

The Effect of the Phonics Method Using Beginning Reading Media on Primary School Students' Beginning Reading Skills

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Abstract. One significant obstacle to improving basic literacy standards in Indonesia is the low initial reading proficiency among primary school students. To strengthen students' understanding of letter-sound relationships, innovative teaching approaches are essential. This study investigated the combined effects of phonics instruction and Beginning Reading (BR) media on elementary students' early reading abilities. Using a quasi-experimental pre-experimental design, the research employed descriptive and inferential statistical analysis of data collected through questionnaires, interviews, and a one-group pretest-posttest framework. Eighteen participants demonstrated pretest scores ranging from 28.46 to 70.76, reflecting varying baseline reading levels. Following the instructional intervention, posttest results revealed substantial improvement, with scores climbing to 82-100 and an average N-Gain score of 82.85. These outcomes demonstrate marked progress in reading competency, providing robust empirical support for integrating phonics methodology with interactive BR media. The results highlight two key findings: (1) the effectiveness of combining systematic phonics with multimedia tools, and (2) technology's role in creating engaging, practical learning solutions for foundational literacy. This research contributes meaningfully to primary education by validating an evidence-based approach that addresses Indonesia's literacy challenges while aligning with contemporary digital learning environments. The demonstrated improvements in reading skills underscore the potential of this combined methodology to transform early reading instruction.

Keywords: Beginning Reading; Indonesian Language Learning; Media; Phonics Method; Sound Alterations.

1. Introduction

Reading is one of the fundamental skills crucial to children's academic development. Primary school reading instruction lays the groundwork for comprehension in subsequent subjects (Azzahra et al., 2024). However, this skill can be particularly challenging for students who struggle with early reading (Md Nordin et al., 2023). Students with difficulties in beginning reading may face greater challenges in meeting academic expectations across various subjects. One effective strategy to enhance early reading abilities is the phonics technique combined with Beginning Reading (BR) Learning Media. Reading is a cognitive process that involves finding, interpreting, and comprehending written symbols to derive meaning or information (Al-Majdawi, 2022). Teaching new readers, especially young children, the fundamental of reading is the first stage in developing literacy. This stage includes fundamental skills such as syllable generation, phoneme identification, letter recognition, basic word recognition, and short phrase construction (Wolf, 2023).

The phonics approach to teaching reading focuses on the relationship between letters and phonemes, or language sounds (Putri et al., 2024). Students are taught to recognize letters or groups of letters and associate them with specific sounds to form readable words. For instance, students learn that the letters "b" and "a" correspond to the sounds /b/ and /a/, respectively, and that these sounds combine to form "ba" (Sharma, 2022). According to Hu and Du (2023), phonics methods are often taught in stages, beginning with the introduction of letters and fundamental sounds, which are then combined to create words, syllables, and sentences. The primary goal of this method is to help students understand the phonetic structure of language,

thereby improving their comprehension of written content and enabling them to read fluently (Karipidis et al., 2021). The phonics method has been widely implemented in primary education across various countries, demonstrating success in helping beginning readers. This is particularly true for languages like Indonesian, which has a consistent phonetic relationship between letters and sounds (Wahyuni, 2022).

The phonics technique is a teaching approach that emphasizes identifying letter sounds and understanding the connection between letters and sounds (Anku, 2024). According to Gumelar and Lestari (2024), this approach aids children in letter identification, sound pronunciation, and associating sounds with words. Previous research has demonstrated the effectiveness of the phonics approach in enhancing early reading skills (Khotimah et al., 2023). However, most existing studies have not extensively examined the use of interactive technology in phonics instruction within Indonesian primary schools. This research addresses this gap by exploring the integration of multimedia tools, such as BR, with the phonics method to enhance student engagement in the learning process (Parry et al., 2024). While previous studies have shown the effectiveness of phonics instruction, this study examines the innovative use of MP files as auditory and visual aids to support student learning. By incorporating this medium, children may develop a deeper understanding of reading comprehension and improve their ability to recognize letter sounds.

This research contributes to the field by demonstrating how combining phonics instruction with interactive media can create a more engaging and effective learning experience. The study highlights the potential of multimedia integration in improving early literacy skills, offering valuable insights for educators and curriculum developers.

1.1. Problem Statement

Ideally, BR abilities should serve as a strong foundation for helping primary school pupils comprehend increasingly complex course content. Children's literacy development and academic achievement depend on these skills (Zainudin et al., 2023). However, many students struggle with syllable composition, letter recognition, and phoneme differentiation when they first begin reading. If these challenges are not addressed, students may have difficulty meeting academic requirements, potentially leading to poor literacy and overall academic performance.

Phonics methods have been widely recognized as effective in improving primary school students' reading proficiency. However, in Indonesia, research on the integration of interactive technologies, such as BR Learning Media, with phonics instruction remains limited. This knowledge gap raises questions about how interactive technology can enhance student engagement and improve the effectiveness of early reading instruction. Without further investigation, the full potential of technology to support children's basic literacy development may not be realized.

The urgency of this research lies in the need to evaluate how interactive BR media-based phonics techniques enhance students' understanding of the correspondence between letters and sounds. With its interactive audio-visual components, BR media has significant potential to help students grasp foundational reading concepts. Therefore, the purpose of this study is to assess how phonics methods, in conjunction with BR interactive media, can improve primary school pupils' early reading abilities. The findings of this research are expected to contribute significantly to the development of more innovative, relevant, and effective reading instruction strategies that meet students' needs in the digital age.

1.2. Related Research

Numerous earlier studies have demonstrated the effectiveness of phonics techniques in enhancing BR skills. According to Virdyna (2015), phonics techniques that incorporate engaging objects can capture children's interest and enhance their learning experience. Because this method emphasizes meaningful learning over rote memorization, it effectively improves children's reading skills and comprehension of English. Children who use this approach not only become proficient readers but also demonstrate a deeper understanding of what they read by retaining information for extended periods.

Furthermore, Novianti (2021) found that the application of phonics methods improves the beginning reading proficiency of students in Special Needs Schools with mild impairments. Both the first and second participants showed significant gains between baseline and intervention conditions, indicating that this approach effectively supports the reading development of children with special needs. Similarly, research by Tiani et al. (2023) demonstrated that the phonics method enhances young children's foundational reading abilities. In a quasi-experimental study, the n-gain test and t-test results showed that the experimental group using the phonics strategy outperformed the control group.

Although all three studies confirm the effectiveness of the phonics strategy in enhancing BR skills, this study differs significantly by incorporating interactive media, specifically Beginning Reading media. The integration of BR media with the phonics method introduces an interactive audio-visual component that not only captures students' attention but also accelerates their understanding of the correspondence between letters and sounds. Because BR media includes interactive activities designed to enhance students' motivation, engagement, and overall comprehension, it represents an innovative approach to reading instruction. Thus, by examining the effectiveness of integrating technology into phonics instruction for BR development in Indonesia, this study not only validates previous findings but also contributes to the broader body of knowledge.

1.3. Research Objectives

The purpose of this research is to examine the impact of the phonics approach, supported by Beginning Reading (BR) interactive media, on primary school pupils' early reading abilities. The primary objective is to determine the extent to which the phonics approach helps children understand the correspondence between letters and sounds and how the use of BR media can significantly enhance these skills. Additionally, this study aims to assess the effectiveness of interactive technology in supporting the development of basic literacy, particularly at the beginning reading level. A secondary objective is to compare students' reading abilities before and after implementing the BR media-based phonics technique.

This study employs a one-group pretest-posttest research methodology to analyze changes in students' reading ability scores, providing empirical evidence of the intervention's effectiveness. By examining pretest and posttest data, this research seeks to demonstrate the extent to which the phonics approach, combined with digital media, supports the learning process of beginning readers.

Furthermore, this research aims to offer insights into more innovative and relevant reading instruction practices for students in the digital age. By exploring the benefits of integrating the phonics technique with BR media, this study is expected to contribute to the development of teaching strategies that enhance beginning reading skills while simultaneously increasing students' engagement and interest in the learning process. The findings of this research may serve as a foundation for teachers to design more effective reading instruction methods for elementary school students.

2. Theoretical Framework

This study includes theoretical framework on beginning reading, Indonesian language learning in primary school, the phonics approach, BR media, and sound alterations.

2.1. Beginning Reading

Reading plays a significant role in children's academic and cognitive development. According to Harianto (2020), reading is a process that enables readers to make sense of a text by integrating prior knowledge with newly acquired information. Reading also requires metacognitive skills, such as monitoring comprehension and identifying strategies to correct misunderstandings. Beginning reading, the initial phase of reading development, focuses on recognizing and understanding the correspondence between letter symbols and sounds, or phonemes (Karipidis et al., 2021). At this stage, students learn the letters of the alphabet and

understand that each letter or letter combination represents a distinct linguistic sound. Beginning reading lays the foundation for more advanced reading skills by equipping students with the fundamental ability to recognize and pronounce simple words.

For many learners, beginning to read can be challenging. One of the most significant obstacles is mastering phonological skills, including phonological awareness and phonemic understanding. Phonological awareness refers to the ability to connect spoken word sounds to individual letters or groups of letters in written language (Deva et al., 2023). Additionally, a limited vocabulary presents a major challenge when learning to read. Students with a restricted vocabulary often struggle to comprehend texts because they cannot recognize unfamiliar words or grasp the broader context of a passage, which may lead to a loss of interest or motivation to continue reading. Another critical barrier to reading development is poor language comprehension. The essential requirements for beginning reading proficiency include the following: recognizing vowel and consonant symbols, identifying words that share the same initial letter, recognizing words with the same first syllable, and combining syllables to form words (Kameche & Taleb, 2023).

2.2. Indonesian Language Learning in Primary School

Receptive and productive abilities are among the many facets of language proficiency covered in Indonesian language instruction. The goal of studying Indonesian is to enhance students' language proficiency comprehensively and in an integrated manner. According to Sari (2024), the scope of learning encompasses components such as speaking, listening, reading, and writing to accomplish this purpose. Enhancing receptive and productive language abilities is the primary objective of Indonesian language instruction (Tammardia & Devianty, 2024). These skills include understanding and using Indonesian effectively and efficiently in various written and spoken communication contexts. Learning Indonesian helps students develop critical, analytical, and creative thinking skills in addition to linguistic proficiency.

Another goal of studying Indonesian is the development of proficient speaking and writing abilities. Students receive instruction on how to communicate thoughts, ideas, and information systematically while adhering to linguistic conventions. Learners are expected to demonstrate verbal communication skills in both formal and informal settings. Conversely, writing skills are necessary to express thoughts in writing with appropriate vocabulary, accurate syntax, and well-structured paragraphs (Rulyandi et al., 2024).

2.3. The Phonics Approach

The phonics approach teaches reading by emphasizing the systematic relationship between letters of the alphabet and the sounds they represent (Gumelar & Lestari, 2024). This method seeks to equip students with the foundational skills needed to recognize, manipulate, and connect sounds in words to written symbols. The phonics strategy is one of the most effective ways to acquire language proficiency (Jayanti et al., 2024). This approach is based on the principle that teaching students the connection between phonemes—the smallest units of sound in language—and graphemes—letters or letter combinations—is a structured way to develop reading skills (Hanna, 2023). For instance, students learn that the letter b represents the sound /b/ and how combining these sounds forms words.

Beyond recognizing individual letters and sounds, the phonics approach teaches learners to blend sounds to form meaningful words. This includes mastering spelling, pronunciation, and letter-sound correspondences in more complex terms. For example, learners discover that the digraph ch produces the sound /tʃ/, as in the word cherry, rather than the individual sounds of c or h (Ahmad & Yunus, 2019). The phonics method is essential because it enables students to develop reading skills in a structured and efficient manner. Research indicates that phonics instruction benefits struggling readers, particularly in early elementary education (Khotimah et al., 2023). By understanding letter-sound patterns, learners improve reading accuracy, fluency, and comprehension while expanding their vocabulary. This approach fosters reading confidence by providing students with the tools to decode texts independently. Additionally, the phonics method significantly enhances reading proficiency (Suteja et al., 2022). Learners

with phonics training typically outperform those who rely solely on whole-word memorization, as the latter often lack strategies for decoding unfamiliar or complex terms.

2.4. BR Media

BR Media is a learning aid designed to support reading instruction at a young age, particularly for elementary school students. This media was developed using Unity, an interactive game and application development platform that enables the creation of dynamic and engaging learning environments (Jones et al., 2017). By leveraging Unity, BR Media integrates interactive, visual, and auditory components to produce interactive reading materials that encourage active student participation in the learning process. One of the key advantages of using Unity in BR Media's development is its ability to adapt content to learners' individual capacities. The application can be programmed to deliver tasks tailored to users' skill levels, ensuring that learning is neither overly simplistic nor excessively challenging. These adaptations may include adjusting the difficulty of reading activities, providing visual aids for struggling students, and offering multiple learning pathways within the BR Media platform.

The BR Media application, built on Unity, is designed to be a practical, dynamic, and adaptable tool that supports early reading instruction. Utilizing Unity's technology, BR Media aims to create an enjoyable and personalized learning experience, enabling students to develop reading skills in a more engaging manner (Piatykop et al., 2022). Learning to read is often challenging for students, especially in the initial stages when they must grasp letter-sound relationships and blending techniques to form meaningful words. The primary objective of BR Media is to increase student interest and engagement in the learning process. Unity's interactive visual features help students better understand foundational reading concepts while boosting their motivation to learn. By incorporating gamified and multimedia elements, BR Media makes reading instruction more accessible and appealing to young learners.

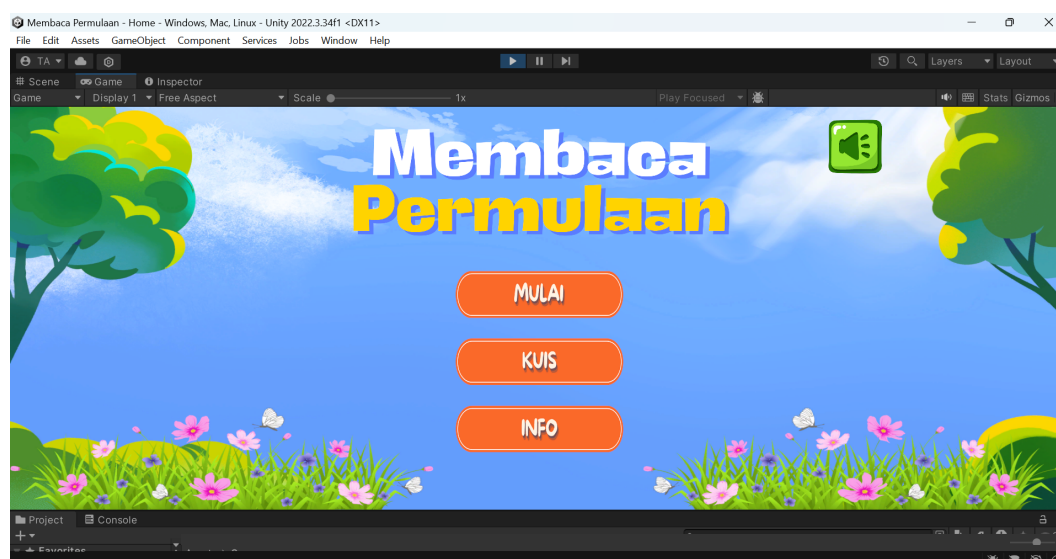


Figure 1. BR or Membaca Permulaan Media Menu Display

Figure 1 displays the main interface of the beginning reading application. The interface contains three main components: (1) Start, which provides access to beginning reading learning materials; (2) Quiz, which contains educational games that students can access after completing the learning materials; and (3) Info, which includes information about the BR media designer and details about the application itself. Additionally, the interface features a speaker button that allows users to toggle sound on and off.



Figure 2. BR Media Material Display

Figure 2 contains beginning reading material presented in BR media. The provided materials include: (1) recognizing alphabet letters, (2) distinguishing between vowel and consonant letters, (3) identifying syllables and words, (4) differentiating living and non-living objects, and (5) reading simple sentences. These materials are designed following the phonics method. In the material section, each letter, word, and simple sentence produces corresponding sounds when clicked. The inclusion of sound enables students to focus more effectively on auditory learning, thereby facilitating deeper comprehension during reading activities.



Figure 3. BR Media Quiz View

Figure 3 displays the quiz interface, which researchers designed as a game-like activity to be completed after the instructional materials. The quiz contains five categories: (1) alphabet letters, (2) vowels and consonants, (3) syllables and words, (4) living and non-living objects, and (5) simple sentences. When students complete the quiz, they receive immediate feedback with their results.

The application's interface comprises three primary menu elements - Start, Quiz, and Info - all designed to support students' learning processes. Collectively, these three menu sections work synergistically to deliver a structured and comprehensive learning experience. The Start section contains systematically organized learning materials that progressively develop reading skills. The Quiz section provides targeted practice opportunities, allowing students to evaluate their

understanding and reinforce acquired knowledge. Meanwhile, the Info section offers supplementary information about the BR media application.

This carefully designed BR media application is expected to serve as an effective tool for developing fundamental literacy skills while providing an engaging and interactive learning experience. The immediate feedback mechanism in the quiz component particularly enhances the learning process by allowing students to promptly assess their performance.

2.5. Sound Alterations

Sound alterations may occur either in a restricted manner or systematically across word groups, depending on the phonological component and its scope. These changes can affect various phonological elements, including vowels, consonants, and prosodic features such as intonation and word stress (Karipidis et al., 2021). In linguistic studies, sound change plays a vital role as it explains dialectal variations, pronunciation differences, and language evolution (Chu et al., 2023).

Sound change refers to the gradual modification of a language's phonological system over time (Glushchenko & Orel, 2022). Multiple factors influence these changes, including social interaction, language contact, and communicative needs, which may result in either frequent or infrequent modifications (Ladda & Mirzana, 2022). Typically, sound changes manifest through the addition, deletion, or substitution of phonemes in particular word segments.

As Irnanda et al. (2022) demonstrate, the Indonesian language has undergone notable sound changes throughout its history, reflecting the dynamic nature of language development. For example, during the transition from classical Malay to modern Indonesian, vowel pronunciation shifted in numerous words. The classical Malay word "*kiṭa*," meaning "we" or "us," was simplified to a two-vowel structure in modern Indonesian. This transformation exemplifies a tendency toward phonological simplification, which often occurs to facilitate more efficient communication (Irnanda et al., 2022).

3. Method

3.1. Research Design

This experimental study employed a pre-experimental one-group pretest-posttest design to measure the intervention's effect on students' beginning reading abilities by comparing outcomes within a single group (Sari et al., 2024). This design effectively assesses treatment impacts through two data collection points: a pretest measuring baseline proficiency and a posttest evaluating improvement.

The research aimed to evaluate the effectiveness of combining phonics instruction with BR media in enhancing primary school students' beginning reading skills. By comparing pretest and posttest results, the study measured reading skill improvements, with the one-group pretest-posttest design enabling efficacy evaluation through pre-intervention and post-intervention comparisons. The study's novelty lies in integrating BR interactive media with phonics instruction, potentially increasing student engagement in beginning reading activities. The findings expected support phonics-based pedagogy in Indonesia and help educators improve early reading instruction.

Eighteen students participated in the study, divided into experimental and control groups. Group assignment based on pretest results ensured no significant baseline differences. The experimental group received BR media-enhanced phonics instruction, while the control group followed conventional methods without BR media.

Initial reading abilities were assessed through a pretest measuring letter recognition, syllable identification, and basic word reading. The experimental group then underwent intervention using BR media to support phonics instruction, featuring interactive exercises for letter recognition, vowel-consonant differentiation, and syllable-based word formation. A posttest reevaluated reading skills to measure intervention effectiveness.

Data analysis compared both groups' pretest and posttest results to assess the BR media-based phonics approach's impact. The experimental group's significantly higher posttest scores

compared to the control group support the hypothesis that BR media intervention effectively improves elementary students' beginning reading skills. These results may contribute to developing more effective reading instruction strategies, particularly in primary education settings.

3.2. Respondent

Following careful selection based on the study's criteria, 18 students from a primary school in Bandung participated in the research. Participants were selected according to the researcher's initial assessment, which identified children demonstrating insufficient beginning reading skills (see Table 1). All participating students engaged voluntarily in the study with both institutional approval from the school and written consent obtained from their homeroom teachers.

Table 1. Learner Respondents

Gender		Total
Male	Female	
7 students	11 students	18 students

3.3. Data Collection

Multiple data collection methods were employed in this research, including interviews, pretests, posttests, and questionnaires. The homeroom teacher of Class 1 conducted interviews to identify potential reading difficulties among students. Both pretests and posttests were administered using BR media's phonics approach, with the pretest occurring before instruction and the posttest following the learning intervention. Researchers used beginning reading assessment tools to collect pretest and posttest data, measuring skill development before and after the instructional period. The same reading materials were utilized for both testing and instructional activities.

The assessment procedure began with individual reading sessions between students and teachers, followed by observational recordings and interactive games. These games were based on BR media's five-part quiz structure, which included: (1) recognizing alphabet letters, (2) identifying vowels and consonants, (3) distinguishing syllables and words, (4) classifying living and non-living objects, and (5) reading simple sentences.

For the questionnaire component, researchers distributed a survey containing multiple-choice questions to thirty-four students. This instrument aimed to comprehensively evaluate the effectiveness of the BR media-enhanced phonics method for beginning reading instruction. The collected responses will undergo analysis to determine the approach's impact on reading proficiency and identify areas requiring instructional improvement.

3.4. Data Analysis

This study utilizes quantitative data obtained from learning achievement tests and activity observation sheets for both teachers and students. Data analysis is employed to evaluate and examine the collected information in order to address the research problem. The analysis is based on pretest and posttest results from 18 children, assessing multiple competencies including: (1) letter recognition, (2) vowel and consonant discrimination, (3) syllable and word identification, (4) distinguishing between animate and inanimate objects, and (5) reading short phrases. The data analysis incorporates both descriptive and inferential statistics, with N-Gain as the descriptive statistic and the t-test as the inferential statistic.

To measure improvement in reading ability, N-Gain calculations were performed using SPSS software to determine the degree of change between pretest and posttest scores (Bao et al., 2020). The Paired Samples t-test was specifically used to analyze whether there were significant differences between pretest and posttest results of students' beginning reading abilities after receiving instruction through the BR media-based phonics approach. For questionnaire data collection and analysis, Google Forms was utilized as the platform.

3.5. Validity and Reliability

The validity test using Pearson correlation analysis examines the relationship between each item's score and the instrument's overall score. Ramadhan et al. (2024) define instrument validity as the degree to which an instrument accurately measures what it intends to assess. In Pearson correlation analysis, an item's validity is determined by comparing the *r*-count value with the *r*-table value at a specified significance level. According to Myers et al. (2020), the validity test conditions are as follows: an item is considered valid when it shows a significant correlation with the total score ($r\text{-count} > r\text{-table}$), while an item is invalid when its contribution to the total score is not significant ($r\text{-count} < r\text{-table}$).

The significance value (*sig.*) serves as another validity indicator. As noted by Di Leo and Sardanelli (2020), an item is valid if the *sig.* value is less than 0.05, indicating a statistically significant relationship between the item and the total score. Conversely, an item is invalid if the *sig.* value exceeds 0.05, showing an insignificant relationship. The reliability test evaluates an instrument's internal consistency - the extent to which its items consistently measure the same variable across different contexts. This study employed Cronbach's Alpha statistics for reliability testing. Cronbach's Alpha is a widely used method for assessing research instrument reliability, particularly for Likert scales (Hayat, 2024).

Reliability interpretation based on Cronbach's Alpha values follows these parameters: an instrument with Cronbach's Alpha above 0.6 is considered reliable with good internal consistency, while values below 0.6 suggest the instrument requires revision. Edelsbrunner et al. (2024) note that a Cronbach's Alpha of 0.7 is considered excellent, though values between 0.6 and 0.7 remain acceptable for social research. This testing ensures the instrument's items produce reliable and consistent results. Through Pearson correlation analysis, researchers can identify which items significantly contribute to variable measurement, ensuring the instrument reliably and consistently measures variables in accordance with research objectives.

The study's validity testing compared *r*-count values with the *r*-table value. With 18 respondents ($N = 18$) and a 5% significance level, the *r*-table value from the statistical distribution was 0.468. Based on validity criteria, items with *r*-count values $\geq r\text{-table}$ (0.468) were deemed valid, while those with *r*-count values $\leq r\text{-table}$ were invalid. Analysis revealed that among the 18 items tested, 16 showed *r*-count values $> r\text{-table}$ (valid) and 2 showed *r*-count values $< r\text{-table}$ (invalid). Thus, most instruments in this study were validated through Pearson validity testing.

Additionally, significance values (*sig.*) were used for validity assessment. Following established criteria, items with *sig.* values < 0.05 were considered valid, while those with *sig.* values > 0.05 were invalid. The findings showed 16 items with *sig.* values < 0.05 (valid) and 2 items with *sig.* values > 0.05 (invalid). Since most items met validity criteria through both *r*-count and significance value testing, the overall research instrument can be considered valid. This confirms the instrument's sufficient quality for measuring the investigated variables.

Table 2. This Research Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.961	26

Based on the reliability test results presented in Table 2, it can be concluded that the research instrument demonstrates adequate reliability, as evidenced by its Cronbach's Alpha value of 0.961, which substantially exceeds the 0.6 threshold. This finding indicates that all components of the instrument consistently measure the study variables with high internal consistency, confirming their appropriateness for subsequent data collection procedures.

4. Findings

This study examines the impact of the BR media-based phonics method on elementary school students' beginning reading abilities through five primary learning components: (1) alphabet recognition, (2) vowel and consonant identification, (3) syllable and word recognition, (4)

distinguishing living and non-living objects, and (5) reading simple sentences. The research findings are derived from analyzing learning outcomes across sessions, incorporating data from pretests and posttests, learning process observations, and student responses to both the media and instructional approaches.

4.1. Statistical Analysis of Research Findings

Table 3 presents the minimum and maximum scores from pretest and posttest assessments:

Table 3. Minimum and Maximum Pretest-Posttest Results

	N	Minimum	Maximum
Pretest	18	28.46	70.76
Posttest	18	82.00	100.00
Valid N (listwise)	18		

The pretest results, ranging from 28.46 to 70.76, revealed varying baseline reading levels among students before intervention. Following implementation of the BR media phonics approach, posttest scores showed significant improvement, with scores ranging from 82.00 to 100.00, indicating most students met or exceeded target proficiency levels in beginning reading.

By referring to Table 4, researchers can evaluate the extent to which the BR media-based phonics approach has significantly impacted student improvement. This categorization not only clarifies the intervention's effectiveness but also provides empirical evidence to determine whether the method is suitable for application in similar learning contexts.

Table 4. N-Gain Score Categories

N-Gain Value	Category
$G > 0,7$	High
$0,3 < g < 0,7$	Medium
$G < 0,3$	Low

(Source: Wahab et al., 2021)

Table 5 presents the detailed results of the N-Gain analysis, which quantifies the improvement in students' beginning reading skills after the implementation of the BR media-based phonics approach.

Table 5. N-Gain Analysis Results

	N	Minimum	Maximum	Mean	Std. Deviation
Ngain_score	18	57	1.00	.8285	.13021
Ngain_persen	18	56.67	100.00	82.8540	12.02132
Valid N (listwise)	18				

Based on Table 5, the average N-Gain score of 82.85% (0.8285) demonstrates substantial improvement in beginning reading skills after using the BR media-based phonics method. According to Table 4's categorization, this high N-Gain score (>0.7) confirms the method's significant effectiveness in enhancing reading ability. These results indicate successful acquisition of fundamental reading skills, from letter recognition to simple sentence reading.

Table 6 provides the interpretation framework for N-Gain effectiveness percentages, classifying results into four distinct categories from "Ineffective" to "Effective" based on Triyono et al. (2024). This categorization enables researchers to quantitatively assess whether the BR media-based phonics intervention achieved meaningful educational impact.

Table 6. N-Gain Effectiveness Interpretation

Presentase	Interpretation
<40	Ineffective
40 - 55	Less Effective
56 - 75	Effective Enough
>76	Effective

(Source: Triyono et al., 2024)

With an N-Gain score of 82.85%, the phonics method falls into the "Effective" category (see Table 6). This category confirming its value as an instructional approach for improving elementary students' beginning reading skills.

The Paired Samples Test reveals statistically significant improvement in students' beginning reading skills after the BR media-based phonics intervention. Results show (Table 7):

Table 7. Paired Samples Test Results

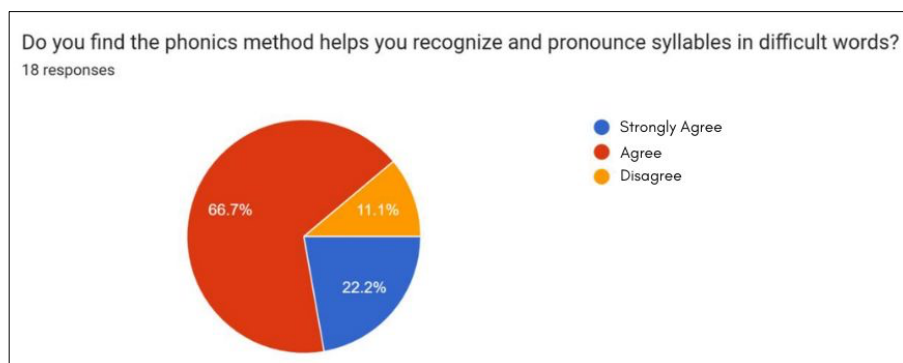
					95% Confidence Interval of the Difference				Sig. (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	Pretest - Posttest	-35.2174	8.04508	1.67752	-38.6963	-31.7384	-20.994	22	.000

The Paired Samples Test results demonstrate significant changes in students' beginning reading ability scores between pretest and posttest after implementing the BR media-based phonics approach. The analysis reveals a mean difference (average) of -42.51 between pretest and posttest scores, with a standard deviation of 11.94 and standard error mean of 2.81. The 95% confidence interval indicates the score difference ranges from -48.45 to -36.57. With degrees of freedom (df) = 17 and t-value = -15.103, the results show statistical significance at the 0.000 confidence level (Sig. 2-tailed < 0.05).

These findings strongly suggest that the BR media-based phonics approach substantially enhanced students' beginning reading abilities. The marked score improvement clearly demonstrates the effectiveness of this instructional strategy in developing pupils' reading skills. Consequently, this study contributes valuable empirical evidence supporting the benefits of technology-enhanced phonics instruction in primary school reading education.

4.2. Recognition of Alphabet Letters

In the initial learning phase using BR media, students are taught alphabet recognition. This multimedia tool simultaneously engages visual and auditory senses, enabling learners to identify both the shapes and sounds of individual letters. Observation data confirmed that most students successfully recognized alphabetical letters following the instructional sessions. This improvement was further validated by posttest results in the letter recognition component, where over 80% of participants demonstrated significantly higher proficiency compared to pretest performance.

**Figure 4.** Effectiveness of Phonics Technique in Syllable Identification and Pronunciation

As shown in Figure 4, which illustrates the effectiveness of the phonics technique in syllable identification and pronunciation, the survey results reveal that 66.7% of respondents agreed that this method facilitates syllable recognition and pronunciation in complex words. An additional 22.2% strongly agreed with this assessment, providing stronger evidence for the method's efficacy. Conversely, only 11.1% of respondents disagreed, indicating minimal perceived limitations of this approach.

The second instructional phase focuses specifically on vowel and consonant identification. BR media's interactive exercises provide systematic practice in articulating these phonetic elements. Quantitative analysis shows that 66.7% of students acknowledged improved vowel/consonant comprehension through this medium. Posttest score increases further confirmed enhanced differentiation skills between these letter types. The phonics approach, when integrated with BR media, offers structured guidance in blending vowels and consonants to form syllables and words - a process visually demonstrated in Figure 4. Survey results indicate that 66.7% of learners found this method particularly helpful for pronouncing challenging polysyllabic words, as exemplified in Figure 4's comparative analysis. Comparative pretest-posttest analysis additionally demonstrated that most students achieved greater fluency in reading basic words.

4.3. Understanding Basic Sentences

Reading basic phrases is the final step, incorporating all the knowledge gained from earlier sessions. BR media provides short sentence reading assignments with audio support to assist students in understanding sentence structure.

Do you feel happy when using BR media to learn to read?

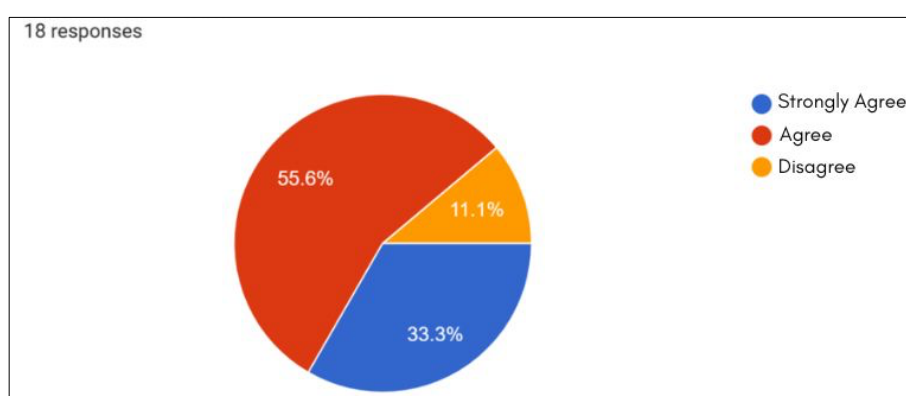


Figure 5. Student Emotional Responses to BR Media Utilization

According to the data in Figure 5, the majority of respondents (55.6%) selected the "Agree" option, indicating that they feel happy when using BR media to learn to read. Additionally, 33.3% of respondents selected the "Strongly Agree" option, demonstrating a high level of support for the positive emotions associated with using BR media. However, a small percentage of respondents (11.1%) selected the "Disagree" option, indicating that they did not find BR media satisfying. Furthermore, the questionnaire findings revealed that 55.6% of students reported feeling more fluent when reading basic words after using the BR media-based phonics technique. Compared to the pretest, the posttest results also demonstrated that students could read basic words more accurately.

Overall, the data suggests that most respondents are satisfied with BR media as a tool for learning to read. In the context of improving reading abilities, this research highlights that BR media can foster a positive learning environment, enhancing students' enthusiasm for reading. Moreover, half of the students stated that the media and approach provided increased their eagerness to learn to read. These findings indicate that integrating BR media with the phonics technique can help students become more proficient in early reading, both in comprehension and motivation. The students' positive responses validate the use of BR media and the phonics approach in elementary school literacy instruction.

The results further demonstrate the effectiveness of the BR media-based phonics strategy in enhancing primary school students' beginning reading abilities across five key learning domains. This approach not only makes learning more enjoyable and increases student engagement but also helps students recognize letters, syllables, and words. Based on these findings, the phonics technique combined with BR interactive media can be recommended as an innovative and effective method for teaching reading to elementary school students.

5. Discussion

5.1. Connection between Fundamental Ideas and Research Findings

The results demonstrate that the BR media-based phonics approach significantly enhanced primary school students' beginning reading abilities. This progress is evidenced by substantial pretest-to-posttest gains across five key areas: (1) letter recognition, (2) vowel identification, (3) consonant differentiation, (4) syllable awareness, and (5) basic sentence reading. These findings support Aprilian's (2024) assertion regarding the phonics method's effectiveness in establishing letter-sound correspondence as the foundation of reading proficiency. Furthermore, Khotimah's (2023) multimedia learning theory confirms that interactive audiovisual components in learning media like BR enhance comprehension through engaging, contextually presented information.

However, the study revealed unexpected findings. While most students showed improvement, some struggled with double consonant recognition, suggesting the method may require refinement for complex phoneme patterns. This observation aligns with Parry's (2024) finding that less common phonemes require additional reinforcement during phonics instruction. Several limitations must be acknowledged. First, the small sample size ($N = 18$) limits the generalizability of the findings. Second, the relatively brief intervention period may be insufficient for assessing long-term effects of BR media implementation. Third, the study did not control for individual differences such as learning styles or baseline motivation levels, which may have influenced outcomes. These limitations suggest valuable directions for future research, including: (1) examining BR media's effectiveness with diverse student populations (including special needs and low-literacy learners), (2) exploring adaptations for group-based instruction or integration with emerging technologies like artificial intelligence, and (3) conducting longitudinal studies to assess sustained impact on reading development.

Notwithstanding these limitations, the study confirms that combining BR media with phonics instruction simultaneously develops technical reading skills and creates a more dynamic learning environment. These findings have important implications for Indonesia's basic literacy initiatives, suggesting that widespread implementation could accelerate progress toward national literacy goals. To ensure continued success, future research should address key factors including differentiation for varying skill levels and development of more inclusive media formats.

5.2. Effectiveness of Learning Based on Meeting Materials

The effective implementation of instructional media can substantially improve students' abilities, particularly in reading comprehension. Pretest and posttest results revealed that most students showed improved alphabet letter recognition after using BR media. The media's interactive audiovisual components proved essential for developing deeper letter understanding, aligning with the multimedia learning theory proposed by Agisni et al. (2023), which asserts that combined visual and auditory elements accelerate learning and strengthen retention. Posttest results also indicated that the phonics approach significantly enhanced students' ability to distinguish between vowel and consonant letters. This finding supports Karipidis et al.'s (2021) demonstration of phonics' effectiveness in establishing letter-sound relationships, enabling students to understand how letters combine to form words. Questionnaire responses further confirmed that most participants perceived this method as beneficial for reading and comprehending simple words.

However, the study yielded unexpected results. Some students continued to struggle with specific letter combinations (e.g., diphthongs and double consonants) despite using BR media and phonics instruction, suggesting these phonetic elements require additional reinforcement. This challenge corroborates Da Costa's (2022) argument that comprehensive phonics instruction demands supplementary strategies to address linguistic complexities.

Several limitations merit consideration. First, the small sample size ($N = 18$) restricts generalizability. Second, the brief intervention period may insufficiently capture long-term effects of combining BR media with phonics instruction. Third, unaccounted individual differences (e.g., motivation levels, learning styles) could influence outcomes. These constraints suggest valuable research directions: (1) expanded trials with diverse learners (including special needs students and varying reading levels), (2) BR media integration with emerging technologies like artificial intelligence or adaptation for collaborative learning, and (3) longitudinal studies assessing the approach's sustained impact.

Collectively, the results demonstrate that BR media-enhanced phonics instruction simultaneously develops technical reading skills (letter recognition, syllable formation, sentence reading) and creates an engaging learning environment. These outcomes hold significant implications for Indonesia's basic literacy initiatives, suggesting this approach could effectively address primary-level reading challenges with further refinement and broader implementation.

5.3. Research Findings' Conformity with Earlier Studies

The study's findings indicate that the BR media-based phonics approach significantly enhances children's reading abilities, aligning with existing research. Sharma's (2022) study confirms that phonics instruction helps children understand letter-sound relationships, facilitating faster and more accurate reading development. Our results demonstrate this method's effectiveness through measurable improvements in letter recognition, syllable comprehension, and simple word reading - skills that depend on students' ability to identify and blend phonemes.

Beyond technical reading skills, an important finding emerged regarding BR media's impact on learning motivation and engagement. This observation supports Agustini et al.'s (2024) findings about how interactive audiovisual media increases student participation. Furthermore, Hu and Du's (2023) research validates that technology-enhanced phonics instruction simultaneously improves learning outcomes and student engagement. The current study confirms BR media's dual role as both an instructional tool and a motivational resource that fosters positive learning attitudes.

Several limitations must be acknowledged. The pretest-posttest single-group design cannot control for external variables that may have influenced outcomes. Additionally, the small, single-school sample limits generalizability. These constraints suggest valuable research directions: (1) BR media implementation across diverse educational settings, (2) larger-scale trials with varied populations, (3) applications for advanced reading skills, and (4) adaptations for other interactive learning domains.

This study substantiates the effectiveness of BR media-enhanced phonics instruction for developing foundational literacy skills. Key outcomes include: improved letter identification, enhanced syllable awareness, better simple word reading, and increased learning engagement. The results suggest that integrating technology with traditional phonics methods can substantially improve instructional effectiveness. This approach may therefore serve as a model for developing more innovative and inclusive pedagogical strategies in elementary reading education.

6. Conclusion

This study demonstrates that the BR media-based phonics approach significantly enhances beginning reading skills among primary school students. The comparative analysis of pretest and posttest results reveals substantial improvements across four key competencies: (1) letter recognition, (2) vowel and consonant differentiation, (3) syllable formation, and (4) short sentence reading when phonics instruction is combined with BR interactive media. While the

phonics method provides a systematic framework for teaching letter-sound correspondences, the findings confirm that BR media further amplifies learning through its engaging audiovisual components. These results align with existing research documenting dual benefits: interactive media's capacity to increase student motivation, and phonics' proven effectiveness in establishing foundational literacy skills. The integration of technology with systematic phonics instruction yields comprehensive educational advantages - simultaneously developing technical reading proficiency while enriching the overall learning experience. Consequently, this study makes three significant contributions: (1) providing empirical validation for the BR media-phonics hybrid approach, (2) supporting Indonesia's initiatives to enhance basic literacy standards, and (3) establishing an evidence base for adopting this methodology in primary education.

Limitation

This study contains several important limitations that warrant consideration. First, the research employed a one-group pretest-posttest design lacking a control group comparison. While results indicated significant improvement in reading skills, this methodological approach prevents direct comparison of the BR media-based phonics method's effectiveness against alternative instructional approaches. Consequently, the findings cannot definitively isolate the intervention's specific effects from potential external influences.

Second, the study's sample size ($N = 18$) represents a limited subset of primary school students, potentially compromising the results' representativeness. This constraint particularly affects generalizability to diverse student populations with varying backgrounds or skill levels. Furthermore, the single-school implementation means geographical and cultural factors remain unexamined in this context.

Third, the intervention's relatively brief duration constitutes another constraint. Given that literacy acquisition typically requires extended practice, the study's short-term measurement window cannot assess the BR media-phonics approach's sustained impact on reading development.

Finally, the study design did not adequately incorporate students with special educational needs or extremely low baseline abilities. This omission raises important questions about the method's inclusivity and adaptability for all learners. These limitations collectively suggest valuable directions for future research, including expanded experimental designs, more diverse participant samples, longer intervention periods, and specific adaptations for inclusive education settings.

Recommendation

The study's findings yield several recommendations for implementing the BR media-based phonics approach in primary school beginning reading instruction.

First, the BR media-based phonics method should be incorporated more frequently into core literacy curricula at elementary schools. Teachers should integrate BR media with phonics instruction to create dynamic and enjoyable learning experiences. To ensure effectiveness, educators must develop both technical proficiency with BR media and the ability to adapt lessons to meet diverse student needs.

Second, comprehensive teacher training programs should be established to support implementation. These programs should focus on three key areas: (1) effective phonics teaching strategies, (2) utilization of interactive media like BR, and (3) techniques for addressing learning challenges across varying reading levels. Such training will equip teachers with the necessary skills to maximize the benefits of this combined approach.

Third, additional research should investigate the BR media-phonics method's efficacy through larger-scale studies employing control group designs. This expansion will enhance the generalizability of findings and provide deeper understanding of the intervention's impact.

Furthermore, longitudinal research is essential to assess the approach's sustained effects on literacy development over time.

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The author fully recognizes that this study contains certain limitations and areas for improvement. Therefore, constructive feedback and scholarly criticism are sincerely welcomed to enhance future research endeavors. It is the author's earnest hope that these research findings may contribute meaningfully to educational development, particularly in the critical area of elementary-level beginning reading instruction.

Conflict of Interest

The Authors declares that there is no conflict of interest.

Declaration of Generative AI-assisted Technologies

This manuscript was prepared with the assistance of Generative AI Deepseek. The AI was used to assist in drafting, language refinement, and content organization. All intellectual contributions, critical analyses, and final revisions were conducted by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the content presented in this work.

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