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# Pear Deck and Pocable Game on Students' Vocabulary Knowledge

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ABSTRACT

This research examined the effectiveness of Pear Deck and Pocable Game in improving students' vocabulary knowledge at SMPN 10 Tarakan. This research used a quasi-experimental method with a quantitative approach and collected test score data from two classes, namely classes VII-I (control) and VII-II (experimental), each consisting of 29 students. Results showed that Pear Deck and Pocable Game significantly improved vocabulary knowledge compared to PowerPoint. The experimental class experienced a more significant increase in mean score, from 69.03 to 86.2 before treatment to 81.62 afterwards. In the control class, the average score increased from 67.31 to 78.12. These findings demonstrate the significant potential of Pear Deck and Pocable Game as learning media that can encourage students to participate interactively during learning, which improves their understanding of pronunciation, meaning, and vocabulary usage. Networked technology and continuous teacher development are needed to create fun and memorable English language learning.

## Introduction

Vocabulary is essential for students to improve their overall English proficiency. Vocabulary affects almost all language-learning skills, such as reading, writing, speaking, and listening [1]. Understanding words and their meanings and communication skills depend on vocabulary [2]. However, mastering vocabulary can be particularly challenging for students like seventh graders at SMPN 10 Tarakan. Traditional methods like PowerPoint presentations often need more interactivity, leading to low motivation and hindering vocabulary acquisition [3].Vocabulary teaching is essential to English language learning, and effective teaching media can help students master vocabulary [4]. Without a sufficient vocabulary, students cannot communicate their thoughts or comprehend those of others; vocabulary can be a crucial component of learning English [5]. Therefore, a need for more innovative learning media suited to the demands of both subject and student characteristics [6]. Adopting learning material may overcome students' difficulties in improving their English vocabulary.

Learning media such as Pear Deck and Pocable Game can help address this issue. Pear Deck was a web-based platform or application integrated with Google and Microsoft Documents, allowing it to function as a standard presentation media and enhance its interactiveness [7]. Teachers can use Pear Deck to create vocabulary quizzes, flashcards, and interactive activities that make learning vocabulary more enjoyable for students. Another effective teaching tool for motivating students to learn vocabulary is using the Pocable Game. Pocable Game is a language learning game that incorporates gamification elements to engage students in learning. The game allows students a fun and interactive way to practice and improve their vocabulary knowledge. Students were actively engaged and motivated to learn new vocabulary by participating in the game.

The activeness of student participation, improvement of understanding, and the teacher's efforts to create exciting learning situations determined students' achievement [8]. Besides, using media such as Pear Deck and Pocable Game can increase students' active participation and learning motivation. The Pear Deck and Jam Board medium significantly enhanced students' active

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participation in learning Mathematics during the COVID-19 epidemic [9] . Furthermore, the favor of using Pear Deck in reading activities during epidemics [10]. Therefore, the researchers were interested in conducting a quasi-experimental research to determine the significant effect of Pear Deck and Pocable Game on the English vocabulary knowledge of seventh-grade students at SMPN 10 Tarakan.

## Literature Review

### *Conceptual of Vocabulary Knowledge*

Vocabulary knowledge involves understanding and using words and their meanings in various situations. Vocabulary knowledge requires us to understand how words are used in different situations, not just memorize their definitions [11]. Throughout life, vocabulary continues to grow and cannot be fully mastered. Learning vocabulary varies; it can be acquired accidentally or through formal learning, such as specialized terminology and word study techniques. Students need to be flexible in understanding the meaning of words according to their context. Thus, vocabulary knowledge is essential. Students who have difficulty understanding terms in reading may need help to capture the true meaning.

Understanding vocabulary is closely related to the ability to understand sentences as a whole. Students need to recognize words, count the number of independent words, and understand their meaning in sentence. There are two types of vocabulary: active and passive [12]. *Active vocabulary* is a term that students understand and use in oral and written language. While passive vocabulary is a term understood in meaning, it cannot yet be used by students. A similar view is expressed by [13], with the terms active/productive vocabulary for words that students use when speaking and writing and passive/receptive vocabulary for words whose meaning is understood through reading and listening.

Vocabulary knowledge is determined by quantity (how many words are known) and quality (how deep the understanding of the word is). Vocabulary breadth as the number of words a person has [14]. The depth of vocabulary [15], refers to how well students understand a word, including pronunciation, spelling, formal/informal usage, language style, structure, and its relationship with other words (antonyms, synonyms, hyponyms, and collocations).

Although vocabulary is often sidelined compared to other linguistic skills, it plays a crucial role in understanding, producing language, and improving overall language proficiency [8]. Knowing grammar alone is not enough for meaningful communication. Students need a broad and deep vocabulay [16]. Instructors should focus on the selection and frequency of vocabulary taught, particularly academic vocabulary [17]. A lexical approach that emphasizes the teaching of words and word combinations, understanding meaningful input, and using linguistic elements in communication is essential for mastering a foreign language [18]. In other words, effective language teaching should integrate language use, word recognition, meaning, and word combination [19].

Mastering vocabulary is key to learning English, a compulsory language in Indonesian secondary schools [20]. Students need to memorize about 12,000 to 20,000 words, depending on their level of education. The proper learning method, as researched by [21], with a learning duration of 1 hour, greatly helps students build vocabulary learning memory. Modern approaches to learning vocabulary are more recommended than traditional methods [22]. With a strong vocabulary, students will be more fluent in communicating and understanding spoken and written English.

### *Media of Vocabulary Learning*

Learning media plays an important role in improving vocabulary depth. Various applications such as Pear Deck, Duolingo, Cake, Kahoot, and Quizizz can be utilized to improve students' English language skills. Teachers play an important role in ensuring the success of learning by using new media to increase students' interest in language learning [23] Learning media generally includes tools, methods, and strategies used in the learning process to improve learning effectiveness [24]. Media can also be used in various mass communication formats such as newspapers, magazines, radio, television, and websites [25].

Pear Deck, a web-based interactive presentation platform, is one option to improve vocabulary. Teachers can create engaging presentations with question-and-answer features, polling, drawing, and other activities integrated with Google Slides [26]. Students can answer directly, and

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teachers can monitor their progress in learning [27]. Pear Deck's easy and affordable accessibility from a variety of digital devices [28] and the variety of question types available ([29] make it an increasingly popular platform. Teachers can also provide feedback and learning summaries via email [30]. In summary, Pear Deck can create an interactive, engaging, and effective classroom to improve students' vocabulary comprehension.

Card games are an innovative way to help students enhance their vocabulary in the classroom. Pocable Game are examples of game-based learning systems that were influenced by the Scrabble board game and the Chinese card. Scrabble is a game in which players construct words from letters on a board using a point system, which is excellent for attaining learning objectives [31]. A similar concept is used in Pocable Game, which is akin to Flashcards, card media with visuals, or particular instructions for students to learn [32]. Teachers can use card media, such as Pocable Game, to create a fun and effective learning environment for students to increase their vocabulary.

## Methodology

The study employed a quasi-experimental research design. It incorporated the pre-test and post-test design to evaluate the effectiveness of a treatment for students. This research was carried out in the VII grades of SMPN 10 Tarakan, Pantai Amal, in East Tarakan, North Kalimantan. Based on the observations and interviews, the teacher reported that the students were less motivated to learn English, and the teacher was less competent to master technology-based learning media. The classes of SMPN 10 Tarakan, with a total of 112 seventh-grade students, comprise the population of the research 112 students, and cluster random sampling was used to get a sample in this research. The VII-1 class, which consisted of 29 students, was the control class, and the VII-2 class, which consisted of 29 students, was the experimental class. A vocabulary test was administered to students in the experimental and control groups to assess their understanding of terms before and after treatment. This test consisted of 30 questions with three sections: Listening, Writing, and Reading. A pre-test was administered to Experimental and Control classes before classes started. After completing the instructional activities in the experimental and control classes, a post-test evaluation occurred.

Before starting treatment, the researchers provided a pre-test for both classes (control and experimental). The researchers prepared the subject in the teaching module while associating the selected vocabularies. The researchers provided some Pocable cards with vocabulary that had been selected by the researchers and distributed randomly to each group. Students were directed to organize the vocabulary by using the Pocable cards. Then, students were asked to read, spell, and explain the meaning of the words they had arranged. The group that managed to arrange all the Pocable cards was considered the winner of this Pocable game. After that, the researchers evaluated by directing each group to read, spell, and explain the meaning of the words they had arranged. Then, the teacher listened to the students how to pronounce well and correctly by playing audio from the Native Speaker about the vocabulary they arranged. Finally, students were directed to write the vocabulary they had compiled in a special notebook for vocabulary. After playing the Pocable Game, students were introduced to Pear Deck. Pear Deck was demonstrated to students at the second, fourth, and sixth meetings. It was available to help students remember the terms they learned while playing the Pocable Game. Finally, both classes took the post-test after the treatment. The questions presented had the same features as the pre-test.

Data were collected using research instruments such as pre-tests and post-tests. The acquired data was tallied and evaluated descriptively. The 29 students' pre-test and post-test scores were compared. The scores were calculated using the percentage score formula. The scores were then examined and compared to the student score categorization used in the Merdeka Curriculum to establish the level of student comprehension based on the pre-test and post-test results. Inferential statistics were used to infer parameters based on the required statistics in parametric and non-parametric testing. Before hypothesis testing, normality and homogeneity were tested to ensure regular and homogeneous distribution. Hypothesis testing, as a decision-making process, compares research results with initial assumptions [33]. This research used the t-test for independent samples, a parametric significance test to determine whether there was a significant difference at a certain probability threshold when the data was normally distributed and homogeneous.

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## Findings and Discussion

### *Findings*

The descriptive statistics summarize the pre-test and post-test scores for both the experimental and control classes:

Table 1. Descriptive Statistics

| | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Pre-test Experiment Class | 29 | 50 | 80 | 69,03 | 8,095 |
| Post-test Experiment Class | 29 | 67 | 93 | 81,62 | 7,504 |
| Pre-test Control Class | 29 | 50 | 83 | 67,31 | 8,363 |
| Post-test Control Class | 29 | 57 | 90 | 76,72 | 8,451 |
| Valid N (listwise) | 29 | | | | |

The results of the data above show that the minimum score from the pre-test experimental class was 50, and the maximum score was 80, with a mean of 69,03. Meanwhile, in the post-test of the experimental class, the minimum score was 67, and the top score was 93, with a mean of 81,62. In the control class, the minimum pre-test score was 50, and the maximum score was 83 with a mean of 67,31, and then the minimum score of the post-test was 57, and the maximum score was 90 with a mean of 76,72. It can be concluded that the student scores from each group before treatment were in range C; after treatment, there was an increase in each group, which was in range A.

Table 2. Tests of Normality

| | Kelas | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| Hasil Vocabulary Knowledge | Pre-Test Experiment (PD & PG) | ,136 | 29 | ,180 | ,940 | 29 | ,103 |
| | Post-Test Experiment (PD & PG) | ,144 | 29 | ,130 | ,942 | 29 | ,116 |
| | Pre-Test Control (PPT) | ,175 | 29 | ,024 | ,952 | 29 | ,203 |
| | Post-Test Control (PPT) | ,134 | 29 | ,198 | ,964 | 29 | ,422 |

The results of the Shapiro-Wilk normality test above demonstrated that the significance of the experimental group in the pretest was 0.103. It illustrated that the probability score was higher than the significance level (0.103> 0,05). Meanwhile, the posttest probability value for the experimental group was 0.116. The results indicated that the probability scores exceeded the significance level (0.116 > 0.05). Therefore, we can conclude that the data was normal.

Furthermore, based on the results of the normality calculation, the significance of the pretest for the control group was 0.203, which indicates that the probability value (0.203 > 0.05) exceeds the significance level. Meanwhile, the posttest probability value for the control group was 0.422. The result showed that the probability value was more significant than the significance level (0.422 > 0.05). Therefore, the data was also normal.

Table 3. Test of Homogeneity of Variances

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Hasil Belajar Vocabulary Knowledge | Based on Mean | ,000 | 1 | 56 | ,996 |
| | Based on Median | ,000 | 1 | 56 | 1,000 |
| | Based on Median and with adjusted df | ,000 | 1 | 54,233 | 1,000 |
| | Based on trimmed mean | ,000 | 1 | 56 | ,983 |

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Table 3 demonstrated the output of the pre-test scores of experimental and control students. The table above shows that the significant value based on the mean was 0.996, and the value 0.996> 0.05 means that the data was determined to be homogeneous.

Table 4. Test of Homogeneity of Variances

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Hasil Belajar Vocabulary Knowledge | Based on Mean | ,192 | 1 | 56 | ,663 |
| | Based on Median | ,167 | 1 | 56 | ,685 |
| | Based on Median and with adjusted df | ,167 | 1 | 55,188 | ,685 |
| | Based on trimmed mean | ,143 | 1 | 56 | ,707 |

Table 4 showed the output of the post-test scores of experimental and control students after treatment. The table above shows that the significant value based on the mean was 0.663, and the value was 0.663 > 0.05, which means that the data was declared homogeneous.

Hypothesis Test

a) Pre-test

The independent sample t-test of the pre-test was a t-test using the scores on the pre-test or the students' initial scores to see whether the scores for each group differed at the start. Table 5 showed the output of the independent sample t-test of the pre-test.

Table 5. Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Hasil Vocabula | Equal variances assumed | ,000 | ,996 | ,798 | 56 | ,428 | 1,724 | 2,161 | -2,606 | 6,054 |
| Knowledge | Equal variances nc assumed | | | ,798 | 55,94 | ,428 | 1,724 | 2,161 | -2,606 | 6,054 |

Based on Table 5, the result of the t-test for the independent sample of students' score pre-test through SPSS 26 was probability value (*p)* was 0.428, (0.428 > 0.05) means Ha was rejected and H0 was accepted, or there was no significant effect of using Pear Deck and Pocable Game on students' vocabulary mastery in other words, that before the treatment each group had no difference in their vocabulary knowledge.

b) Posttest

In the pre-test, the t-test for the independent sample pre-test uses the score in the pre-test or the student's initial score, whereas in the t-test for the independent sample post-test, it uses the student's score taken at the end of treatment. This aims to see whether there were changes for each group after being given treatment. Table 6 showed the output of the independent sample t-test of the post-test.

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Table 6. Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Hasil Vocabulary Knowledge | Equal variances assumed | ,192 | ,663 | 2,333 | 56 | ,023 | 4,897 | 2,099 | ,692 | 9,101 |
| | Equal variances not assumed | | | 2,333 | 55,228 | ,023 | 4,897 | 2,099 | ,691 | 9,102 |

Based on Table 6, the result of the t-test for the independent sample of students' score pre-test through SPSS 26 was probability value (p) was 0.023, (0.023 < 0.05) means H0 was rejected, and Ha was accepted, or there was a significant effect of using Pear Deck and Pocable Game on students vocabulary knowledge. Students who studied the Pear Deck and Pocable Game had better vocabulary knowledge than those who learned using PowerPoint media in the control class.

c) Comparing Control and Experiment Group

In the independent sample t-test data above, some values and results show a significant difference between the average post-test score for the experimental class and the post-test score for the control class, allowing for an N-gain score to be carried out. N-gain was the difference between the post-test score and the pre-test score. N-gain or normalized gain aims to determine the effectiveness of a media in one group's pre-test and post-test design research.

Table 7. N-Gain Score

| Class | N-Gain | Category |
|---|---|---|
| Experiment | 42,1682 | Moderate |
| Control | 26,9564 | Low |

The N-gain score test calculation results showed that the average N-gain score for the experimental class (Pear Deck and Pocable Game) was 42.1682 or 42.2%, including in the moderate category. Meanwhile, the average N-gain score for the control class (PowerPoint) was 26.9564 or 27%, including in the low category. Therefore, Pear Deck and Pocable Game was more effective in enhancing students' vocabulary knowledge at SMPN 10 Tarakan.

***Discussion***

This research aimed to assess the effectiveness of Pear Deck and Pocable Game as alternative methods for teaching vocabulary. The findings significantly improved students' vocabulary knowledge when using these interactive media. In the experimental group, the pre-test mean score increased from 69.03 to 81.62 in the post-test, while in the control group, the pre-test mean score increased from 67.31 to 76.72 in the post-test. Statistical analysis showed that both groups' pre-test and post-test scores were normally distributed and homogeneous, with significance values above 0.05. Hypothesis testing revealed a significant difference between the experimental and control groups' post-test scores (p = 0.023 < 0.05), indicating the effectiveness of Pear Deck and Pocable Game. The N-gain scores further supported this, with the experimental group achieving a moderate N-gain score of 42.2%, compared to the control group's low score of 27%. It emphasized that Pear Deck and Pocable Game are more effective in enhancing vocabulary knowledge than traditional methods like PowerPoint.

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Pear Deck and Pocable Game were more effective in improving students' vocabulary with higher levels of engagement and better learning outcomes than using PowerPoint. The used interactive technology in teaching, such as Pear Deck, not only increases student engagement but also facilitates more profound understanding and better retention of information [34]. In addition, educational games such as Pocable can increase students' learning motivation and their ability to remember new vocabulary [35]. Therefore, the results of this research were in line with global trends in education that increasingly recognize the importance of interactive technology and educational games in supporting effective and enjoyable learning processes.

Pear Deck and Pocable Game utilize technology to create an engaging and interactive learning environment for vocabulary acquisition [36]. Students actively participate in activities like vocabulary exercises, quizzes, and word games, receiving immediate feedback to track their progress [37]. Additionally, the diverse game selection caters to different learning styles, making vocabulary learning practical and fun [27]. This innovative approach demonstrably improves student learning outcomes and prepares them for future academic challenges. Beyond introducing new vocabulary, Pocable's gamified approach leverages technology to create interactive and contextualized exercises. This engaging format, [38], highlights the benefits of digital learning platforms, which broaden students' vocabulary and deepen their understanding. Through gamification, Pocable encourages repetition and provides instant feedback, while the technology allows for the customization of materials to individual abilities, ultimately solidifying vocabulary knowledge.

While Pear Deck and Pocable Game offer exciting, gamified learning benefits, implementing them presents challenges. Limited technological infrastructure [39], such as unreliable internet and insufficient devices, hinders effective use. Additionally, some teachers lack the necessary digital literacy skills and require training to fully utilize these applications [40]. Time constraints for integrating media, curriculum alignment concerns, and potential resistance from teachers accustomed to traditional methods and students facing a new approach further complicate implementation.

Technology is revolutionizing education by fostering teacher creativity and enhancing learning materials and student achievement. Digital tools like Pear Deck and Jamboard boost student participation and empower educators with innovative teaching methods [41]. Information and communication technology (ICT) unlocks a vast library of customizable learning content, making the process engaging and productive [42]. Technology-infused teaching elevates teaching quality, helps students develop their abilities, and fosters enthusiasm for learning. Cloud computing further enhances efficiency and adaptability, while strong digital skills correlate with improved academic performance [43]. Therefore, technology is crucial in creating effective, engaging learning environments that promote student achievement. Vocabulary is fundamental to learning a language before grammar and developing English skills.

## Conclusion and Implications

The researchers investigated the effectiveness of Pear Deck and Pocable Game in enhancing students' vocabulary knowledge at SMPN 10 Tarakan. The findings revealed that utilizing these interactive media significantly improved vocabulary compared to traditional PowerPoint presentations. Students in the experimental class demonstrated more excellent vocabulary knowledge (average N-gain score of 42.2%) compared to the control class (average N-gain score of 27%). Furthermore, students reported a more positive learning experience with Pear Deck and Pocable Game, highlighting increased motivation, better recall, and a fun approach to vocabulary acquisition. These results strengthened that Pear Deck and Pocable Game can improve students' vocabulary knowledge more effectively than conventional PowerPoint presentations.

The researchers provide three recommendations based on the research results to capitalize on these benefits. First, English teachers are advised to use innovative and effective learning media in improving students' vocabulary knowledge such as Pear Deck and Pocable Game. Secondly, policymakers should support integrating these educational technologies in various subjects by providing adequate resources and training for teachers to implement these technologies effectively in the classroom. Thirdly, future researchers are encouraged to explore the use of Pear Deck and Pocable in other educational settings and subjects and conduct longitudinal studies to assess the long-term impact of these tools on student learning outcomes.

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