, I. A., & Dewi, E. M. P. (2023). *Efektivitas media pembelajaran interaktif berbasis canva terhadap peningkatan pengetahuan budaya indonesia siswa kelas 4 dan 5 SD Runiah School Makassar. Joong-Ki : Jurnal Pengabdian Masyarakat*, *2*(3), 636–642. https://doi.org/10.56799/joongki.v2i3.2066

Astri, A. H. A., & Amalia, D. N. (2024). *Analisis faktor-faktor kesulitan membaca pada siswa sekolah dasar. Jurnal Basicedu*, *8*(1), 83–90. https://doi.org/10.31004/basicedu.v8i1.6789

Astriyandi, A. A. (2016). *Pengembangan buku digital interaktif untuk pemahaman konsep geografi. Jurnal Geografi Gea*, *16*(1), 13. https://doi.org/10.17509/gea.v16i1.3464

Astuti, P., Mumpuni, A., & Adjar Pranoto, B. (2019). *Pengaruh minat dan kemampuan membaca peserta didik dalam memahami teks bacaan. Jurnal Ilmiah KONTEKSTUAL*, *1*(01), 26–32. https://doi.org/10.46772/kontekstual.v1i01.55

Biassari, I., Putri, K. E., & Kholifah, S. (2021). *Peningkatan hasil belajar matematika pada materi kecepatan menggunakan*

media video pembelajaran interaktif di sekolah dasar. Jurnal Basicedu, *5*(4), 2322–2329. https://doi.org/10.31004/basicedu.v5i4.1139

Bua, M. T., Santoso, A., Hasanah, M., Dasar, P., & Malang, P. N. (2016). *Analisis Minat Membaca Permulaan Dengan menggunakan media. Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *1*(9), 1749–1752.

Castillo-Merino, D., & Serradell-López, E. (2014). An analysis of the determinants of students' performance in e-learning. *Computers in Human Behavior*, *30*, 476–484. https://doi.org/10.1016/j.chb.2013.06.020

Castro, R. (2019). Blended learning in higher education: Trends and capabilities. *Education and Information Technologies*, *24*(4), 2523–2546. https://doi.org/10.1007/s10639-019-09886-3

Celik, B. (2023). Technology-enhanced language learning: a review of its benefits. *International Journal of Social Sciences & Educational Studies*, *10*(1), 383–387. https://doi.org/10.23918/ijsses.v10i1p383

Çelik, H. C., & Özdemir, F. (2020). Mathematical thinking as a predictor of critical thinking dispositions of pre-service mathematics teachers. *International Journal of Progressive Education*, *16*(4), 81–98. https://doi.org/10.29329/ijpe.2020.268.6

Creswell, J. W., & Creswell, J. D. (2022). Research design: Qualitative, quantitative, and mixed methods approaches, 5th edition. *Journal of Electronic Resources in Medical Libraries*, *19*(1–2), 54–55. https://doi.org/https://doi.org/10.1080/15424065.2022.2046231

Darmayanti, R., Sugianto, R., Baiduri, B., Choirudin, C., & Wawan, W. (2022). Digital comic learning media based on character values on students' critical

thinking in solving mathematical problems in terms of learning styles. *Al-Jabar/ : Jurnal Pendidikan Matematika*, *13*(1), 49–66. https://doi.org/10.24042/ajpm.v13i1.11680

Fitri, P. I. M., & Efendi, R. (2024). The need for developing canva-based interactive learning media to improve students' literacy abilities. *Research Education and Technology*, *2*(2), 50–59. https://journalregy.com/index.php/uvw/article/view/109%0Ahttps://journalregy.com/index.php/uvw/article/download/109/46

Fitriyah, R., Hilmiyati, F., & Juhji, J. (2024). Effectiveness of canva-based interactive animation media in enhancing learning interest of second-grade madrasah ibtidaiyah students. *Al-Adzka: Jurnal Ilmiah Pendidikan Guru Madrasah Ibtidaiyah*, *14*(2), 135–150. https://doi.org/10.18592/aladzkapgmi.v14i2.13896

Fonseca, D., & García-Peñalvo, F. J. (2019). Interactive and collaborative technological ecosystems for improving academic motivation and engagement. *Universal Access in the Information Society*, *18*(3), 423–430. https://doi.org/10.1007/s10209-019-00669-8

Ghofur, A., & Youhanita, E. (2020). Interactive media development to improve student motivation. *IJECA (International Journal of Education and Curriculum Application)*, *3*(1), 1. https://doi.org/10.31764/ijeca.v3i1.2026

Gower, M. D., & Shanks, R. A. (2014). Research design-qualitative, quantitative, & mixed methods approaches. In *4th ed* (p. 273). Sage Publication.

Gracella, E., Hasibuan, E., Destrinelli, D., & Zahyuni, V. (2025). *Asatiza/ : Jurnal Pendidikan*. *6*(1), 48–62.

Hafidh, M., & Lena, M. S. (2023). *Pengembangan media pembelajaran*

menggunakan aplikasi canva pada pembelajaran tematik terpadu di kelas V Sekolah Dasar. Muallimuna/ : Jurnal Madrasah Ibtidaiyah, *8*(2), 112. https://doi.org/10.31602/muallimuna.v8i2.10553

Hanif, M. (2020). The development and effectiveness of motion graphic animation videos to improve primary school students' sciences learning outcomes. *International Journal of Instruction*, *13*(4), 247–266. https://doi.org/10.29333/iji.2020.13416a

Hardina, L. T., Asari, S., & Maruf, N. (2024). Designing local culture-based canva narratives to enhance reading skills for junior high school students. *JEELS (Journal of English Education and Linguistics Studies)*, *11*(2), 927–957. https://doi.org/10.30762/jeels.v11i2.3802

Hidayatullah, A., Artharina, F. P., Sumarno, S., & Rumiarci, E. (2023). *Penggunaan aplikasi canva pada pembelajaran di sekolah dasar. Jurnal Educatio FKIP UNMA*, *9*(2), 943–947. https://doi.org/10.31949/educatio.v9i2.4823

Hoesny, M. U., & Darmayanti, R. (2021). *Permasalahan dan solusi untuk meningkatkan kompetensi dan kualitas guru/ : sebuah kajian pustaka. Scholaria/ : Jurnal Pendidikan Dan Kebudayaan*, *11*(2), 123–132.

Ikhlas, R. Z., Japakiya, R., & Muzayanah, T. (2023). Utilization of canva application as a learning media video creation. *Journal of Social Science Utilizing Technology*, *1*(3), 158–169. https://doi.org/10.70177/jssut.v1i3.558

Ilham, S., Vázquez-Cano, E., & Novita, L. (2023). Use of canva application as a learning media. *Al-Hijr: Journal of Adulearn World*, *1*(1), 9–18. https://doi.org/10.55849/alhijr.v1i1.499

Indarta, Y., Jalinus, N., Waskito, W., Samala, A. D., Riyanda, A. R., & Adi, N. H. (2022). *Relevansi kurikulum merdeka belajar*

dengan model pembelajaran abad 21 dalam perkembangan era society 5.0. Edukatif/ : Jurnal Ilmu Pendidikan, *4*(2), 3011–3024. https://doi.org/10.31004/edukatif.v4i2.2589

Irwansyah, Alfathoni, M. A. M., Arifin, E. H. Y., Khaddafi, M., Hana, F. M., Prihandono, A., Ali, M., Labuda, F., Safii, M., & Zaadi, M. A. (2025). *Multimedia*. Yayasan Tri Edukasi Ilmiah.

Jeno, L. M., Adachi, P. J. C., Grytnes, J. A., Vandvik, V., & Deci, E. L. (2019). The effects of m-learning on motivation, achievement and well-being: A Self-Determination Theory approach. *British Journal of Educational Technology*, *50*(2), 669–683. https://doi.org/10.1111/bjet.12657

Joyo, A. (2019). *Literasi digital berbasis kearifan lokal pada pembelajaran menulis teks prosedur. Seminar Nasional Pendidikan Bahasa Dan Sastra (Semiba)*, 245–255.

Kartini, T., & Rusman, R. (2019). *Studi evaluatif kurikulum diklat berjenjang tingkat dasar dalam jaringan terhadap peningkatan kompetensi pendidik paud. Diklus: Jurnal Pendidikan Luar Sekolah*, *2*(2), 74–86. https://doi.org/10.21831/diklus.v2i2.23651

Kemendikbud. (2024). *Kurikulum pada pendidikan anak usia dini, jenjang pendidikan dasar, dan jenjang pendidikan menengah. Permendikbud Ristek Nomor 12 Tahun 2024*, 1–26.

Khairunnisa, Akbar, M. R., Usanto, Ningtyas, S., Aziz, F., Sepriano, Rini, F., Hasanuddin, Putra, I. N. A. S., Adhicandra, I., Novita, R., Metra, R., & Junaidi, S. (2023). *MULTIMEDIA (Teori dan aplikasi dalam dunia pendidikan)*. PT. Sonpedia Publishing Indonesia.

Lin, M. H., Chen, H. C., & Liu, K. S. (2017). A study of the effects of digital learning on

learning motivation and learning outcome. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(7), 3553–3564. https://doi.org/10.12973/eurasia.2017.00744a

Mahyudin, A. (2023). *Journal of instructional and development researches pengembangan media pembelajaran canva mata pelajaran pai & bp fase c-sekolah dasar. JIDeR*, *3*(4), 169–177. https://doi.org/10.53621/jider.v3i4.255

Marpaung, D. W., Wiryanto, & Tatag Yuli Eko Siswono. (2024). Canva-Based MPI analysis of critical thinking skills for class vi elementary school mathematics story problems. *Jurnal Elementaria Edukasia*, *7*(4), 3443–3454. https://doi.org/10.31949/jee.v7i4.11796

Maxnun, L., Kristiani, K., & Sulistyaningrum, C. D. (2024). Development of hots-based cognitive assessment instruments: ADDIE model. *Journal of Education and Learning*, *18*(2), 489–498. https://doi.org/10.11591/edulearn.v18i2.21079

Mayer, R. (2022). The future of multimedia learning. *The Journal of Applied Instructional Design*, 69–76. https://doi.org/10.59668/423.10349

Melinia, S., & Nugroho, N. (2022). Creating a video using canva application as an english learning media of recount text material. *JEdu: Journal of English Education*, *2*(2), 118–129. https://doi.org/10.30998/jedu.v2i2.6644

Meyer, M. W., & Norman, D. (2020). Changing design education for the 21st century. *She Ji*, *6*(1), 13–49. https://doi.org/10.1016/j.sheji.2019.12.002

Mou, Z., Damhuri, D., & Nur Iman, M. (2023). The effect of interactive video learning media on the motivation of arabic language learning of class VIII Students of Mts Al-Khairat Paguyaman. *Al-Kalim/ : Jurnal Pendidikan Bahasa Arab Dan Kebahasaaraban*, *2*(1), 14–28. https://doi.org/10.60040/jak.v2i1.15

Muslim, F., Refnida, R., Chen, D., & Wirayuda, R. P. (2021). Macroeconomic digital book development: how are the feasibility of experts and student responses? *Journal of Education Technology*, *5*(3), 501–510. https://doi.org/10.23887/jet.v5i3.38280

Mustadi, A., Sayekti, O. M., Rochmah, E. N., Zubaidah, E., Sugiarsih, S., & Schulze, K. M. (2022). Pancalis: Android-based learning media for early-reading in new normal. *Cakrawala Pendidikan*, *41*(1), 71–82. https://doi.org/10.21831/cp.v41i1.45883

Noermanzah, & Friantary, H. (2019). Development of competency-based poetry learning materials for class X high schools. *International Journal of Recent Technology and Engineering*, *8*(4), 6631–6638. https://doi.org/10.35940/ijrte.d8855.118419

Nurhayati, S., & Lahagu, E. S. (2021). *Pendidikan sepanjang hayat* (E. Rianty (ed.); Pertama). PT. Sonpedia Publishing Indonesia.

Nurpiani, R., Anggraeni, S. R., & Farhurohman, O. (2024). *Penggunaan media canva untuk meningkatkan minat belajar siswa kelas III Sekolah Dasar. Al Madrasah Jurnal Pendidikan Madrasah Ibtidaiya*, *8*(3), 1172. https://doi.org/10.35931/am.v8i3.3561

Ockta, Y., Umar, U., Komaini, A., Firdaus, K., Padli, P., & Masrun, M. (2024). Walk, run, jump and learn: Interactive multimedia for teaching locomotor skills in primary schools. *Research and Development in Education (RaDEn)*, *4*(1), 1–11. https://doi.org/10.22219/raden.v4i1.31831

Oktafiani, D., Nulhakim, L., & Alamsyah, T. P. (2020). *Pengembangan media pembelajaran ipa berbasis multimedia*

interaktif menggunakan adobe flash pada kelas IV. MIMBAR PGSD Undiksha, 8(3), 527–540.

Oktaviany, D. F. (2023). *Pendidikan sepanjang hayat menurut perspektif hadis Rasulullah SAW. At-Tarbiyah: Jurnal Pendidikan Islam*, 13(2), 192–201. https://doi.org/10.15548/v14i2.3010

Pamuji, S. S., & Setyami, I. (2021). *Keterampilan berbahasa*. Guepedia.

Pandey, P., & Pandey, M. M. (2021). *Research methodology tools and techniques*. Bridge Center.

Pratama, H. P., Putri, D. I. H., Sari, N. T. A., & Fuada, S. (2021). *Pemanfaatan platform digital untuk buku digital interaktif*. Media Edukasi Indonesia (Anggota IKAPI).

Pratiwi, R. I. M., & Wiarta, I. W. (2021). *Pengembangan multimedia interaktif berbasis pendidikan matematika realistik indonesia pada pembelajaran matematika kelas II SD. Jurnal Edutech Undiksha*, 9(1), 85–94. https://doi.org/10.23887/jeu.v9i1.32220

Pridasari, F., & Anafiah, S. (2020). *Analisis kesulitan membaca permulaan pada siswa kelas i di sdn demangan yogyakarta. TRIHAYU: Jurnal Pendidikan Ke-SD-An*, 6(2), 432–439. https://doi.org/10.30738/trihayu.v6i2.8054

Puspitarini, Y. D., & Hanif, M. (2019). Using learning media to increase learning motivation in elementary school. *Anatolian Journal of Education*, 4(2), 53–60. https://doi.org/10.29333/aje.2019.426a

Rahayu, T. E., & Ansori, I. (2025). Development of canva-based interactive multimedia presentation using problem based learning model on the material of body parts – plants. *Jurnal Penelitian Pendidikan IPA*, 11(4), 685–693. https://doi.org/10.29303/jppipa.v11i4.10771

Rahim, A. R., Tajuddin, A. S., Ummiyati, & Arsyad, W. (2022). *Inovasi pembelajaran keterampilan berbahasa di kelas awal sekolah dasar*. ZAHIR PUBLISHING.

Ramadhana, B., & Meitasari, I. (2023). *Kajian tingkat pendidikan terhadap kualitas hidup masyarakat. Jurnal Penelitian Pendidikan Geografi*, 8(2), 38–45. https://doi.org/10.36709/jppg.v8i2.1

Rohimah, S. (2021). Reading difficulties and factors affecting reading difficulties of students of grade 1 elementary school. *LADU: Journal of Languages and Education*, 1(5), 189–195. https://doi.org/10.56724/ladu.v1i5.85

Fatimah, R. A., Mailandari, O., Khoirunnisa, J. F., Lestari, W., & Dirahman, F. (2024). *Pengaruh kurikulum merdeka dalam penggunaan canva sebagai media pembelajaran di man 1 kulon progo.* Lencana: Jurnal Inovasi Ilmu Pendidikan, 2(1), 92-102.

Royani, M., & Muslim, B. (2014). *Keterampilan bertanya siswa smp melalui strategi pembelajaran aktif tipe team quiz pada materi segi empat. EDU-MAT: Jurnal Pendidikan Matematika*, 2(1), 22–28. https://doi.org/10.20527/edumat.v2i1.586

Salsabila, U. H., Ilmi, M. U., Nurfadila, & Saputra, R. (2020). *Peran teknologi pendidikan dalam meningkatkan kualitas pendidikan di era disrupsi. Journal on Education*, 03(01), 104–112. https://doi.org/10.61132/nakula.v2i5.1008

Sari, N. R. (2018). Animation media to improve student learning results. *Jurnal Tadris Matematika*, 1(2), 145–156. https://doi.org/10.21274/jtm.2018.1.2.145-156

Setiyaningsih, G., Prasetyo, M. A. W., & Hidayah, D. U. (2019). *Penerapan aplikasi media pembelajaran pada smp n 1 nusawungu berbasis smartphone android. MATRIK/*

: *Jurnal Manajemen, Teknik Informatika Dan Rekayasa Komputer*, *18*(2), 246–256. https://doi.org/10.30812/matrik.v18i2.365

Solas, E., & Sutton, F. (2018). Incorporating digital technology in the general education classroom. *Research in Social Sciences and Technology*, *3*(1), 1–15. https://doi.org/10.46303/ressat.03.01.1

Sugiyono. (2021). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Supartini, T., Weismann, I. T. J., Wijaya, H., & Helaluddin. (2020). Development of learning methods through songs and movements to improve children's cognitive and psychomotor aspects. *European Journal of Educational Research*, *9*(4), 1615–1633. https://doi.org/10.12973/EU-JER.9.4.1615

Suprianti, G. A. P. (2020). Powtoon animation video: a learning media for the sixth graders. *VELES Voices of English Language Education Society*, *4*(2), 152–162. https://doi.org/10.29408/veles.v4i2.2536

Suprihatin, D., & Hariyadi, A. (2021). *Peningkatan kemampuan menentukan ide pokok melalui model SAVI berbasis Mind Mapping pada siswa sekolah dasar. Jurnal Educatio*, *7*(4), 1384–1393. https://doi.org/10.31949/educatio.v7i4.1468

Susila, H., Muslim, S., & Syahrial, Z. (2019). Interactive multimedia to enhance students' engagement. *ICSTI 2018*. https://doi.org/10.4108/eai.19-10-2018.2281286

Taherdoost, H., & Hamta, G. (2017). Validity and reliability of the research instrument/; how to test the validation of a questionnaire / survey in a researchfile:///C:/Users/admin/Desktop/RISACHI REPORT 2021/reference B/2190-8050-1-PB-1

SOCIO.pdf. *International Journal of Sport, Exercise & Training Sciences*, *5*(3), 27–36. https://hal.science/hal-02546799/document

Ulfah, A., Jesica, E., Fitriyah, L., Amalia, G. S. P., Yulianingtyas, M., & Amelya, P. D. (2023). *Pemanfaatan teknologi dalam model pembelajaran olah alur pada pembelajaran menulis cerpen. GHANCARAN: Jurnal Pendidikan Bahasa Dan Sastra Indonesia*, 38–48. https://doi.org/10.19105/ghancaran.vi.11731

Vargas-Cumbicus, M. I., Carrión-Ordoñez, J. F., Santamaria-López, T. M., & Tapia-Bastidas, T. (2024). Integración de las herramientas tecnológicas Canva y Padlet para fortalecer el aprendizaje colaborativo en la asignatura de Estudios Sociales. *Journal Scientific*, *8*(3), 1118–1135. https://doi.org/10.56048/mqr20225.8.3.2024.1118-1135

Vidiawati, C. T. (2023). Implementing the use of canva media to promote interest in reading and writing the qur'an in primary schools. *Intiqad: Jurnal Agama Dan Pendidikan Islam*, *15*(1), 135–148. https://doi.org/10.30596/13280

Wardana, A., Ramadhan, M. R., Aznur, M., Putri, R. A., & Ikhwan, A. (2023). *Media pembelajaran multimedia interaktif menggunakan metode mdlc pada zoom meetings. Jurnal Penelitian Dan Pengkajian Ilmiah Eksakta*, *2*(1), 25–29. https://doi.org/10.47233/jppie.v2i1.677

Wu, L. F., Razak, A., & Dashwood, A. M. (2023). Exploring innovative teaching strategies of the singapore english language curriculum: a learning experience of lesson study. *Journal of Language and Literature Studies*, *3*(2), 118–134. https://doi.org/10.36312/jolls.v3i2.1348

Yeºilyurt, E., & Vezne, R. (2023). Digital literacy, technological literacy, and internet literacy as predictors of attitude toward applying computer-supported education. *Education and Information Technologies*, *28*(8), 9885–9911. https://doi.org/10.1007/s10639-022-11311-1

Yunus, M., & Wedi, A. (2018). *Konsep dan penerapan pendidikan sepanjang hayat dalam keluarga. Jurnal Inovasi Teknologi Pembelajaran*, *5*(1), 31–37.