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The Utilization of Edu-Game Media to Improve Reading and Vocabulary Skills of Grade 2 Elementary School Students with Speech Delay

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Abstract

This study aims to improve the reading ability and vocabulary mastery of students experiencing speech delay through the use of digital edu-game media. The main problem addressed is students' low interest in reading and limited vocabulary, which negatively affect their learning achievement in the Indonesian language subject. The research method employed was Classroom Action Research (CAR), conducted in two cycles. Each cycle consisted of planning, action implementation, observation, and reflection stages. The research subjects were students diagnosed with speech delay in a public elementary school located in Bengalon District. The research instruments included planning procedures, observation sheets, social interaction records, field notes, and reflective documentation. The results of the study indicate that the gradual implementation of digital-based edu games was able to improve students' phonetic abilities, letter recognition, vocabulary acquisition, and responsiveness to assigned tasks among students with speech delay. This improvement was evident from the observation scores of vocabulary mastery, which showed a significant increase in each cycle.In conclusion, the use of digital-based edu games has proven to be an effective and innovative strategy for enhancing the phonetic and language abilities of children with speech delay within an inclusive learning context. These findings are expected to serve as a reference for teachers, parents, and related stakeholders in developing adaptive and child-friendly learning media for students with special needs.

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INTRODUCTION

Basic education is a crucial phase in the formation of a person's academic foundation, where literacy skills become the main key to accessing all scientific disciplines. However, in reality, not all students are able to achieve reading skills optimally. One of the students experiencing obstacles is a student with a speech delay. Speech delay is a condition when the development of a child's speaking ability is not in accordance with their developmental age stage.

According to Paul, speech delay is a delay in expressive language development that causes children to be unable to speak according to their chronological age (Paul, 2007). Meanwhile, Rescorla explained that children with speech delay generally have limited vocabulary and are slow in combining words into sentences (Rescorla, 2011). According to Robert E. Owens Jr. (2012), speech delay not only affects communication skills, but also has an impact on academic development, especially beginning reading skills, because reading requires phonological skills and adequate vocabulary mastery. This opinion is reinforced by Catherine Snow (2002), who stated that oral language development is the main foundation for the development of reading skills. In addition, Barbara Ehren (2005) explained that childhood language disorders can impact emergent literacy readiness, especially in aspects of phonological awareness, vocabulary mastery, and the ability to understand instructions.

According to David H. Rose and Anne Meyer (2002; 2014), students experiencing language barriers require multisensory learning that combines visual, auditory, and kinesthetic elements so that attention and learning motivation can be maintained longer. Therefore, the use of interactive media such as Edu-Game Marbel Membaca is one of the appropriate alternatives to increase the learning involvement of students with speech delay. Digital-based Edu Games are interactive games designed for educational purposes and the development of children's cognitive and social skills (Hirsh-Pasek et al., 2021). Meyer, et al., (2024) stated that the approach through edu-game media can certainly be believed to provide abilities, especially increasing access to meaningful learning for all children early on at every level of inclusive education.

Based on these conditions, this research is important to be carried out at SDN 005 Bengalon, especially in class II.C, to find out how the implementation of edu-game media in Indonesian language learning can increase the reading interest of students with special needs. This study aims to analyze the application of digital-based Edu Games media in improving the

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ability to read simple words in speech delay students at SDN 005 Bengalon, measure the effectiveness of Edu Games on students' vocabulary mastery after action is taken, and describe the implementation process of reading learning using Edu-Game media tailored to the needs of speech delay students.

RESEARCH METHODOLOGY

This research uses the Classroom Action Research (CAR) method. CAR is an approach aimed at improving the quality of learning and solving specific problems in the classroom through a series of action cycles. This study refers to the CAR model developed by Kemmis and McTaggart (2014), which consists of four main stages in each cycle, namely: planning, action implementation, observation, and reflection. The research was planned to be carried out in two cycles, where one initial cycle is used to see the response and initial results of the action, while the second cycle is the improvement and refinement of the action based on the reflection results of the first cycle.

The research was conducted at SDN 005 Bengalon, Bengalon District, East Kutai Regency, during the even semester of the 2025/2026 academic year. The subject of this study focused on an 8-year-old male student in class 2C with the initials A.R. (also referred to as AV in the observation notes), who was identified as experiencing speech and language development delays (speech delay). The selection of the subject was carried out purposively based on early observation results which showed that the student experienced difficulties in pronouncing similar consonants, frequently omitted syllables, had difficulty doing decoding, and easily felt frustrated when asked to read.

The data collection technique in this study used a qualitative approach with quantitative data support. The techniques used included observation, which served as the main technique to observe the learning process, involvement, and changes in student learning behavior during the application of the edu-game media. Tests were used as supporting data to determine the development of the student's reading comprehension ability in each cycle. Furthermore, documentation was used to complete the research data in the form of student work results, learning activity photos, and other supporting documents.

Data analysis was conducted descriptively qualitatively with the support of quantitative data. Qualitative analysis became the main basis for determining the success of the action by describing changes in student learning behavior in the pre-action, Cycle I, and Cycle II stages. Meanwhile, quantitative data analysis was obtained from the reading test results at each stage by calculating the test score in each cycle and calculating the average score. The action is declared

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successful if the student shows increased attention and active involvement, supported by an increase in reading test scores from pre-action to Cycle I and Cycle II.

RESEARCH RESULTS

Initial Conditions (Pre-Cycle)

The initial condition (pre-cycle) is a description of the research subject's ability before being given learning actions using Edu-Game media. Based on the results of the initial reading diagnostic test before the action, the subject's reading ability was still in the low category. The subject has recognized most of the vowel letters, but still experiences difficulties distinguishing several consonant letters that have similar shapes and sounds, such as b–d, p–b, m–n, and g–k. When reading syllables, the subject still spells them one by one so that the reading process is slow. When reading simple words, omissions of sounds, additions of sounds, or phoneme replacements frequently occur.

The subject's vocabulary mastery before the action was still limited. The subject is more likely to easily recognize vocabulary that is often used in everyday life, while new vocabulary found in textbooks is still difficult to understand. Initial observations also showed that the subject's learning focus was still low. The subject was only able to maintain concentration for a few minutes before finally needing redirection from the teacher. The average value of reading ability at the pre-cycle stage was 48%, which indicates that the beginning reading ability is still far below the research success indicator.

Cycle I Implementation

The implementation of the action in Cycle I was carried out by applying digital-based Edu-Game media (Marbel Membaca) combined with letter cards and reading exercises gradually. The learning began with the teacher providing auditory stimulus through the edu-game media on a device, which displayed the sounds of letters and syllables clearly and repeatedly. The student was asked to listen to the sound produced by the application, then match it with the Letter Cards or Syllable Cards that had been prepared.

The results of the observation in Cycle I showed the initial development of reading skills and student learning focus during two meetings. The active learning duration or focus of the student was still limited, namely 10 minutes at the first meeting and 12 minutes at the second meeting, so that the average duration of learning focus in Cycle I was 11 minutes. The frequency of answering correctly also showed relatively low results, namely 4 times at the first meeting and

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5 times at the second meeting, with an average of 4.5 times. Based on the reading ability scale of 1–4, the student's reading ability in both meetings was still at the number 2 (Poor). The evaluation results showed that the average value of reading ability was 50%, so the student still needed intensive guidance.

Cycle II Implementation

Based on the reflection of Cycle I, the Learning Implementation Plan (RPP) was modified to adjust to Subject A.R's learning needs. In Cycle II, the use of edu-games was carried out gradually using a screen-time limitation (jeda layar) system. After the device played the sound of a letter or syllable, the application screen was temporarily closed, and the student was required to find the Letter Card or Syllable Card that matched the sound heard. If the student successfully matched the card and was able to pronounce it, the student was given a reward in the form of a star sticker to increase motivation and self-confidence.

The active learning duration or focus reached 17 minutes at the first meeting, while at the second meeting it increased to 25 minutes, so that the average focused learning duration in Cycle II was 22.5 minutes. The frequency of answering correctly also experienced an increase. At the first meeting, Subject A.R was able to answer correctly 5 times, then increased to 10 times at the second meeting, with an average of 9 times. Based on the reading ability scale of 1–4, Subject A.R's ability in Cycle II was at a score of 3 with a Fair category. The final value of Cycle II reached 75%.

Comparative Analysis Between Cycles (Including Cycle III)

The active learning focus duration experienced an increase from 11 minutes in Cycle I to 22.5 minutes in Cycle II, and reached 37.5 minutes in Cycle III, showing a total increase of 26.5 minutes. This indicates that the student is able to suppress distractions and be actively involved. The frequency of answering correctly also increased from 4.5 times in Cycle I to 9 times in Cycle II, and reached 16.5 times in Cycle III, showing an increase of 12 times. The learning completeness percentage increased from 50% in Cycle I, to 75% in Cycle II, and reached 100% in Cycle III, so the student was declared complete in mastering beginning reading skills.

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Table 1. Recapitulation of the Results of Increasing Reading Ability and Learning Behavior of Subject 1 (A.R) in Cycle I, II, and III

No	Indicator / Observed Aspect	Cycle I (Average)	Cycle II (Average)	Cycle III (Average)	Increase (Cycle I to III)	Remarks
1	Learning Time	70 Minutes	70 Minutes	70 Minutes	-	Constant/fixed time
2	Active Learning Focus Duration	11 Minutes	22.5 Minutes	37.5 Minutes	+ 26.5 Minutes	Increased Significantly, the child is able to suppress distractions.
3	Frequency of Answering Correctly	4.5 Times	9 Times	16.5 Times	+ 12 Times	Mastery of decoding syllables and words increased.
4	Reading Ability Scale	2	3	4	+ 2 Scales	KKM Target (Scale 4) Achieved.
5	Assessment Category	Poor	Fair	Good	-	Positive academic behavior change.
6	Completeness Percentage	50%	75%	100%	+ 50%	Complete in Cycle III

DISCUSSION

Based on the results of the classroom action research conducted on Subject A.R, a class II student at SDN 005 Bengalon with speech delay, findings were obtained that the gradual use of edu-game media can improve beginning reading skills, learning focus duration, and student active participation. Quantitatively, the increase in reading ability can be seen from the learning focus

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duration which increased from 11 minutes in Cycle I to 37.5 minutes in Cycle III. The percentage of learning completeness increased from 50% in Cycle I to 100% in Cycle III, thus showing that the intervention using edu-game media successfully achieved the established KKM target.

The observation results showed that the screen-time limitation strategy combined with the provision of rewards in the form of star stickers is effective in increasing the learning focus of students experiencing speech difficulties. In the initial cycle, the student was still easily distracted and showed mild tantrums when facing syllables that had not been mastered. However, in the next cycle, the student's attention and involvement began to increase along with the habituation of using edu-game media, more intensive teacher guidance, and repeated reading exercises.

The findings of this study support the latest theories regarding multisensory approaches in reading learning for children with language barriers and speech delay. The integration of visual, auditory, and kinesthetic modalities in the reading process can strengthen the association between graphemes and phonemes. The Edu-game provides a multisensory learning experience because students can see letter symbols, hear their sounds, and respond through physical activities such as matching letter cards or syllable cards. In addition, the interactive approach and gamification in reading learning are believed to be able to increase students' intrinsic motivation.

Supporting and Inhibiting Factors

The success of the research implementation was influenced by several supporting factors, namely:

1. The interactive characteristics of the Edu-Game media which integrate images, colors, sounds, animations, and games so that it can attract the attention of students experiencing speech delay.
2. The active role of the class teacher in helping the implementation of the action and providing motivation.
3. Support from the principal and parents, as well as the availability of adequate learning facilities such as smartphones and internet networks.

Meanwhile, the inhibiting factors encountered during the implementation of the research included:

1. The student's concentration is not yet stable and occasionally loses focus when there are distractions from the surrounding environment.
2. Limited Indonesian language learning time in schools.

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3. Dependency on digital devices and electricity, where internet network disruptions can interfere with the learning process.
4. The pronunciation of some phonemes still requires advanced practice because the student still experiences difficulties pronouncing certain consonant sounds.

CONCLUSION

Based on the results of the classroom action research regarding the use of edu-game media to improve reading skills in speech delay students in class II at SDN 005 Bengalon, several things can be concluded: The use of edu-game media is proven to be effective in improving the beginning reading ability of speech delay students. In the learning process, the edu-game media that combines visual, auditory, and kinesthetic elements is proven to be able to attract students' attention, increase learning focus, and provide a concrete and fun learning experience. Activities such as matching letters with sounds, arranging syllables, and reading simple words make students more actively involved in learning and able to practice reading repeatedly.

The increase in reading ability can be seen from every intervention cycle. The learning focus duration of Subject A.R increased from 11 minutes in Cycle I to 22.5 minutes in Cycle II, and reached 37.5 minutes in Cycle III. The frequency of answering correctly increased from 4.5 times in Cycle I to 9 times in Cycle II, and reached 16.5 times in Cycle III. The reading ability scale increased from 2 (Poor) in Cycle I to 4 (Good) in Cycle III, while the percentage of learning completeness increased from 50% in Cycle I to 100% in Cycle III. This shows that the edu-game media is able to increase reading skills gradually until it reaches completeness. The development of reading skills is not only seen from the scores, but also from the student's learning behavior. In addition to the increase in the completeness score, the student showed positive academic behavior changes, such as increased focus, courage to read, active involvement in every learning stage, and higher motivation. Additional strategies such as the reward system and screen-time limitation system are proven to be effective in maintaining attention and reducing distractions during learning. Thus, it can be concluded that the use of edu-game media is a very effective learning strategy to improve beginning reading skills in students with speech delay.

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