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INVESTIGATING THE EFFECTIVENESS OF EDUCANDY AS GAMIFICATION IN ENGLISH LANGUAGE TEACHING TO IMPROVE STUDENTS' VOCABULARY MASTERY

Nur Ahista Balqist

Samudra University, Langsa, Aceh, Indonesia
Corresponding author's email: nurahistab@gmail.com

Abstract
The purpose of this study was to investigate whether the Educandy application effect the students' vocabulary mastery. The study focused on the seventh-grade students of SMP N 2 Langsa, with sample of 44 students, divided into an experimental class and a control class. A quantitave approach was employed, utilizing a quasi-experimental design. The research instrument consisted of a vocabulary test, and the data were gathered through pre-test and post-test. Analysis was conducted using non-parametric tests, specifically the Wilcoxon and Mann-Whitney tests. The findings indicated a significant improvement in the mean scores of the experimental class after using the Educandy application compared to the control class. Statistical analysis yielded an Asymp Sig. (2-tailed) value of 0.000. which is less than $\alpha = 0.05$, *leading to the rejection of H0 and acceptance of Ha. Therefore, the study concluded that Educandy application effectively enhances students' vocabulary mastery.*

Keywords: *Vocabulary, Educandy, Application*

INTRODUCTION

English is an international language that is used as a means of communication in the international world. Panjaitan et al (2021) state that English is a communication tool in everyday life which also includes academics. To speak English fluently, there are four aspects of skills that must be mastered, namely listening, reading, speaking and writing. To master these four skills, it is important to master the basic thing of English, namely vocabulary. Prayoga (2022) states that reading and listening can improve the ability to understand vocabulary while writing and speaking can improve the ability to use vocabulary. Vocabulary is a main role in mastering English. In view of the fact that vocabulary is an important component of learning English (Khoirunnisa et al, 2023). Vocabulary learning must be improved the same as learning the four main skills. However, students often find it difficult to express something because they do not have enough vocabulary (Salawazo, et al, 2020). Therefore, learning vocabulary requires the use of appropriate methods.

A teacher must be smart in choosing the right learning method due to many cases of low student interest in learning. Teachers must apply learning methods related to need of students itself to facilitate the learning process (Diaz et al, 2022). Most learning methods that use a blackboard are considered boring and uninteresting for students (Kholili, 2023). Unsuitable learning methods make students to become lazy about learning English. Most

students have no interest in learning English because they feel it is boring and difficult to learn (Mido & Asmita, 2023). Based on the observation with one of the English teachers at SMP N 2 Langsa showed that most students were not interested and lazy in learning English. Teachers say that students tend to find it difficult to learn new things that they have never learned in elementary school, mainly vocabulary which is the basic of English and most students cannot read and speak or pronounce a word correctly. Similar cases have also been found in previous research, Amalia (2018) in her research stated that students' low interest in learning English vocabulary is caused, among other things, by various factors and obstacles, including the students themselves, learning facilities, teachers' abilities, low average students' abilities, students' irresponsibility to assignments, and often English is still considered too difficult.

The problem above shows that choosing the suitable learning model are needed in the form of active and fun learning to increase students' interest in learning to master vocabulary and reading skill. One of the models that can increase students' interest in learning to master vocabulary and reading skill is using the gamification model. Gamification in learning is the right choice for a teacher. On the other hand, students are only interested in learning while playing (Videnovik et al, 2023). Gamification can make students like learning by learning while playing.

Several researches related to the use of Educandy as Gamification have been carried out previously. Saputri & Rusnilawati (2023) in their research regarding Educandy which is effective in students' critical thinking skills and self-confidence, focused on mathematics lessons and grade 4 elementary school students as the research subjects. Apart from that, Pratiwi & Fhadilawati (2024) in their research on the use of the Educandy Studio application to improve students' grammar skills, specialized in the domain of narrative texts and focused on simple past tense with grade 10 high school students as their research subjects. Rizky (2023) in their research) focuses the study on the application of the Game-Based Learning (GBL) model using the Educandy application in learning chemistry material, especially the topic of colloids. In this research, the researcher chose to increase vocabulary mastery and improve reading ability since students at SMPN 2 Langsa, as previously known, had difficulty reading because they had little knowledge of vocabulary. Therefore, this paper aims at knowing Educandy as Gamification in English Language Teaching can improve students' vocabulary mastery or not. From the objectives of this study, the research questions of this research are:

1. Does Educandy as Gamification in English Language Teaching potentially improve students' vocabulary mastery?
2. How does Educandy as Gamification in English Language Teaching improve students' vocabulary mastery?

METHODS

This research uses a quantitative method with a quasi-experimental design. Researchers chose this method because the focus was to explore the effectiveness of using Educandy as a gamification tool in improving students' vocabulary mastery. According to Creswell (2012), quantitative research in an educational context involves researchers defining research topics, formulating focused questions, collecting measurable data from participants, analyzing data with statistical methods, and conducting investigations objectively. This research uses an approach where groups or classes are given a pretest, then treatment is carried out and ends with a posttest to evaluate the differences in results before and after treatment. The treatment given focused on using Educandy as a gamification method to improve students' vocabulary mastery in class VII SMP N 2 Langsa.

The population in this research is class VII students of SMP N 2 Langsa in the 2024/2025

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academic year with 212 students divided into seven clasess. Otherwise, the samples taken in this research were the remaining students from 2 class VII of SMP N 2 Langsa, namely VII-2 and VII-3. The sample of research participants is part of the population and is a member of the sample group.

The instrument of this research is a vocabulary test. The test is divided into several parts: pre-test and post-test. Both measure the extent students know the vocabulary used. A pre-test was given to both classes. The pre-test consists of 22 items using paper. The test used is multiple choice questions based on the school syllabus. After that, the experimental class was taught vocabulary using the Educandy application with a gamification learning model which would be taught by the researcher, while the control class was taught vocabulary using the usual method used by the teacher in teaching which would be carried out by the teacher himself with the same topic as in class. experiment. Meanwhile, a post-test was given to both classes to see if there were any increases or decrease after treatment. The control class post-test use paper and experimental post-tests use Educandy.

In the process of analyzing this data, researchers used the Mann-Whitney Test to assess the impact of the Educandy Application on students' vocabulary mastery. Before carrying out analysis using Mann-Whitney, researchers carried out preliminary data analysis to test normality and homogeneity. Normality and homogeneity tests were carried out using SPSS v29.

FINDING AND DISCUSSIONS

The experimental class in this study comprised 30 students from the VII-3 class at SMP N 2 Langsa. However, only 22 students were included in the pre-test and post-test due to some being absent. This class was taught using the Educandy application. Otherwise, the control class in this study was the VII-2 class from SMP N 2 Langsa, which included 30 students and only 22 students were included in the pre-test and post-test due to some being absent. This class did not use the Educandy Application for their study. Both classes got different pre-test and post-test scores with different average scores.

	Score of Pre-Test	Score of Post-Test	Gained
∑	1714	1880	166
Average	77.90	85.45	7.54

Table 1.1 The Students' Score of Experimental Class

	Score of Pre-Test	Score of Post-Test	Gained
∑	1635	1113	-522
Average	74.31	50.59	-23.72

Table 1.1 The Students' Score of Control Class

Prior to this analysis, normality and homogeneity tests were conducted to determine if the data from both classes followed a normal distribution and if the samples were homogeneous.

Tests of Normality

Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.

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Result Score	Pre-Test(Experimental)	0.266	22	0.000	0.808	22	0.001
	Post-Test(Experimental)	0.192	22	0.033	0.909	22	0.044
	Pre-Test(Control)	0.158	22	0.160	0.913	22	0.054
	Post-Test(Control)	0.129	22	.200*	0.959	22	0.472

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 1.3 The Normality Test

The results indicated that the data was normally distributed in the pre-test for the control class (0.160) and post-test for the control class (.200). However, the pre-test and post-test data for experimental classes was not normally distributed, with values of 0.001 and 0.033. Data is considered normally distributed if Sig > 0.05; if Sig < 0.05, it is not. Since the data did not meet the normality requirement for parametric tests, non-parametric tests, specifically the Wilcoxon and Mann-Whitney tests, were used for the data analysis in this research.

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	0.872	1	42	0.356
	Based on Median	0.160	1	42	0.692
	Based on Median and with adjusted df	0.160	1	36.313	0.692
	Based on trimmed mean	0.571	1	42	0.454

Table 1.4 The Homogeneity Test (Pre-Test)

According to the homogeneity test results presented in Table 1.4, the significance value (sig) was 0.356. Homogeneity is confirmed if sig > 0.05, while sig < 0.05 indicates that the data is not homogeneous. Since the value of 0.356 is greater than 0.05, it can be concluded that the data is homogeneous.

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	0.090	1	42	0.765
	Based on Median	0.059	1	42	0.810
	Based on Median and with adjusted df	0.059	1	36.769	0.810
	Based on trimmed mean	0.078	1	42	0.782

Table 1.5 The Homogeneity Test (Post-Test)

According to the homogeneity test results presented in Table 1.5, the significance value (sig) was 0.765. Homogeneity is confirmed if sig > 0.05, while sig < 0.05 indicates that the data is not homogeneous. Since the value of 0.765 is greater than 0.05, it can be concluded that the data is homogeneous.

The non-parametric test was conducted because the normality test revealed that the data did not follow a normal distribution.

The Wilcoxon test was applied to assess whether there was a change in the average scores between the pre-test and post-test for each class, including both the experimental and control class.

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Ranks

		N	Mean Rank	Sum of Ranks
Post-Test Experimental - Pre-Test Experimental	Negative Ranks	7[a]	11.71	82.00
	Positive Ranks	15[b]	11.40	171.00
	Ties	0[c]		
	Total	22		
Post-Test Control - Pre-Test Control	Negative Ranks	20[d]	12.40	248.00
	Positive Ranks	2[e]	2.50	5.00
	Ties	0[f]		
	Total	22		

a. Post-Test Experimental < Pre-Test Experimental

b. Post-Test Experimental > Pre-Test Experimental

c. Post-Test Experimental = Pre-Test Experimental

d. Post-Test Control < Pre-Test Control

e. Post-Test Control > Pre-Test Control

f. Post-Test Control = Pre-Test Control

Table 1. 6 Ranks of Pre- and Post-test of Experimental and Control Classes

According to the pre-test and post-test rank results shown in Table 1.6, the control class experienced a decrease (negative rank) of 20 and an increase (positive rank) of 2. In contrast, the experimental class saw an increase (positive rank) of 15 and a decrease (negative rank) of 7.

Test Statistics[a]

	Post-Test Experimental - Pre-Test Experimental	Post-Test Control - Pre-Test Control
Z	-1.445[b]	-3.947[c]
Asymp. Sig. (2-tailed)	0.148	0.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.

Table 1. 7 Result of Wilcoxon test from Experimental and Control Classes

According to the Wilcoxon test results presented in Table 1.7, the experimental class has an Asymp. Sig. (2-tailed) value of 0.148. This indicates a significant difference between the pre-test and post-test scores in the experimental class. Specifically, there was an increase (positive rank) of 15 and a decrease (negative rank) of 7. Therefore, it can be concluded that the average score in the experimental class improved from the pre-test to the post-test.

In contrast, the Wilcoxon test results for the control class, shown in Table 1.7, indicate a Sig. (2-tailed) value of 0.000, which is below the $\alpha = 0.05$. This suggests a significant difference between the pre-test and post-test scores in the control class. Specifically, there was a decrease (negative rank) of 20 and an increase (positive rank) of 2. Consequently, it can be concluded that the average score of the control class decreased from the pre-test to the post-test.

The researcher employed a non-parametric test, specifically the Mann-Whitney test, to assess the effectiveness of the Educandy Application on students' vocabulary mastery.

Ranks

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Class		N	Mean Rank	Sum of Ranks
Result Score	Experimental Class	22	33.36	734.50
	Control Class	22	11.64	256.00
	Total	44		

Table 1. 8 Rank of Post-test from Experimental Class and Control Classes

According to the Mann-Whitney U test results in Table 1.8, the rank table indicates that the mean rank or average increased for each class. Specifically, the experimental class had an average increase of 33.36, which is higher compared to the control class's average of 11.64.

Test Statistics[a]

	Result Score
Mann-Whitney U	3.000
Wilcoxon W	256.000
Z	-5.616
Asymp. Sig. (2-tailed)	0.000

a. Grouping Variable: Class

Table 1. 9 Result of the Mann-Whitney Test

According to the Mann-Whitney test results for the experimental and control classes presented in Table 1.9, the U value was 3.0, the W value was 256.0, and the Z value was -5.616. The Asymp. Sig. (2-tailed) value was $0.000 < \alpha = 0.05$. This indicates a significant difference between the experimental and control classes, leading to the acceptance of Ha and the rejection of H0. The hypothesis analysis is summarized as follows:

Ha: There is an impact of using the Educandy application on the vocabulary mastery of seven-grade students at SMP N 2 Langsa for the academic year 2024/2025 if the significance value is less than $\alpha = 0.05$.

H0: There is no impact of using the Educandy application on the vocabulary mastery of seven-grade students at SMP N 2 Langsa for the academic year 2024/2025 if the significance value is greater than $\alpha = 0.05$.

In conclusion, the study found that H0 was rejected and Ha was accepted, indicating that the Educandy Application was effective in enhancing students' vocabulary mastery.

Based on the Mann-Whitney results, where Z = -5.616 and the sample size n = 44, the calculation was performed using the following formula:

$$r = \frac{|z|}{\sqrt{n}}$$

$$r = \frac{|-5.616|}{\sqrt{44}}$$

$$r = \frac{5.616}{6.633} = 0.846$$

Based on the effect analysis, the calculated effect size for this research is 0.846. According to the criteria outlined in Chapter III by Cohen in DataTab (2023), since 0.846 > 0.5, it indicates that the Educandy Application has a large impact on students' vocabulary mastery. This result is in line with Ramadhanti et al. (2024) which states that the word search game in Educandy application improve vocabuary mastery since it assists students' in memorizing new words such as nouns and verbs along with the words' spelling.

CONCLUSION

Based on the results, the experimental group had a higher pre-test score compared to the control group. The average pre-test score for the experimental class was 77.90, while the control class had an average of 74.31, indicating a difference between the two groups. However, the experimental class achieved a higher average post-test score than the control class again. The average post-test score for the experimental group was 85.45, whereas the control group's average was 50.59, demonstrating a significant improvement in the experimental class's performance.

However, the results from the Mann-Whitney test showed an Asymp Sig. (2-Tailed) value of 0.000, which is below the α level of 0.05 (0.000 < 0.05). This indicates that, in the Mann-Whitney test, when the Asymp Sig. (2-Tailed) is less than α = 0.05, the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted.

Additionally, to assess the effectiveness of the Educandy application, the researcher computed the effect size using Cohen's formula. According to Cohen's criteria, an effect size greater than 0.5 is considered large. In this study, the effect size was 0.846, which exceeds 0.5. Therefore, it indicates that the effect size is classified as large.

In summary, a notable difference was observed in the post-test scores between the experimental and control classes. This suggests that the Educandy Application effectively enhanced vocabulary mastery among seven-grade students at SMP N 2 Langsa for the 2024/2025 academic year. However, the research still has several limitations, such as this study only include students from one junior high school as the sample. Thus, the finding may not represent all students. Moreover, this study did not examine other factors that might influence the effectiveness of Educandy. It indicates that these elements could be investigated in future research.

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