The Influence of OCEAN as Educational Media to Improve Students' Vocabulary

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Abstract. The media has developed massively as an essential part of English teaching. The role of media in teaching English cannot be separated from students and teachers. This study aims to measure the effect of media developed by the writer to determine the effectiveness of the media itself in improving students' vocabulary. OCEAN is a media development that provides some features to enhance students' English skills. This study implemented and tested OCEAN to measure the effectiveness of the media. This study used experimental quantitative research and a T-test to gain and analyze the data. The result said that the average value of English vocabulary from the pre-test is 65.81 ± 5.19, which is lower than the average value of English vocabulary in the post-test, 82.12 ± 5.86. The Wilcoxon test was carried out to determine whether there was a significant increase in the average variable value of English vocabulary from pre- to post-test. From the Wilcoxon test, it was found that the calculated Z value was smaller than the -Z table ($-4,594 < -1,960$), and the p-value was smaller than α ($0,000 < 0,050$), so the decision was taken that H0 was rejected, which means that there is a significant difference in the average between pre and post-test. The conclusion of this study showed that the media is effective in teaching English vocabulary.

Keywords: Educational Media, OCEAN, Students' Vocabulary

1. INTRODUCTION

Teaching English as a foreign language is quite challenging for Indonesian teachers. Like educators from other countries, Indonesian teachers may face specific problems due to linguistic issues, cultural considerations, and educational contexts. Some challenges the Indonesian teacher faces are the students' background and skill, the education policy, the teacher with unprepared media, and the overcrowded class of Indonesian students (Boy Jon et al., 2021). Indonesian English teachers might struggle with various challenges, similar to English teachers in other non-native English-speaking countries. Language proficiency is a common problem because English may

not be their first language, so they might struggle with pronunciation, grammar, vocabulary, and idiomatic expressions. This could impact their ability to effectively teach these elements to their students. Besides, the students have low motivation to learn because English is not their native language (Susiyanti, 2019). Another problem might be the cultural differences and the diverse language backgrounds. Teaching English is not only teaching the language itself, but also introducing the culture. Indonesian teachers might struggle to bridge the cultural gap and convey the nuances of English-speaking cultures. On the other hand, Indonesia is a linguistically diverse country with many regional languages. Students may come from various linguistic backgrounds, which makes it challenging to address individual needs and language transfer issues. On the other hand, (Wang & Xiong, 2022) stated that the various language background does not have any impact in learning English as long as the teacher provide an interactive media. In this case, the media's role is important in teaching and learning.

The media plays a significant role in teaching English because it can help teachers deliver knowledge. Integrating various forms of media into the language learning process can enhance students' language skills, cultural understanding, and overall engagement. Media sources such as movies, TV shows, podcasts, news articles, and music provide learners with authentic and diverse language input, exposing them to real-world language usage, accents, and colloquial expressions. Listening to spoken language in media helps students improve listening comprehension and pronunciation. Additionally, media content can serve as models for conversational patterns, intonation, and rhythm. Visual media like videos, images, and infographics can aid in explaining complex concepts, making language learning more engaging and accessible. Interactive media, such as language apps, online quizzes, and language games, allow learners to practice language skills in an engaging and self-paced manner. Technology and media significantly impact education because they can help teachers organize learning, engage students to learn, and help learning beyond the classroom (Erbas et al., 2021). The ocean plays a vital role in advancing sustainable development, requiring the reconciliation of ecological, sociocultural, and economic imperatives amid rapid global change (Gerhardinger et al., 2024). Many countries have incorporated Ocean Literacy (OL) principles into educational curricula. Teaching methods, such as project-based, problem-based, and inquiry-based learning (IBL), enable students to acquire scientific knowledge related to marine and coastal biodiversity, conservation, and ocean sustainability (Asikin et al., 2025).

Educational games can play a crucial role in teaching English, offering a range of benefits that can enhance language learning. Games are inherently engaging and fun, which helps maintain students' interest and motivation. Engaged learners are more likely to actively participate and invest time in language learning. Educational games effectively create the educational process and improve students' motivation because the students can directly interact with the material (Mawas et al., 2019). Games also promote active participation, encouraging students to interact with the language meaningfully. This leads to better retention and application of language skills. The repetition in a game plays an important part in language acquisition because it can help students to internalize vocabulary and structures. OCEAN is a game that was developed based on the students' needs analysis in the maritime department, and it provides students with specific vocabulary needed by maritime students.

Vocabulary is the most important part of teaching English, especially for English for Foreign Language students (Br Simamora & Oktaviani, 2020). Vocabulary is essential for English foreign language students because it is the foundation of effective

communication and plays a crucial role in expressing thoughts, ideas, emotions, and complex concepts. A rich vocabulary enables you to express yourself clearly and precisely. You can choose the most appropriate words to convey your intended meaning and reduce the chances of miscommunication. Having a wide range of words helps you communicate with a diverse audience. It allows you to connect with people from various backgrounds and effectively convey your message. A strong vocabulary is often linked to strong critical thinking skills. You can articulate your thoughts and engage in deeper discussions with various words. Mastering English vocabulary can also improve the students' speaking skills (Ani & Sinaga, 2021). In academic and professional settings, a strong vocabulary is a valuable asset. It can help you excel in writing assignments, exams, presentations, and job interviews. A robust vocabulary enhances your reading comprehension, and a diverse vocabulary gives you the tools to express your creativity.

This study discusses the use of OCEAN as an educational game to improve students' vocabulary. The educational game has been proven to improve English vocabulary because the game has many aspects that can engage students' attention longer than other media. Using games to improve students' vocabulary is very effective because games can provide a fun aspect, so students can enjoy the learning process (Yudha & Mandasari, 2021). Educational games have been used in many countries, especially in those countries that speak English as a foreign language. Online games can reduce the anxiety of English foreign language students because they can create a situated English learning environment (Yang et al., n.d.). Another study stated that mobile game applications can boost students' vocabulary because they can also help students improve their confidence (Elaish et al., 2019). Using technology to create learning media is needed because it can encourage students to be active in the activity provided, and teachers must be more creative (Fatimah & Santiana, 2017). A game based on the Android application can help students learn English because most students use their phones daily. If we talk about online games or games based on the Android application, we will find that most students like them, but developing a good game to teach English is not easy for a teacher. Research, development, and testing of the game are needed to validate its suitability for the students. Many games have been developed by researchers to help educators improve their English skills, and OCEAN comes with the specific need for maritime students to improve their maritime vocabulary. This game has been developed based on the needs analysis of students and teachers. The game aims to conquer all the game stages by solving the quizzes presented in the five key stories (Microplastics, Eutrophication, Sustainable Fishing, Ballast Water, Coastal Tourism) (Veronica & Calvano, 2020).

2. METHOD

This study included two testing methodologies: the Normality Test and the Paired T-test. The use of the SPSS version 20 computer program, often known as the Statistical Program for Social Sciences, facilitated the calculation and processing of data. The factors to be taken into account while using the SPSS software were as follows:
a) The SPSS software was a computer program that enhanced the accountability and accuracy of calculations and data processing.
b) The computational and data processing procedures were more efficient than manual calculations, reducing processing and calculation durations.

The paired sample t-test was part of the comparative hypothesis or comparison test. The paired t-sample test was used to assess if a statistically significant difference existed in the means of two samples (or groups) that were paired with one another. The paired sample t-test was part of the parametric statistical analysis. Therefore, as a basic rule in parametric statistical analysis, the main requirement is that the research data must be normally distributed. In order to ascertain the normalcy of the data used, it was important to conduct a preliminary normality test using the following hypothesis:

$H_0 = data\ was\ normally\ distributed.$
$H_1 = data\ was\ not\ normally\ distributed.$

According to Santoso (2014), the decision-making guidelines in the paired sample t-test (Sig.) were as follows:
1. If the Sig. (2-tailed) <0.05 then H_0 was rejected and H_1 was accepted
2. Conversely, if the Sig value. (2-tailed) > 0.05 then H_0 was accepted and H_1 was rejected.

The paired t-test was one of the hypothesis testing methods where the data used was not free, which was characterized by a value relationship in each of the same samples (paired). The most common characteristic of paired cases was that one individual (the subject of study) was subjected to two different treatments. Despite using the same participants, researchers collected two sets of sample data: data gained from the first treatment and data collected from the second treatment. The first intervention might include a control group, whereby no treatment is administered to the subject under investigation. The independent variable in this study pertained to the data collected on cadets' English vocabulary learning outcomes when exposed to the notion of advancement without using learning media based on Android apps. The dependent variable in this research pertains to the data collected on the learning results of cadets' English Vocabulary using the OCEAN android application-based learning media. Thirty cadets from the Ship Engineering Technology Study Program of the Faculty of Vocational Shipping served as subjects.

The research instruments were a pre-test and a post-test. Pre-test was done before treatment, and post–test was done after treatment. This research used a vocabulary test because the researcher tried to find the vocabulary improvement after the treatment. Respondents are taken from maritime students. The data analysis procedures used in this study included a Normality Test and a Paired t-test. These approaches were applied to the data obtained through the completion of questionnaires. The data collected by cadets was obtained using a Likert scale and will be subjected to descriptive analysis following the responses received from the questionnaire.

3. RESULT

3.1. Comparison test between pre-treatment and post-treatment

The test was carried out using the mean difference test method, namely the paired t-test (for 1 group of paired data). Before conducting this experiment, a fundamental assumption was made about the normality of the data, which was assessed using the Shapiro-Wilk test. If the data used failed to satisfy the underlying assumptions, a substitute test, the Wilcoxon test, was conducted.

3.2. Assumption test

3.2.1. Normality test

The normality test aimed to see whether the variable data used was normally distributed. Normality test as follows:

H_0: Data was normally distributed

H_1: The Data was not normally distributed

The Kolmogorov-Smirnov test was used to test this assumption using a decision-making framework whereby the null hypothesis (H_0) was deemed acceptable if the significance value exceeded 0.05. In contrast, the null hypothesis (H_0) was rejected if the significance value fell below 0.05. The test results were presented in the following manner:

Table 1. Normality test

Variable	Statistic	Significance
Value of English Vocabulary (pre-treatment)	0.918	0.040
Value of English Vocabulary (post-treatment)	0.886	0.008

Based on the outcomes of the normality tests, it was evident that the data about the value variable of English vocabulary in both the pre-treatment and post-treatment stages did not exhibit a normal distribution, as indicated by the significance values being less than the predetermined threshold α (0.05). Consequently, the value variable of English vocabulary will be subjected to further analysis using the Wilcoxon signed-rank test to address the assumption's violation.

3.2.2. Hypothesis Test

The hypothesis used is as follows:

H_0: No significant mean differences were based on the measured variables between pre- and post-treatment.

H_1: There were significant mean differences between pre-treatment and post-treatment based on the variables measured.

The test criteria are outlined as follows:

If the calculated Z value < -Z table, and p-value < 0.05, then H_0 is rejected; If the calculated Z value > -Z table and p-value > 0.05, then H_0 is accepted.

3.3. Value Variable of English Vocabulary

Table 2. Summary of mean difference test results

	Means	St. Dev.
Pre-treatment	64.8077	5.19245
Post-treatment	82.1154	5.86056
Calculated Z	= -4.594	
Z Table	= 1.960	
p-value Z	= 0.000	

Based on the table above, the average English vocabulary score at pre-treatment is 65.81 ± 5.19, lower than the average English vocabulary score at post-treatment of 82.12 ± 5.86. The Wilcoxon test was conducted to determine whether there was a significant average increase in the English vocabulary score variable from pre-treatment to post-treatment.

Based on the results of the Wilcoxon test, it is seen that the estimated Z value (-4.594) is less than the critical Z value (-1.960) obtained from the Z table. The p-value (0.000) exceeds the predetermined significance level ($\alpha = 0.050$). Consequently, the null hypothesis (H0) is rejected, indicating a statistically significant difference in the average English vocabulary scores before and after the treatment. The findings from the descriptive analysis indicate a significant increase in the mean score of English vocabulary from pre-treatment to post-treatment.

The result stated that OCEAN influences the students' vocabulary because there is an improvement from the pre-test to the post-test. Students are motivated to memorize the vocabulary because they compete. The faster they memorize all vocabulary, the better their score will be. This situation creates a new environment that forces them to complete the game. The situation and design of the game indirectly influence their unconscious mind to memorize the vocabulary. Online games are effective in language acquisition because students are willing to be the winner and are engaged in an enjoyable environment (Ashraf et al., 2014). The challenge in OCEAN is designed to force students to complete the first level before they open the second level, making them feel challenged to complete the levels in the game.

4. CONCLUSION

Teaching English cannot be separated from teaching media. OCEAN as teaching media effectively improves students' vocabulary, especially maritime vocabulary. It is proven from the data result, which shows that the average English vocabulary score at pre-treatment is 65.81 ± 5.19, lower than the average English vocabulary score at post-treatment of 82.12 ± 5.86. The p-value (0.000) exceeds the predetermined significance level ($\alpha = 0.050$). Consequently, the null hypothesis (H0) is rejected, indicating a statistically significant difference in the average English vocabulary scores before and after the treatment.

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