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SYLLABLE PUZZLE MEDIA ON THE BEGINNING READING ABILITY OF GRADE II STUDENTS AT SDN 25 PALEMBANG

Yusuf Giancarlo Sutioso[1*], Hetilaniar[2], Aswadi Jaya[3]
[1,2,3] *Universitas PGRI Palembang, Indonesia*
**Corresponding author: yusufgiancarlos52@gmail.com*

Abstract

This study was motivated by the low early reading skills of second-grade students at SDN 25 Palembang, particularly in the phonological aspect of syllable blending. The main objective was to examine the effect of using syllable puzzle media on the early reading skills of second-grade students at SDN 25 Palembang. The method used was a quantitative, quasi-experimental approach with a Nonquivalent Control Group Design. This study involved 66 students divided into experimental and control groups. Data were collected using a performance test instrumen based on five indicators of early reading and were analyzed using SPSS. The results of the Paired Sample T-Test on the experimental group demonstrated a significant improvement in abilitiy following the intervention, with a significance value (Sig., 2-tailed) of 0.000. This finding was reinforced by the results of the Independent Sample T-Test on the posttest, which yielded a significance value of 0.002 < 0,05. The criterion for "moderately effective" was also met, as indicated by the experimental group's average N-gain of 66.93%. The conclusion is that the use of syllable puzzle media has a significant effect on improving the early reading skills of second-grade students.

Keywords: Syllable Puzzles; Early Reading; Quasi-Experimental Study.

1. INTRODUCTION

Education plays a fundamental role in developing human resources and should be regarded as a long-term investment in improving individual capabilities and overall quality of life. It provides opportunities for individuals to develop their cognitive abilities, shape their ways of thinking, and build personal character through meaningful experiences (Renna, 2022, p. 9). Within this broader framework, elementary education serves as the foundation for developing essential literacy competencies, particularly reading and numeracy. Reading is especially important because it enables students to access information, acquire knowledge, and engage with various academic subjects. Therefore, difficulties in developing beginning reading skills during the early years of elementary school may interfere with students' subsequent academic progress and cognitive development. Adequate reading proficiency provides an essential basis for continuing education and achieving learning outcomes at higher levels (Syajida et al., 2024). Furthermore, reading involves more than simply receiving written information. Septiana et al. (2025) explain that reading is an active process in which readers connect their existing knowledge with new information obtained from texts, as also discussed by Lubis (2023, as cited in Septiana et al., 2025, p. 419). When children fail to develop adequate reading skills at an early stage, the consequences may extend beyond their performance in language-related activities and affect their learning progress, cognitive development, and critical thinking abilities.

Reading proficiency also influences students' ability to participate effectively in classroom learning. Students who experience reading difficulties may struggle to understand instructional

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directions, follow learning activities, and comprehend the materials presented by teachers (Utami & Kowiyah, 2022, p. 139). As a fundamental component of literacy, reading provides access to information and knowledge that might otherwise remain unfamiliar to learners. Hadi et al. (2023) describe reading as a gateway to broader knowledge because it allows individuals to explore and understand information from various sources. Nevertheless, successful knowledge acquisition requires not only reading competence but also the internal motivation to learn and engage with new information.

Despite the importance of reading, the development of beginning reading skills remains a challenge in Indonesian elementary schools. Recent studies have identified difficulties related to phonological awareness, particularly syllable recognition and word formation, among young learners. National findings further illustrate the seriousness of the literacy problem. Data from the 2016 Indonesia National Assessment Program (INAP), conducted by the Center for Educational Research under the Ministry of Education and Culture, indicated that 46.83% of students were classified as having poor reading literacy skills, while 47.11% were in the sufficient category and only 6.06% achieved the good category (Puspendik Kemdikbud, 2017, as cited in Tahmidaten & Krismanto, 2020, pp. 22–23). These figures highlight the need for effective instructional approaches that can strengthen students' reading foundations, particularly during the early years of elementary education.

Similar challenges were identified through preliminary observations at SDN 25 Palembang. Several second-grade students demonstrated difficulties in recognizing syllables, combining syllables into meaningful words, and reading at an appropriate pace. These limitations affected their ability to understand written instructions and follow classroom learning activities effectively. One possible contributing factor was the use of learning media that did not sufficiently accommodate the developmental characteristics of young learners. Children at this age benefit from concrete experiences, visual representations, and opportunities to learn through play. When instructional materials fail to attract students' attention or provide sufficient opportunities for active engagement, students may have difficulty connecting written symbols with their corresponding sounds. Comparable findings were reported by Apreasta et al. (2024, p. 421), who identified reading difficulties among elementary school students and noted that instructional media may remain ineffective when it lacks sufficient appeal and instructional relevance.

The limited effectiveness of learning media may also influence students' interest and motivation during reading lessons. Syafitri et al. (2024, p. 2770) associated low levels of beginning reading proficiency among students in the lower elementary grades with the limited use of meaningful learning media. When reading instruction relies heavily on conventional approaches, students may become less engaged and find it difficult to understand how syllables are combined to form words. Consequently, teachers need to consider instructional strategies that encourage active participation and provide students with concrete experiences in learning basic reading skills.

For second-grade students, learning activities should correspond to their developmental characteristics and need for direct, observable experiences. Concrete and interactive instructional materials can help learners understand language elements that may otherwise appear abstract, including syllables and word structures. Syllable Puzzle Media represents one potential alternative because it enables students to manipulate syllable pieces, recognize their relationships, and combine them to form meaningful words. Putri and Dafit (2023, p. 29) emphasize the potential of syllable puzzle media to increase students' interest by integrating play into the learning process. Through activities that involve arranging and combining syllables into words or simple sentences, students can participate directly in learning while developing their understanding of phonological structures.

Although theoretical perspectives and previous studies suggest that manipulative learning media may support beginning reading development, empirical evidence is still needed to determine the extent to which syllable puzzle media influences reading skills among second-grade students at SDN 25 Palembang. Addressing this gap is important because the effectiveness of an instructional medium should be examined within the learning context in which it is implemented. Therefore, this study investigates the effect of using Syllable Puzzle Media on the beginning reading skills of Grade II students at SDN 25 Palembang. The findings are expected to provide empirical evidence regarding the contribution of this learning medium to students' early reading development.

2. LITERATURE REVIEW

2.1 Learning Media

Learning media refers to the materials, instruments, and resources used to convey instructional messages and learning content to students in accordance with the objectives of the teaching and learning process (Yulisa et al., 2025, p. 36). Its use can support the delivery of instructional content and improve the effectiveness of classroom activities. Kisma et al. (2020, p. 637) highlight the contribution of media to enhancing the effectiveness of teaching and learning, while Daniyati et al. (2023, p. 285) describe learning media as a means of transmitting messages through different channels. These perspectives indicate that learning media can facilitate communication between teachers and students and support the achievement of instructional objectives.

2.2 Syllable Puzzle Media

Puzzle-based activities generally require learners to organize separate pieces into a complete and meaningful arrangement. In educational settings, these activities can help children develop coordination and problem-solving skills by assembling pieces into a unified form (Oktaviani et al., 2023, p. 301). Similarly, Rahmanelli (as cited in Indrianti, 2020, as cited in Oktaviani et al., 2023, p. 301) explains that puzzle activities involve reconstructing separate components to create a complete object.

In language learning, syllables are important structural elements in the formation and pronunciation of words. Setiawan (2017, as cited in Ari Utami et al., 2020, p. 51) describes a syllable as a basic rhythmic unit of speech that contains a vowel and may be accompanied by one or more consonants. Fatimah et al. (2024, p. 62) similarly explain that syllables function as components of words that contribute to prominence or stress during pronunciation. Understanding these components is therefore essential for students who are developing beginning reading skills.

Based on these concepts, Syllable Puzzle Media can be understood as an educational tool consisting of separate syllable pieces that students arrange and combine to produce complete written words or sentences. Andryani and Rahmi (2025, p. 369) characterize syllable puzzles as educational games in which children organize randomly arranged syllables to construct meaningful words or sentences. In addition, puzzle-based learning activities encourage students to identify, recall, and select appropriate elements to complete a given task (Ernawati et al., 2016, as cited in Apreasta et al., 2024, p. 421). Accordingly, syllable puzzles offer a practical way to integrate play with literacy instruction by allowing students to interact directly with the components of written language.

2.3 Beginning Reading Skills

Reading is a cognitive and linguistic activity through which individuals interpret written symbols and obtain information from printed materials. Harianto (2020, p. 2) explains that reading involves expressing or interpreting written words and acquiring information from texts. This process also requires several interconnected cognitive abilities, including analysis, critical thinking, evaluation, and problem-solving, which help readers develop an understanding of the information presented. From another perspective, Arwita (2023, as cited in Septiani et al., 2025, p. 79) identifies reading as a receptive language skill through which individuals receive information and gain new experiences. Similarly, Ritonga et al. (2023, p. 103) define reading as an activity directed toward obtaining information from written sources. Somadyo (2021, as cited in Ulum et al., 2024, p. 63) further emphasizes the interaction between readers and texts in the process of identifying and interpreting written meaning.

Beginning reading constitutes an essential stage in the development of literacy because it introduces children to the basic elements of written language and prepares them for more advanced reading activities. At this stage, students gradually develop the ability to recognize letters, combine linguistic units, and read words and sentences. Setyowati et al. (2021, p. 25) suggest that students' confidence and reading fluency can be supported by systematic instruction and the appropriate selection of teaching methods. Suleman et al. (2021, p. 714) likewise identify beginning reading as a critical phase during which students start to master fundamental language units, progressing from

letters to sentences. These perspectives establish beginning reading as a foundation for further literacy development and underscore the importance of providing appropriate instructional support during this period.

Wulandari et al. (2022, p. 2187) identify five indicators for assessing students' beginning reading abilities: (1) accuracy in pronouncing written words, (2) appropriateness of pronunciation, (3) appropriate intonation, (4) reading fluency, and (5) voice clarity. These indicators provide a framework for examining students' reading performance. In the present study, they can serve as assessment dimensions for determining students' beginning reading proficiency and evaluating the potential contribution of Syllable Puzzle Media to reading development.

2.4 Learning Theories Underpinning Syllable Puzzle Media

The application of Syllable Puzzle Media can be explained through constructivist and behaviorist perspectives on learning. Constructivism emphasizes the active role of learners in developing knowledge through experience and interaction with their learning environment. Drawing on Piaget's perspective, Parwati et al. (2023, as cited in Darmataksiah et al., 2025, p. 939) explain that manipulative learning media are consistent with constructivist principles because they allow students to construct understanding through direct engagement with learning materials. In the context of beginning reading, syllable puzzles provide opportunities for students to explore written components, experiment with different combinations, and develop an understanding of how syllables form meaningful words.

Behaviorism offers another perspective by explaining learning in terms of observable responses to environmental stimuli and reinforcement. Rahmah, Nur Wahidatur (2023, as cited in Dewi et al., 2023, p. 175) describes behaviorism as a theory in which behavioral changes result from interactions between stimuli and responses, with reinforcement contributing to the learning process. Applied to syllable puzzle activities, the presentation of syllable pieces functions as a learning stimulus, while students' attempts to arrange the pieces into words represent observable responses. Feedback, encouragement, and reinforcement from teachers can help students recognize correct combinations and strengthen their participation in subsequent activities. Together, constructivist and behaviorist perspectives provide a theoretical basis for using syllable puzzles as an interactive medium to support the development of beginning reading skills among elementary school students.

3. METHOD

3.1 Research Method

This study employed a quantitative approach using a quasi-experimental method. The quantitative approach involved numerical data obtained from students' pre-test and post-test scores, which were analyzed statistically to examine the hypothesis concerning the effect of the independent variable on the dependent variable. A quasi-experimental design was selected because the study involved implementing an instructional treatment without fully controlling all external variables or randomly assigning individual participants to groups. Instead, the research utilized existing classes as intact groups. Specifically, this study adopted a *Non-Equivalent Control Group Design*, which involved an experimental group and a control group. Both groups completed a pre-test before the intervention and a post-test after the treatment to identify changes in students' beginning reading skills.

Research variables are essential components that define the aspects examined in a study. Sugiyono (2012, p. 59, as cited in Moto, 2019, p. 24) explains that research variables encompass the characteristics or aspects determined by researchers for investigation to obtain relevant information and draw conclusions. This study examined two variables: the independent variable (X) and the dependent variable (Y). The independent variable was the use of Syllable Puzzle Media, which served as the instructional treatment investigated in the study. Meanwhile, the dependent variable was students' beginning reading ability, which was measured to determine whether the instructional treatment influenced their reading performance.

The research was conducted at SD Negeri 25 Palembang, focusing on Grade II students during the even semester of the 2025/2026 academic year. The study population consisted of 97 second-grade students. The research sample comprised two existing classes, namely Class II.B, consisting of 35 students, and Class II.C, consisting of 33 students. These classes were used as the research groups in accordance with the quasi-experimental design.

Data were collected through tests and documentation. A test is an assessment instrument consisting of structured questions or tasks designed to measure an individual's level of knowledge, skills, or abilities (Arikunto, 2010, p. 193, as cited in Astuti, 2020, p. 71). In this study, a beginning reading performance test was used to assess students' reading abilities. The test results were converted into numerical scores representing students' levels of achievement. A minimum competency criterion (*Kriteria Ketuntasan Minimal*, KKM) of 70 was applied as the benchmark for determining whether students had achieved the school's required level of reading proficiency (Agnesia Panjaitan et al., 2020). The assessment instrument took the form of a worksheet developed around indicators of beginning reading ability and accompanied by a test blueprint outlining the assessed competencies. Documentation was also used as a supplementary data collection technique to support the research process.

Table 1. Initial Reading Performance Test Instrument Grid

No	Indicator	Aspects Observed	No Question	Max Score
1	Accuracy of Voicing Writing	1. Students are able to pronounce the letter symbols (vowels/consonants) correctly. 2. Students are able to string letters together into syllables without swapping any sounds.	1.2	4.4
2	Pronunciation Reasonableness	1. Students pronounce words with clear articulation (not lisping/mumbling). 2. The pronunciation of words is in accordance with the natural Indonesian dialect.	3,4,5	4,4,4
3	Intonation Fairness	1. Students provide appropriate pauses at commas (,). 2. Students end the reading with a falling tone at the dot (.).	6,7,8	4,4,4
4	Reading Fluency	1. Students read word by word in a sentence without stuttering. 2. Students do not repeat the same words over and over again.	9,10,11	4,4,4
5	Voice Clarity	1. The student's voice volume is loud enough for the entire class/examiner to hear. 2. Students show confidence when speaking (not whispering).	12,13,14	4,4,4
Total		Max Score		56

Source: Citing Indicators from the journal (Wulandari et al., 2022) .

3.2 Documentation

Documentation was employed as an additional data collection technique to obtain supplementary information relevant to the research. The documentation process focused on collecting population and sample data, including the names and total number of Grade II students at SDN 25 Palembang. These records provided supporting information for identifying the research population and determining the sample involved in the study.

3.3 Instrument Validity and Reliability

The quality of the research instrument was examined through validity and reliability testing to ensure that the instrument was appropriate for measuring students' beginning reading abilities.

1) Validity Test

Validity refers to the extent to which a measurement instrument accurately measures the intended construct (Sugiono et al., 2020, p. 55). According to Rispatiningsih and Lestari (2023, p. 17), instrument validity can generally be classified into three categories: content validity, construct validity, and criterion validity. In this study, the validity of the beginning reading performance test was assessed using SPSS version 26. The analysis involved 20 test items to determine whether each item met the established validity criteria. Items that did not satisfy these criteria were designated for revision or removal from the final instrument. The results indicated that 14 of the 20 items were valid, whereas the remaining six items were classified as invalid. Therefore, the final instrument required further refinement to ensure that only appropriate items were used for data collection.

2) Reliability Test

Reliability refers to the consistency and stability of measurements obtained using a research instrument. Azwar (2011, as cited in Azis & Rikfan, 2022, p. 6) explains that reliability is associated with the dependability and consistency of measurement results. In this study, the reliability of the beginning reading performance test was evaluated using Cronbach's alpha coefficient ((\alpha)) to determine the internal consistency of the instrument. A coefficient of (\alpha \geq 0.70) was established as the minimum criterion for acceptable reliability in this study. If the coefficient met or exceeded this threshold, the instrument would be considered sufficiently reliable for the pre-test and post-test data collection. Conversely, if the coefficient was below 0.70, the items would need to be reviewed and revised or removed as appropriate, followed by another reliability assessment. The final instrument would be considered ready for use only after the reliability analysis confirmed that it met the specified criterion.

Table 2. Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
0.888	14

The reliability analysis yielded a Cronbach's alpha coefficient of 0.888. This value indicates that the 14 items retained in the beginning reading performance test demonstrate good internal consistency, as the coefficient exceeds the minimum acceptable threshold of 0.70. Therefore, the instrument meets the established reliability criterion and is suitable for use in collecting pre-test and post-test data.

3.4 Data Analysis Techniques

The data collected in this study were analyzed using descriptive statistics, prerequisite tests, and hypothesis testing. The prerequisite tests consisted of normality and homogeneity tests, which were conducted to assess whether the data met the assumptions required for the planned statistical analysis.

1) Descriptive Statistics

Descriptive statistics were used to organize and summarize the research data to provide a clear overview of students' beginning reading performance. Sholikhah (2016, as cited in Martias, 2021, p. 44) explains that descriptive analysis aims to present data in an informative manner, enabling researchers to understand the characteristics of the conditions or phenomena being investigated. In this study, descriptive statistics were used to summarize the students' pre-test and post-test scores and describe their reading performance before and after the instructional treatment.

2) Normality Test

A normality test was conducted to determine whether the collected data followed a normal distribution. This assessment is important because normality is one of the assumptions underlying parametric statistical procedures, including the *t*-test (Nurhaswinda et al., 2025, pp. 56–57). A normal distribution is generally characterized by a symmetrical pattern in which the mean and median coincide at the center of the distribution (Nuryadi et al., 2017, as cited in Nasar et al., 2024, p. 793). The decision regarding normality was based on the significance value obtained from the statistical test, using a significance level of 0.05. According to Supariyadi et al. (2022, p. 63), the significance value is compared with the predetermined alpha level to determine whether the data satisfy the normality assumption. Under this criterion, a significance value greater than 0.05 indicates that there is insufficient evidence to reject the assumption of normality.

3) Homogeneity Test

A homogeneity test was performed to determine whether the variances of the groups being compared were statistically equivalent. Sianturi (2022, p. 388) emphasizes that variance homogeneity should be examined before conducting analyses such as the independent-samples *t*-test or analysis of variance (ANOVA), when the selected procedure requires this assumption. Assessing homogeneity helps determine whether the groups have comparable levels of variability, thereby supporting the appropriate interpretation of differences in their outcomes (Usmadi, 2020, p. 51). In this study, the test was intended to establish whether the experimental and control groups met the variance homogeneity assumption before the hypothesis-testing procedure was conducted.

4) Hypothesis Testing

Hypothesis testing was used to evaluate the research hypothesis and determine whether the use of Syllable Puzzle Media had a statistically significant effect on students' beginning reading skills. Rahayu and Sumargo (2021, p. 262) describe hypothesis testing as a systematic procedure for drawing statistically supported conclusions from research data. Similarly, Poletiek (2013, as cited in Anuraga et al., 2021, p. 328) explains that hypothesis testing involves evaluating a claim concerning a population parameter using data obtained from a sample. A well-formulated research hypothesis should identify the relationship between variables, be expressed clearly and concisely, be empirically testable, and have a sound theoretical foundation (Suharsimi, 2010, as cited in Zaki & Saiman, 2021, p. 117).

In this study, hypothesis testing was directed toward examining the effect of the independent variable, namely the use of Syllable Puzzle Media, on the dependent variable, students' beginning reading ability. The statistical decision was to be made using a significance level of 0.05. The null hypothesis ((H_0)) stated that the use of Syllable Puzzle Media had no statistically significant effect on students' beginning reading skills, whereas the alternative hypothesis ((H_a)) stated that the use of the media had a statistically significant effect. The hypothesis-testing results would provide the statistical basis for determining whether the research hypothesis was supported by the collected data.

4. RESULT AND DISCUSSION

Result

This section will present the results of a study conducted at SDN 25 Palembang on second-grade students as research subjects. The data presented are the results of the initial reading performance test instrument scores, both at the initial stage (pretest) and the final stage (posttest) in experimental class II.C and control class II.B. This data description aims to to provide an overview of the influence of the use of syllable puzzle media on students' initial reading abilities. Data analysis in this chapter is divided into several sections, beginning with the analysis prerequisite tests which include normality and homogeneity tests, and ending with hypothesis testing to draw research conclusions.

1. Normality Test Results

The normality test aims to determine whether the research data is normally distributed. The researchers used the Shapiro-Wilk test with the help of SPSS because the sample size was less than 50.

Table 3. Normality Test

Tests of Normality						
	Kolmogorov – Smirnov[a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Pre_Experiment	,143	32	,096	,946	32	,109
Pre_Control	,099	34	,200*	,946	34	,092
Post_Experiment	,138	32	,127	,936	32	,059
Post_Control	,139	34	,094	,962	34	,271

The results of the normality test show that all data groups have a significance value (p-value) that is consistently above the alpha threshold of 0.05 ($\alpha > 0.05$). In detail, the experimental Pre-test group obtained a sig value of 0.109 and the control Pre-test group of 0.092. Meanwhile, in the final ability data, the experimental Post-test group recorded a sig value of 0.59 and the control Post-test of 0.271. Referring to the decision-making rules in the classical assumption test, if the resulting significance value is greater than 0.05 , it can be concluded with confidence that the data on students' initial reading ability, both in the experimental and control classes, are normally distributed (symmetrical).

2. Homogeneity Test Results

In its operationalization, researchers applied the Test of Homogeneity of Variances method using Levene's statistics, with the aid of SPSS software. This instrument was chosen because of its reliability in testing equality of variances without having to rely heavily on strict normality assumptions.

Table 4. Homogeneity Test Both Groups (Pretest)

Test of Homogeneity of Variance					
		Levene Statistics	df1	df2	Sig.
Pretest Results	Based on Mean	1,556	1	64	,217
	Based on Median	1,615	1	64	,208
	Based on Median and with adjusted df	1,615	1	63,533	,208
	Based on trimmed mean	1,562	1	64	,216

Tabel 5. Uji Homogenitas Kedua Kelompok (Posttest)

Test of Homogeneity of Variance					
		Levene Statistic	df1	df2	Sig.
Hasil_Posttest	Based on Mean	3,333	1	64	,073
	Based on Median	2,876	1	64	,095
	Based on Median and with adjusted df	2,876	1	58,047	,095
	Based on trimmed mean	3,462	1	64	,067

Based on the data presented in the table above, the results of the homogeneity test calculation show a significance value (based on the mean) of 0.217 for the pretest data and 0.073 for the posttest

data. Referring to the statistical testing criteria, both significance values are convincingly within the 0.05 threshold (0.217 > 0.05 and 0.073 > 0.05). This statistical finding leads to the conclusion that the variance or diversity of the data in the experimental and control classes has the same or homogeneous nature.

3. Hypothesis Testing

Referring to the results of previous normality and homogeneity tests that consistently show that the data distribution is normally distributed and has the same variance , the most appropriate and objective statistical procedure and has a high test to use is parametric statistics. In this context, the researcher determined the Independent Sample T-Test as the main instrument to empirically test the research hypothesis.

a. Sample T-Test

Testing at this stage is carried out to empirically prove whether there is a significant effect after being given treatment (Treatment) using syllable puzzle media in the experimental class compared to the control class . The decision-making criteria in this test are determined based on the resulting significance value, namely if the Sig. (2-tailed) value <0.05, then the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. The following is a detailed table of the results of the t-test analysis for post-test data:

Table 6. Test Independent Sample T-Test

Independent Samples Test

		t-test for Equality of Means						
							95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil_ Posttest	Equal variances assumed	3,154	64	,002	8,03243	2,54646	2,94528	13,11958

In order to prove whether the average difference is statistically significant, an independent sample t-test was conducted with reference to the assumption of homogeneous variance. The results of the analysis showed a calculated t- value of 3.154 with a significance value of Sig. (2-tailed) of 0.002 . Based on the decision-making rules in parametric statistics, because the resulting significance value is much smaller than the required significance level (0.002 < 0.05), the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.

b. Hypothesis Test of Internal Ability Improvement (Paired Sample T-Test)

This paired sample t-test was systematically conducted in both research groups. In the experimental class, this analysis was used to measure the stimulation and effectiveness of the use of syllable puzzle media in stimulating students' basic literacy development. The researcher observed the transition of competencies experienced by students, starting from the pre-action phase where most students still experienced mechanical difficulties in identifying grapheme sounds, to the post-action phase after they interacted intensively with the puzzle media.

Meanwhile, the same test was applied to a control class that followed the learning process using conventional methods. This step was taken to obtain objective comparative data on the effectiveness of the one-way learning pattern commonly used in schools in boosting students' beginning reading skills. The following are details of the test results assisted by the SPSS program:

Table 7. Paired Samples T-Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Standard Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre_Experiment - Post_Experiment	-22.43304	7,18504	1.27015	-25.02352	-19.84255	-17,662	31	,000
Pair 2	Pre_Control - Post_Control	-9,50630	11.04049	1.89343	-13,35851	-5.65409	-5,021	33	,000

Based on the table above, it can be explained as follows:

a. The experimental class obtained a significance value of Sig. (2-tailed) of 0.000. Because this value is <0.05, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.
b. The control class obtained a significance value of Sig. (2-tailed) of 0.000. Although this value is also <0.05, which means there is an increase, however, if seen from the average difference (mean) is (- 22.43304) which has a much greater influence compared to the control class whose t- value is only (-5.021) with an average difference of (-9.50630).

This proves that providing treatment using syllable puzzle media has a stronger and more real impact on improving students' reading abilities at SDN 25 Palembang compared to only using conventional methods.

c. N-Gain Score Analysis

If the previous test only answered "whether there is an influence or not", then this N-Gain Score analysis is specifically designed to measure the effectiveness or extent to which the syllable puzzle media is able to provide a real contribution in accelerating the initial reading skills of second grade students at SDN 25 Palembang.

The use of the N-Gain Score is considered highly objective because this calculation not only looks at the final posttest results, but also considers the difference in improvement between the initial pretest score and the final score. In other words, researchers wanted to see how much "growth" in reading ability students experienced after interacting with the puzzle media . This analysis is crucial because each student starts from a different starting point, and N-Gain is able to capture this improvement fairly and accurately.

Table 8. Average N-Gain Score Results (Experiment)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
Ngain_Score_Experiment	32	,36	1.00	,6693	,17819
Gain_Percent_Experiment	32	36.00	100.00	66.9305	17.81924
Valid N (listwise)	32				

Table 9. Average N-Gain Score Results (Control)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
Ngain_Score_Kontrol	34	-,62	,93	,2755	,41817
Gain_Percent_Control	34	-62.50	93.33	27,5479	41.81658
Valid N (listwise)	34				

The calculation results show that the experimental class group obtained an average (mean) N-Gain value. Score of 0.6693. When converted into a percentage, the N-Gain Percentage value for the experimental class recorded a figure of 66.93%. Referring to the classification criteria for obtaining the N-Gain Score according to Setyowati et al. (2023, in Andayani & Agustina, 2025) . The index achievement of 0.6693 places the growth of the beginning reading ability of students in the experimental class in the Moderate category. Meanwhile, viewed from the perspective of the effectiveness interpretation criteria according to Hake (1998, in Andayani & Agustina, 2025) , the percentage achievement of 66.93% confirms that the implementation of syllable puzzle media is in the criteria of Quite Effective.

On the other hand, the contrasting description is shown by the control class group that carried out learning without using manipulative media, but only relied on conventional methods. This control class group was only able to obtain an average N-Gain Score of 0.2755 , or if presented in an N-Gain Percent value equivalent to 27.55%. Referring to the same data interpretation standardization, the N-Gain index figure of 0.2755 includes the control class's rate of improvement in the Low category. Furthermore, the percentage effectiveness performance only touched 27.55 % , so it can be concluded methodologically that the conventional learning method is at Ineffective effectiveness criteria for accelerating students' basic literacy skills.

Discussion

This research is empirically oriented to test and analyze "The effect of using syllable puzzle media on the beginning reading ability of second grade students of SDN 25 Palembang". The implementation of the experiment involved 66 research subjects spread across two class groups, namely, class II.B and II.C. Based on objective findings in the field, researchers identified that the low initial reading ability in the initial phase of the study at SDN 25 Palembang was rooted in a suboptimal learning ecosystem. Prior to the intervention, teaching and learning activities (KBM) were still heavily dominated by a conventional, teacher-centered model. In this pattern, knowledge transfer is unidirectional, with teachers providing mostly verbal instructions without adequate support from visual aids.

This situation directly impacts student participation in class. Second-grade students, who are psychologically active and energetic, often feel unsupported in a static learning environment. The boredom that arises from the lecture method triggers uncontrolled behavior. Students tend to be more interested in interacting and playing with their peers than focusing on the material being presented. In response to these challenges, researchers presented syllable puzzles as a transformative solution. Implementing this media in the experimental class empirically proved effective in transforming the reading learning paradigm, which was initially perceived as rigid and boring, into a dynamic and interactive activity. Throughout the learning process, researchers observed a remarkable surge in enthusiasm. Students who previously appeared hesitant and lacking confidence in spelling gradually began to demonstrate significant fluency.

syllable puzzle media in class II of SDN 25 Palembang has been proven to be able to change the paradigm of reading learning from being boring to a dynamic activity. This is in line with the opinion of Susilana and Riyana (2008, in Sekar Anggun et al., 2025) which confirms that learning media is designed with Considering visual and interactive aspects can effectively increase students' interest and attraction to the material being studied. The use of syllable puzzle media in this study has also been proven to be able to bridge the cognitive barriers experienced by second-grade students of SDN 25 Palembang. As stated by Lanani (2013, in Juhaeni et al., 2020, p. 39) that through the use of learning media, learning activities that are generally abstract can be transformed into more concrete ones. The findings in this study strengthen the results of previous studies that also tested the effectiveness of manipulative media such as research (Nabila et al., 2024) which also found a positive effect of the use of puzzle media on reading skills at SDN 11 Pontianak, as well as research (ButarButar et al., 2024) which showed similar results in Pematang Siantar, also this study also shows consistency with the results of research conducted by (Putri Ana Sari & Purnomo, 2023) which examined the use of letter puzzle media in improving the initial reading skills of first-grade elementary school students. However, the novelty in this research lies in the specific use of syllable

puzzles at SDN 25 Palembang and from the research location from previous researchers, the puzzles used also differ and also show the differences between syllable puzzles and letter puzzles .

This transformation in the quality of learning is also accurately documented through statistical data that shows a consistent increase in student performance. The increase in early reading skills in the experimental class (class II.C) can be strongly validated through a comparison of the average (mean) scores of students. It was noted that in the pretest stage, the experimental class only obtained an average (mean) score of 65.01. However, after being given intensive treatment using syllable puzzle media , this number jumped drastically in the posttest stage to 87.44. This jump in the average score with a very massive difference in mean differences of 22.43 is valid evidence that the syllable puzzle media is not just an ordinary game aid, but a very effective and measurable educational instrument in accelerating students' basic literacy skills at SDN 25 Palembang.

5. CONCLUSION

Based on the results of research and discussion that have been presented in the previous chapter regarding the effect of using syllable puzzle media on the initial reading ability of second grade students of SDN 25 Palembang, the researcher draws the conclusion that, The use of syllable puzzle media has a positive and significant effect on the mastery of students' initial reading ability. This is proven statistically through the Independent Sample T-Test hypothesis test on posttest data which produces a Significance value. Sig. (2-tailed) of 0.002, because the significance value is much smaller than the significance level of 0.05 (0.002 <0.05), then the test decision states that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted, this finding provides scientific certainty that intervention through this manipulative media is able to accelerate students' initial reading ability in real terms.

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