



The Implementation of Educandy Towards Students' Vocabulary Mastery in Fifth-Grade at Elementary School

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Abstract. This study aims to determine whether there is a significant effect of the use of Educandy on students' vocabulary mastery of fifth-grade in elementary school. This study used a quantitative method with a quasi-experimental design. The sampling technique used is total sampling with intact group. The population of this study was all fifth-grade students. The sample used was class 5A as the control group with 32 students, and class 5B as the experimental group with 32 students. The instrument used was a vocabulary test in the form of multiple choices consisting of 20 questions. Data were collected using a pre-test and post-test, and analyzed using the Mann-Whitney test. The results of this study showed that the mean score of the experimental group was higher than the control group. The calculation results of the Mann-Whitney test showed Asymp. Sig. (2-tailed) $<.001 < \alpha = 0.05$, which means H_a is accepted and H_0 is rejected. The calculation of the effect size also showed that Educandy has a large effect. Therefore, this study concluded that the use of Educandy is effective in mastering the vocabulary of fifth grade students in elementary school.

Keywords: *Educandy; Game-Based Learning; Vocabulary Mastery*

Abstrak. Penelitian ini bertujuan untuk mengetahui apakah terdapat efek yang signifikan dari penggunaan Educandy terhadap penguasaan kosakata siswa kelas lima sekolah dasar. Penelitian ini menggunakan metode kuantitatif dengan kuasi-eksperimental desain. Teknik pengambilan sampel yang digunakan adalah total sampling dengan intact group. Populasi penelitian ini adalah seluruh siswa kelas lima. Sampel yang digunakan adalah kelas 5A sebagai grup kontrol dengan jumlah 32 siswa, dan kelas 5B sebagai grup eksperimen dengan jumlah 32 siswa. Instrumen yang digunakan adalah tes kosakata dalam bentuk pilihan ganda sebanyak 20 soal. Data diambil dengan menggunakan pre-test dan post-test, serta dianalisis menggunakan uji Mann-Whitney. Hasil dari penelitian ini menunjukkan bahwa nilai rata-rata kelompok eksperimen lebih tinggi daripada kelompok kontrol. Hasil perhitungan dari uji Mann-Whitney menunjukkan Asymp. Sig. (2-tailed) $<.001 < \alpha = 0.05$, yang artinya H_a diterima dan H_0 ditolak. Perhitungan ukuran efek juga menunjukkan bahwa Educandy memberikan efek yang besar. Oleh karena itu, penelitian ini menyimpulkan bahwa penggunaan Educandy efektif terhadap penguasaan kosakata siswa kelas lima sekolah dasar.

Kata Kunci: *Educandy; Pembelajaran Berbasis Permainan; Penguasaan Kosakata*

INTRODUCTION

English language learning at the elementary school level in Indonesia, including in Bali, plays an important role in building the foundation of foreign language skills from an early age. In Bali, English proficiency is particularly beneficial because of the rapid growth of tourism and the creative industry, which require the ability to communicate in English. Rismadewi & Utami (2024) stated that English communication skills are important because they increase future career potential and allow students to actively participate in the global economy and promote local culture. Therefore, English is integrated into the elementary school curriculum as a subject or local content to equip students with language skills from an early age.

Vocabulary is the main foundation in English because understanding words helps students comprehend texts, communicate effectively, and develop other language skills (Nation, 2001). Sucandra et al., (2022) stated that poor vocabulary mastery is a problem that must be solved because vocabulary is very necessary in learning English. Without adequate vocabulary mastery, students will have difficulty understanding subject matter, participating in classroom activities, and using English actively. Research by Amalia (2018) also showed that many students still have difficulty achieving learning indicators due to inadequate English vocabulary.

However, in reality, English learning in elementary schools still faces several obstacles. The main obstacle is students' low vocabulary mastery. This was also found in the preliminary observation conducted with the fifth-grade English teacher in one of elementary schools in Karangasem. Limited vocabulary mastery becomes a major barrier for students to develop English skills comprehensively. It affects their ability to understand texts, communicate orally, write, and think critically in English. In this study, vocabulary mastery refers to students' ability to recognize, understand, and use English vocabulary related to food, drinks, and taste through four dimensions: spelling, word classes, word use, and meaning.

One factor contributing to low vocabulary mastery is that the learning media used is less interesting and interactive (Thornbury, 2002). Salsabila et al., (2024) found that teachers only used textbooks and blackboards in vocabulary learning without more engaging media. This was also found during preliminary observation at one of elementary schools in Karangasem, where the teacher only used English textbooks when teaching English. As a result, students felt bored and the learning process became monotonous. Nurhabibah et al., (2021) stated that learning media can affect students' learning achievement. Therefore, more creativity is needed from teachers to develop interactive learning media that can attract students' interest.

In Indonesia, not many teachers have developed digital game media into the learning process to support students' learning (Budiarta, 2024). The use of technology in the modern era, such as digital and online tools, has become an important resource for language mastery and educational achievement (Rismadewi & Utami, 2024). Agustinasari et al., (2020) also stated that using technology and the internet is one way to make learning more interesting and interactive. Therefore, game-based learning media can be an effective solution to overcome these problems.

Game-based learning media offers interactive and interesting features that can increase students' motivation and make vocabulary learning more effective. Mahayanti et al., (2020) stated that digital game-based learning promotes an active learning process

with fun and interactive activities for young learners, especially in language learning. Several studies have proven the effectiveness of game-based learning. Fitriati et al., (2021) stated that Educandy is effective in evaluating learning and increasing students' motivation. Research by Damayanti et al., (2023) also showed that Educandy can improve elementary school students' vocabulary mastery.

One digital platform that can be used as a game-based learning media is Educandy. Educandy is a platform that allows teachers to create interactive educational games for vocabulary learning. With its motto, "*making learning sweeter*", Educandy offers features such as quizzes, matching games, crosswords, and other activities based on relevant vocabulary. Using Educandy helps teachers facilitate the learning process and makes vocabulary learning more engaging. Through a gamification approach, students learn vocabulary while playing, so the learning process becomes more enjoyable and less boring (Gee, 2003; Mayer & Johnson, 2010; Deterding et. al. 2011).

The research question in this study is "Does the implementation of Educandy give any significant effects on students' vocabulary mastery in fifth grade at elementary school?". This study aims to determine whether there is a significant effect of using Educandy on fifth-grade students' vocabulary mastery at elementary school. Although previous studies have shown the potential of Educandy in improving vocabulary learning, most of them were conducted in different educational contexts and have not specifically examined its effectiveness among elementary school students in Bali. This creates a contextual gap, because the effectiveness of game-based learning media may vary depending on students' characteristics, classroom conditions, and local learning environments. Therefore, this study is needed to provide empirical evidence on whether Educandy is effective for Balinese elementary learners, particularly fifth-grade students in one of elementary schools in Karangasem. The findings are expected to contribute new insights for teachers and researchers in developing more effective and innovative vocabulary learning strategies at the elementary school level.

METHODS

This study used a quantitative approach with a quasi-experimental design. Quantitative research is a research approach used to test or examine the relationship between variables through statistical procedures (Creswell & Creswell 2018). A pre-test and post-test design was employed to determine whether there was a significant effect of using Educandy on fifth-grade students' vocabulary mastery. This design involved two groups of students, namely the experimental group and the control group. The experimental group received treatment using Educandy media, while the control group was taught using an English textbook.

This research was conducted at one of elementary schools in Karangasem. The population consisted of all fifth-grade students, with a total of 64 students in two intact classes. The sampling technique used in this study was total sampling, because all members of the population were involved as the sample. Class 5A, consisting of 32 students, was assigned as the control group, while class 5B, consisting of 32 students, was assigned as the experimental group. Since the groups were already formed as intact classes, the study did not involve random assignment of individual students.

The main instrument used in this study was a vocabulary test consisting of 20 multiple-choice items. The instrument was constructed based on the indicators of food,

drinks, and taste vocabulary, and it was validated through expert judgment by two experts. The content validity was analyzed using the Gregory formula. Based on the expert judges' assessments, all questions were deemed relevant. Content validity was then assessed using the following Gregory formula.

$$\begin{aligned} \text{Content Validity} &= \frac{D}{(A + B + C + D)} \\ \text{Content Validity} &= \frac{20}{0 + 0 + 0 + 20} = 1 \end{aligned}$$

The value obtained in content validity on the vocabulary test is 1.00. based on the criteria of Gregory formula, 1.00 indicates 'Very High'. So, it can be stated that the 20 questions on the vocabulary test have very high content validity and are suitable for use in this research.

While the reliability of the instrument was tested using Cronbach's Alpha in SPSS, and the results are as follows.

Table 1. Reliability Test Result
Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.814	.817	20

The result obtained from reliability test is 0.814, and based on the instruments' reliability criteria, 0.814 marked as 'High'. This indicates that the vocabulary test instrument has high reliability and is suitable for use.

The validity and reliability results indicated that the instrument was appropriate for use in the study. Furthermore, an item blueprint was prepared to represent the vocabulary aspects measured in this research, including spelling, word classes, word use, and meaning. After receiving feedback from the experts, several items were revised to improve clarity and accuracy. The vocabulary test was then administered as a pre-test and post-test. The collected data were analyzed using descriptive statistics and inferential statistics, including the Kolmogorov-Smirnov normality test, homogeneity test, Mann-Whitney test, and effect size calculation using Cohen's formula.

FINDING AND DISCUSSION

Findings

During data collection, six meetings were held for both groups using the same steps. The following are details of the six meetings for both groups.

Table 2. Meeting Activities

Meeting	Learning Objective	Vocabulary Target	Activity		Assessment	
			Control	Experiment	Control	Experiment
1 st Meeting	Students are able to identify and mention food and drink vocabulary	Food and drink vocabulary	-Introducing food and drink vocabulary using pictures in the textbook -Imitating pronunciation and writing vocabulary	-Match-up (Whole class vocabulary introduction) -Word Search & Memory games (Group practice)	-Pre-test (20 multiple-choice questions) -Matching pictures and words in the textbook, and pronunciation	-Pre-test (20 multiple-choice questions) -Group words recognition and pronunciation
2 nd Meeting	Taste vocabulary (sweet, salty, sour, bitter, spicy)	Students are able to identify and mention taste of different foods and drinks	-Introducing taste vocabulary -Imitating pronunciation and writing taste vocabulary in the book	-Word Search (Introduce taste vocabulary) -Noughts & Crosses (Pair game connecting food & taste)	-Matching food/drinks with the right taste in the textbook	-Individual oral activity: mentioning a favorite food/drink with its correct taste
3 rd Meeting	Sentence structures (e.g., "Bakso tastes delicious", "Candy is sweet")	Students are able to make sentences to express taste of foods and drinks	-Reviewing taste vocabulary -Reading example sentences -Choose taste vocabulary from book and create sentences	-Word Search (Review taste vocabulary) -Match-up (Demonstrate sentence patterns) -Word Search (Find vocabulary to create sentences)	-Making sentences based on the pictures in the textbook -Reading the sentences in front of the class	-Creating a simple sentence from a word found in the game -Volunteering to read sentences aloud in front of the class
4 th Meeting	Question patterns (e.g., "What is your favorite food/drink")	Students are able to make sentences and express taste through interaction	-Ice breaking: guessing pictures of food/drinks, and how is it taste	-Memory review of vocabulary & taste) -Match-up (Practice on	-Writing sentences about favorite food/drink with reasons	-Writing individual short sentences about favorite food/drink

	?)		-Introducing and practice question and answer patterns	question patterns)	-Reading sentences aloud in turns	with reasons -Reading sentences aloud in turns
5 th Meet -ing	Review of all learned vocabulary , tastes, and sentence patterns	Students are able to use simple sentences to describe food/drinks and taste through dialogue	Reviewing previously learned vocabulary and sentences	Word Search & Match-up (Group review of vocabulary and sentences)	-Creating short dialogue in pairs - Performin g live role plays in front of the class	-Creating short dialogues in pairs -Performing live role plays in front of the class
6 th Meet -ing	Review of all unit materials	Students are able to demonstrate their understandin g of all unit materials	-Reviewing all the materials together -Conducted Post-test	-Reviewing all the materials together -Conducted Post-test	Post-test (20 multiple- choice questions)	-Post-test (20 multiple- choice questions -Final classroom reflection

After conducting six meeting sessions, a vocabulary test was collected. The following are the results of the pre-test and post-test in both groups.

Table 3. Result of Descriptive Statistical Analysis

	Statistics			
	Pre-test Experimental	Post-test Experimental	Pre-test Control	Post-test Control
N	32	32	32	32
Mean	59.53	89.38	57.34	60.94
Std. Deviation	6.998	6.568	9.244	8.466
Minimum	40	80	30	40
Maximum	70	100	70	70

The result of descriptive statistical analysis in experimental group showed that the pre-test score had a mean of 59.53, with a standard deviation of 6.998, and a minimum score 40 and a maximum score 70. Meanwhile, the post-test score increased significantly with a mean of 89.38, standard deviation of 6.568, and a minimum score of 80 and a maximum of 100.

Other than that, the results in the control group, the pre-test score had a mean of 57.34, standard deviation 9.244, and with a minimum score of 30 and a maximum of 70.

Then, in the post-test control group, the mean was 60.94, standard deviation 8.466, and with a minimum score of 40, and a maximum of 70.

After descriptive analysis, inferential statistical analysis was performed, including normality test, homogeneity test, and then hypothesis test. The following are the results of inferential statistical analysis.

Table 4. Result of Normality Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test Experimental	.245	32	<.001	.876	32	.002
Post-test Experimental	.216	32	<.001	.879	32	.002
Pre-test Control	.212	32	<.001	.877	32	.002
Post-test Control	.216	32	<.001	.860	32	<.001

a. Lilliefors Significance Correction

Based on the results of the Kolmogorov-Smirnov normality test, the significance value obtained for the Experimental Pre-test was <.001, the Experimental Post-test was <.001, the Control Pre-test was <.001, and the Control Post-test was <.001. Based on these results, it can be seen that the significance value for the pre-test and post-test in the control and experimental groups were all less than 0.05. Therefore, it can be concluded that the data in all groups were not normally distributed.

Table 5. Result of Homogeneity Test

		Levene Statistic			
		Statistic	df1	df2	Sig.
Experimental - Control	Based on Mean	1.022	1	62	.316
	Based on Median	.448	1	62	.506
	Based on Median and with adjusted df	.448	1	47.965	.507
	Based on trimmed mean	.921	1	62	.341

The result showed that the significance value is above 0.05. The significance value obtained from the mean is 0.316, then obtained from the median is 0.506, then the significance value for the median adjusted for degrees of freedom is 0.507, and the significance value based on the trimmed mean is 0.341. Based on these results, it can be concluded that the data is homogeneous.

Although the results are homogeneous, the results of the group normality test, both the control and experimental groups, the data are not normally distributed. Therefore, a non-parametric test, namely the Mann-Whitney test is used instead of the independent sample t-test.

Table 6. Result of Rank of Mann-Whitney Test

		Ranks			
		Group	N	Mean Rank	Sum of Ranks
Experimental - Control	Experimental		32	48.50	1552.00
	Control		32	16.50	528.00
	Total		64		

The results of the Mann-Whitney test showed that there is a very clear difference between the two groups in the mean rank. It can be seen in the table 4 that the experimental group has a mean rank of 48.50 with a total ranking of 1552.00. Meanwhile, the control group only has a mean rank of 16.50 with a total ranking of 528.00. This very large difference in rank values between the experimental group and the control group indicates that in general the post-test score of the experimental group is much higher than the control group.

Table 7. Result of Mann-Whitney Test

Test Statistics ^a		Experimental - Control
Mann-Whitney U		.000
Wilcoxon W		528.000
Z		-6.925
Asymp. Sig. (2-tailed)		<.001

a. Grouping Variable: Group

Furthermore, the Test Statistics table showed a Mann-Whitney U value of 0.000 with a Z value of -6.925. The Mann-Whitney test results showed an Asymp. Sig. (2-tailed) value of <.001, it means it is less than 0.05. This indicates that the difference in post-test scores between the experimental and control groups is statistically significant.

Based on these results, it can be concluded that there was a significant difference between the experimental and control groups, it means H_a is accepted and H_0 is rejected. The analysis hypothesis are as follows:

- H_a : There is a significant effect of using Educandy towards students' vocabulary mastery in fifth grade of elementary school students if the value $< \text{sig } \alpha = 0.05$.
- H_0 : There is no significant effect of using Educandy towards students' vocabulary mastery in fifth grade of elementary school students if the value $> \text{sig } \alpha = 0.05$.

The experimental group showed better results than the control group, thus indicating that the treatment given to the experimental group was effective for students'

vocabulary mastery compared to the control group. In conclusion, this study concludes that H0 is rejected and Ha is accepted. This means that the Educandy application is effective for students' vocabulary mastery.

After conducting the hypothesis test, an effect size test was also conducted to determine or measure how much an effect of the use of Educandy had on students' vocabulary. The interpretation of effect size according to Cohen, (1992) can be seen in the table below.

Table 8. The Interpretation of Effect Size r by Cohen

r Value	Effect Size
0.10	Small
0.30	Medium
0.50	Large

From the results of the Mann-Whitney test, it is known that $Z = -6.925$ with a total of $N = 64$. Then, this is calculated using the following formula:

$$r = \frac{|z|}{\sqrt{n}}$$
$$r = \frac{|- 6.925|}{\sqrt{64}}$$
$$r = \frac{6.925}{8} = 0.865$$

Based on the effect size results above, it can be seen that the result is 0.865. As outlined by Cohen (1992), $0.865 > 0.50$, which means that Educandy has a large effect on students' vocabulary mastery.

Discussion

The findings of this study indicate that the use of Educandy was associated with a significant improvement in students' vocabulary mastery in the experimental group. The mean post-test score of the experimental group increased to 89.38, while the control group only reached 60.94. In addition, the Mann-Whitney test result showed an Asymp. Sig. (2-tailed) value of 0.001, which is below 0.05, and the effect size value of $r = 0.865$ indicates a large effect. However, these results should be interpreted as evidence that Educandy may have supported vocabulary learning in this context, rather than as proof that Educandy alone caused the improvement.

The positive result may have occurred because Educandy provided students with repeated exposure to the target vocabulary through interactive game activities such as word search, matching, and noughts and crosses. These activities likely helped students focus on the relationship between meaning, spelling, and word use while making the learning process more engaging. Unlike textbook-based instruction, which tends to be

passive, Educandy required students to respond actively and repeatedly, so it may have strengthened their vocabulary recall and recognition. This is consistent with the idea that vocabulary learning becomes more effective when students are involved in meaningful and enjoyable practice rather than memorizing words in isolation.

Another reason for the improvement may be the relevance of the learning content to the students' daily experience. The vocabulary used in this study focused on food, drinks, and taste, which are familiar topics for fifth-grade students. Because the materials were close to their real-life context, students may have found it easier to connect new words with prior knowledge. In this situation, Educandy did not work merely as a game, but as a media that helped students interact with familiar vocabulary in a more structured and memorable way. This suggests that the effectiveness of Educandy may depend not only on the digital platform itself, but also on the suitability of the content and the classroom context.

The learning design used in this study also likely contributed to the result. Students were not only playing individually, but also working in pairs and small groups, with the teacher providing guidance throughout the treatment. This means that the improvement may have been influenced by a combination of factors, including teacher support, peer interaction, repeated practice, and the game format. Therefore, the result should not be attributed to Educandy alone. Rather, Educandy appears to have functioned as a supportive tool that made vocabulary practice more active and visible within the classroom setting.

The findings of this study are in line with previous studies that reported positive outcomes from the use of Educandy in vocabulary learning. For example, Damayanti et al., (2023) found that Educandy improved elementary students' vocabulary mastery, while Fitriati et al., (2021) also reported that Educandy increased students' motivation in learning. Similar results were also found in other educational levels, which suggests that Educandy has potential as a flexible game-based learning media. However, the present study adds a more specific contribution because it examines fifth-grade students in one of elementary schools in Karangasem, a context that has not been widely discussed in earlier studies.

At the same time, the conclusion of this study should remain limited because several practical constraints may have affected the implementation. During the learning process, the internet connection was not always stable because the classroom was located far from the Wi-Fi source. In addition, not all students had their own devices during the pre-test and post-test, so some students had to take turns using phones, which may have reduced efficiency and concentration. The study also focused on only one topic, namely food, drinks, and taste, so the result may not automatically apply to other vocabulary areas. These limitations suggest that the effectiveness of Educandy should be understood as context-dependent rather than universal.

Overall, the findings suggest that Educandy may be an effective media for supporting vocabulary mastery among fifth-grade students at one of elementary schools in Karangasem under the conditions of this study. Its potential lies in its ability to provide repeated practice, immediate engagement, and more meaningful interaction with vocabulary. However, the result should be interpreted cautiously because it was influenced by the lesson topic, the classroom setting, teacher guidance, and technical limitations. Future studies should examine Educandy in other vocabulary topics, grade

levels, and school contexts to determine whether similar results can be achieved more broadly.

CONCLUSION

Based on the results of this study, it can be concluded that Educandy appeared effective towards vocabulary mastery of fifth-grade students at one of the elementary schools in Karangasem within the context of this study. The statistical result from the Mann-Whitney test showed a significant difference between the experimental and control groups, indicating that Educandy had a positive effect on students' vocabulary learning for the food, drinks, and taste topic taught during the treatment period. The varied game types in Educandy also supported the learning process by providing an interactive way for students to practice the target vocabulary.

This conclusion, however, should be limited to the specific group, setting, duration, and vocabulary content involved in this study. The findings cannot automatically be generalized to other schools, grade levels, regions, or different vocabulary topics. Therefore, Educandy may be considered an effective learning media for this particular context, but further research is still needed to determine its effectiveness in broader settings.

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