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The Effectiveness of Infographics to Enhance Students' Vocabulary Mastery at Eight Grade Students of SMPN 1 Kota Tangerang Selatan

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Abstract

Penelitian ini bertujuan untuk mengetahui apakah penggunaan infografis di kelas delapan SMPN 1 Kota Tangerang Selatan berpengaruh signifikan terhadap penguasaan kosakata siswa. Penelitian ini menggunakan pendekatan kuantitatif dan quasi experimental desain. Sebanyak 78 siswa berpartisipasi dalam penelitian ini; 39 dari masing-masing dua kelas (eksperimen dan kontrol) dimasukkan dalam sampel. Setiap kelas mendapatkan pre-dan post-test selama pertemuan pertama dan terakhir. Uji t sampel independen dilakukan melalui SPSS versi 22 untuk mengevaluasi hipotesis. Hasil penelitian menunjukkan bahwa penggunaan infografis meningkatkan penguasaan kosakata siswa kelas delapan SMPN 1 Kota Tangerang Selatan. Ukuran efek penguasaan tersebut adalah 0,80, dengan tingkat signifikansi 0,001 dalam uji-T Independen dua arah (0,001 < 0,05). Hal itu mendukung efek moderat (sedang) dan menunjukkan diterimanya hipotesis alternatif. Dengan demikian, menggunakan infografis sebagai alat pengajaran memberikan pengaruh yang signifikan terhadap penguasaan kosakata siswa.

Keywords: *Efektivitas, Infografis, Penguasaan Kosakata*

Abstract

This research aimed to determine if using infographics in the eighth grade at SMPN 1 Kota Tangerang Selatan had a significant effect on students' vocabulary mastery. This study employed a quantitative approach and a quasi-experimental design. A total of 78 students participated in the study; 39 from each of the two classes (the experimental and control) were included in the sample. Each class took a pre-and post-test during the first and last meetings. Independent sample t-tests were run in SPSS version 22 to evaluate the hypothesis. The results showed that using infographics enhanced the vocabulary mastery of eighth-graders at SMPN 1 Kota Tangerang Selatan. The effect size was 0.80, with a significance level of 0.001 for the two-tailed Independent T-test (0.001 < 0.05). That supports the moderate size effect and indicates the acceptance of the alternative hypothesis. Thus, using an infographic as a teaching tool provides a significant effect on students' vocabulary mastery.

Keywords: *Effectiveness, Infographics, Vocabulary Mastery*

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INTRODUCTION

In an EFL (English as Foreign Language) context, EFL students learn and should master one of the English components: vocabulary. Word collection recognized by people is called their vocabulary (Linse, 2005, p. 121). It can be defined as a collection of words that people understand and use. Thus, vocabulary is essential since every language comprises words, and English is no exception.

Learning innovation is a result of a teacher's ingenuity as a learning Furthermore, when communicating, people must adjust their vocabulary based on the context and with whom they share – and people who are well-versed in a variety of concepts or who have a large vocabulary are able to speak swiftly and fluently with others (Hekmatiar & Umam,

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2020). Thus, improving vocabulary proficiency is necessary for community interaction. Put another way, someone with an extensive vocabulary can readily communicate their thoughts to others by choosing an exact word. In addition, vocabulary is among the essential aspects that need to be discussed in foreign language learning since communicating with different words will only be possible with various vocabulary (Rohmatillah, 2014). This statement implies that teaching vocabulary in a foreign language is fundamental, and mastering vocabulary is essential for language learners, particularly for EFL learners.

Since English is not a native language for EFL students, and it can be used as spoken and witten language (Ungu & Qathrunnada, 2024), they often experience obstacles in mastering vocabulary. As a result, students often face various vocabulary acquisition issues. According to Teng (2016), the first issue is an inability to produce in-depth word recognition because only some children have sentence comprehension for every word. Comprehensive vocabulary is the quality of understanding terms that thoroughly allows students to understand word meanings (Teng, 2016). In sum, EFL learners encounter difficulties in both word recognition and comprehensive vocabulary, affecting their ability to master vocabulary.

On the other hand, media is widely used to assist teachers in learning and teaching – it has become widely used to teach English as a foreign language. Teachers or educators must create more innovative media to carry out active teaching and learning processes (Syafrizal et al., 2021). There are various forms of media for educational purposes: visual, audio, and audio-visual (Puspitarini & Hanif, 2019). To conclude, teaching media is used to support teachers in achieving the objectives of learning processes, and teachers expect students' interest in learning processes to increase when using media.

Along with the times, the number of media used to teach and learn English also overgrows as the utilization of technology; this is supported by Miranty et al. (2023), who states that a number of empirical studies have shown the efficacy of using technology in second language (L2) classrooms as a result of advances in educational technology and increased reliance on technology. For instance, teachers can utilize technological resources, such as an application or platform, to create teaching media (Castillo & Quinonez, 2022). Students often report a greater grasp of the lecture material when technology is employed; thus, educators would do well to take advantage of this (Miranty et al., 2023). Therefore, teachers must utilize technology properly to adapt learning to the times, students' needs, and aspects that need improvement.

In the educational system, visual aids such as infographics have become increasingly popular because they aim to persuade. Infographics have an appealing graphic design. "Infographic" refers to a medium to deliver messages that contain data and information concisely but vividly in the form of images (Smiciklas, 2012, cited in Alqudah et al., 2019). This infographic is an illustrated medium with informative writing, and it can be designed using technology. Thus, it is expected to help teachers provide the materials to the students in graphic visual form.

In this case, through observation with one of the English teachers of 8th grade on 12 January 2023, the researcher found several factors influencing 8th-grade students at SMPN 1 Kota Tangerang Selatan to learn new vocabulary. Generally, they learn vocabulary only by memorizing words. Besides, while reading a text in English, students

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somehow feel confused and do not comprehend the meaning of certain words because many have a limited vocabulary. Moreover, the teacher only uses several media such as PowerPoint, YouTube videos, printed books, and paper, which can lead to monotonous. That way can also affect students' mastery of vocabulary.

Considering the importance of learning vocabulary and the obstacles students encounter in mastering vocabulary, the researcher admits that teachers can design infographics through the utilization of technology; then, they can use them as the teaching medium. The research of Eremkina et al. (2022); Aldalalah (2020); Alqudah et al. (2019); and Maamuujav et al. (2020) proved that infographics positively affect the instructional subsystem of a language (vocabulary). Due to this fact and the phenomenon described previously, the researcher intends to find the effect of using infographics as a teaching medium on students' vocabulary mastery. This study focuses on enhancing students' vocabulary mastery (receptive vocabulary). Therefore the research question: "Is there any effect of infographics to enhance students' vocabulary mastery of 8th-grade students at SMPN 1 Kota Tangerang Selatan?"

THEORITICAL REVIEW

In this study, there are several definitions about vocabulary to support the study. Vocabulary is a set of words (Syafrizal et al., 2021). Still related to that statement, a language's entire set of words is vocabulary (Nunan, 2003, p. 121). Meanwhile, more deeply explained vocabulary (knowing a word) implies understanding its meaning, usage, formation, and grammar (Ardiyanti et al., 2021). From those statements, it concluded that vocabulary is a language's word collection that somebody must understand. Besides, learning vocabulary is important, since an excellent understanding of vocabulary is crucial for effectively conveying ideas, as words are the core components of language (Okyar & Çakır, 2019). Mastery of vocabulary means being able to read, write, and speak fluently and effectively with many words. One aspect of this is being able to understand the implications and denotations of words as well as their form and use (Sartika, 2017). To master vocabulary, one must also be fluent in deducing the meaning of unknown words from their context and using linguistic tools like word roots, prefixes, and suffixes (Sartika, 2017). The elementary curriculum requires mastery of 3,500 words for elementary school, 9,000 for junior high school, and 12,000 for high school (Lailan et al., 2018). Moreover, there are two ways to recognize the meaning of word usage (Kamal & Faraj, 2015). In addition, reffer to the 2013 curriculum, learning English at the junior high school level's core competence is processing and presenting material in a concrete and abstract manner that includes writing, reading, and composing (Apoko et al., 2024). These competencies require proficient vocabulary mastery. Receptive vocabulary defined as a word group to which a person can attribute meanings when listening to or reading is receptive or recognition vocabulary. It is a passive process of acquiring vocabulary. Whereas, productive vocabulary can be said as set of words used when conversing in either written or spoken form (speaking or writing). As a result, productive vocabulary is a dynamic procedure since people are able to generate words to communicate with others.

On the other hand, there are several definition of teaching media. Munadi (2013) stated that the function of teaching media is as an interpretive tool for content given

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by instructors via electronic or printed media (p. 3). Visual media are elements used in teaching and learning through the sense of sight (Wirawan, 2020). Visual media is essential in teaching and learning activities nowadays. Visual representation helps portray ideas or information in a prescribed context (Alyahya, 2019).

An infographic (brief for information in graphic form) is a visual representation that combines facts and graphic design to assist individuals or those in need in effectively conveying information to their target audience. More formally, infographics can also be a visual representation of details or thoughts that aim to communicate intricate information to a target readership so that it may be readily absorbable and understood (Smiciklas, 2012, cited in Alqudah et al., 2019). An information graphic or an infographic represents information, data, and knowledge aimed to present complex information quickly and clearly (Saptodewo, 2014). Therefore, it can be inferred that infographics are visual media presented in a graphical format that contains specific information intended to aid comprehension or communicate information.

RESEARCH METHOD

The principles underpinning quantitative research include impartiality, objectivity, and accumulating a wide range of understanding (for example, A statistical summary based on a sizable sample) (Leavy, 2017, p. 9). Leavy (2017) adds: "This technique is typically acceptable once the primary objective is to describe or assess (p. 9)." That way, the researcher employed quantitative approach and quasi-experimental design to evaluate the effectiveness of infographics on students' vocabulary mastery, since quasi-experimental is a kind of research design that is fundamentally concerned with the cause and effect of research. The researcher typically identifies the variables of interest and attempts to determine if changes in an independent variable (cause) result in changes in the dependent variable (effect).

Table 1 Research Design

Class	Treatment		
Experimental Group	T1	X	T2
Control Group	T1	Y	T2

Notes:
T1: Pre–Test
T2: Post-Test
X: Treatment using an Infographic
Y: Treatment without using an Infographic

In addition, the researcher took two classes for the 8th-grade students in the first semester of the academic year 2023/2024. A population is a group of people with the same feature that sets them apart from another group (Creswell, 2012, p.381). Thus, the total population of this research was the eight grades of SMPN 1 Kota Tangerang Selatan, and there are 494 students from nine classes. Besides, a representative of the entire population and it is a subset of the population can be said to be a sample (Leavy, 2017, p. 76). The total samples in this research were 39 students from the 8.4 class (Experimental) and 39 students from the 8.5 (Control); the researcher employed cluster random sampling in this study.

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This study employed a vocabulary test in multiple-choice form which included as an objective test (Fitria, 2024). The test consisting of 40 questions about vocabulary for tryouts. After the tryout, 31 valid items could be used, and the researcher also created 19 additional questions. Thus, there were 50 questions, which were then divided into pretest and post-test. The correct answer's score received 1 point, and 0 points for the incorrect answer.

The researcher used different treatments for the experimental and control groups. As for the experimental class, infographics as a teaching medium were implemented, while the researcher did not use any teaching medium in the control class. The researcher used Pearson Product Moment (r) and the Cronbach's Alpha test with the assistance of the SPSS program version 22 to measured the validity and reliability of the test. The normality test was used Kolmogorov-Smirnov; Levene Test for homogeneity tets; Independent Sample T-Test for hypothesis testing; and used Cohen Formulation to calculated the effect size. Moreover, there were two hypotheses in this research:

- The alternative hypothesis (Ha) → there is significance effect
- The null hypothesis (H0) → there is no significance effect.

RESULTS AND DISCUSSION

Research Findings

The study took place at SMPN 1 Kota Tangerang Selatan from 22 September 2023 to 10 October 2023. This study included fifth meetings (the timeline of the research can be seen on the table below):

Table 2 Timeline of the Research

No	Classes	Stage	Date
1	Experimental Class (84)	a. Pre-test b. First treatment using infographics c. Second treatment using infographics d. Third treatment using infographics e. Post-test	a. 26 September b. 27 September c. 3 October d. 4 October e. 9 October
2	Control Class (85)	a. Pre-test b. Conventional learning (1st meeting) c. Conventional learning (2nd meeting) d. Conventional learning (3rd meeting) e. Post-test	a. 25 September b. 27 September c. 4 October d. 5 October e. 10 October
3	Tryout Class (89)	Tryout	22 September

Thirty-nine students in that class participated in the tryout. The validity of the data was measured by using Pearson Product Moment with the help of SPSS version 22. Furthermore, the researcher used 31 valid items to be made as the questions of pretest and post-test; and the researcher also formulated 19 additional questions, the type and the level of which are equivalent to valid items, and it was also adjusted with the material from the book. The researcher had a total of 50 questions, which then divided into pre-

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and post-test. And the reliability of the test was 0.854 (used Cronbach Alpha with the assistance of SPSS version 22); it can be inferred that r calculated<r table= 0.854<0.316.

There were pre-test and post-test for both classes. The researcher gave the treatment by using infographics to the experimental class. The researcher found the average scores pre-test and post-test both of classes; the average score of pre-test in control class was 59.74. There was improvement in the post-test with the average score was 71.38. The average score of pre-test in experimental class was 61.28 and in post-test were 77.44. It means that students' vocabulary mastery of the experimental class was better than the control class after getting the treatments.

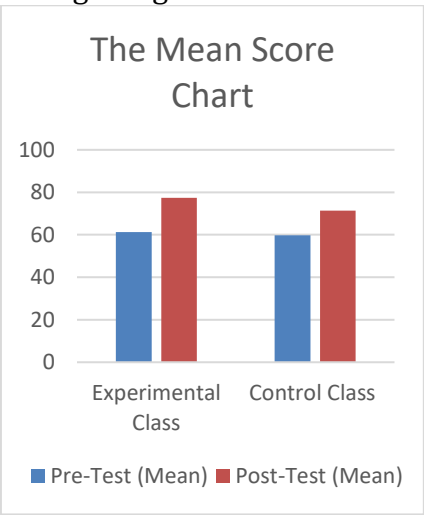

Figure 1 The Mean Score

Furthermore, a normality test is performed to determine if data follows a normal distribution (used Kolmogorov Smirnov with the assistance of SPSS version 22). If the value of sig. > 0.05= accepted. if the value of sig. < 0.05= rejected.

Table 1 The Results of Normality Test

Class	Test	Kolmogorov Smirnov	
		Sig.	Description
Experimental	Pre-test	.174	Normal
	Post-test	.200	
Control	Pre-test	.200	Normal
	Post-test	.148	

All test results were more significant than 0.05. Pretest results in the Experimental Class showed a normal distribution with a significance level of 0.174. Normality was shown by a significance level of 0.200 on the post-test administered in the Experimental Class. Pretest scores in the Control Class were normally distributed with a significance level of 0.200. And the post-test results in the Control Class had a normal distribution of scores, with a significance level of 0.148.

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After that, there were two criterias in the homogeneity test: If the sig. (P-value) is > 0.05. Then, the variation of the data is homogeneous; If the sig. (P-value) < 0.05. Then, the interpretation of the data is not homogeneous.

Table 4 The Result of Homogeneity Test

Test	Sig.
Pre-test	.366
Post-test	.837

The homogeneity referred to in the table above was calculated by using SPSS version 22, and it showed that the pretest significance level in both the control and experimental classes was 0.366 (significantly higher than 0.05). In addition, the sig. Of homogeneity post-test in the control and experimental class was 0.837 (substantially more significant than 0.05). As a result, it can be implied that the data from the pretest and post-test were homogeneous, as all of the data were significantly greater than 0.05.

Moreover, the researcher used T-test in this study to measure and determine the effectiveness of infographics (variable X) on students' vocabulary mastery (variable Y). T-tests are used to determine if there was a significant effect on the students' results (Arikunto, 2010, p. 280), in this case determining the students' results who are taught by implementing infographics. Hence, there were two hypotheses in this research:

- Ha: The use of infographics as a teaching medium significantly impacts the vocabulary mastery of eighth-grade pupils at SMPN 1 Kota Tangerang Selatan.
- H0: The use of infographics as a teaching medium to enhance vocabulary mastery among eighth-grade pupils at SMPN 1 Kota Tangerang Selatan has no significant effect.

The criteria of the hypothesis testing:

- If the p-value or sig (2-tailed) is less than sig= 0.05 (5%) means that H0 (the null hypothesis) is rejected, and Ha (the alternative hypothesis) is accepted.
- If the p-value or sig (2-tailed) is more than sig = 0.05 (5%) means that H0 (the null hypothesis) is accepted, and Ha (the alternative hypothesis) is rejected.

Table 5 The Results of Independent T-Test

Test	Sig. (2-tailed)
Vocabulary Test Score on Post-test	0.001

After the researcher determined the hypothesis testing of the students' results by using an independent T-test with SPSS version 22, the results showed that Sig. 2-tailed 0.001 < 0.05. Thus, the alternative hypothesis is accepted, and the null hypothesis is rejected. That means there is a significant effect of using infographics as a teaching medium to enhance vocabulary mastery of 8th-grade students at SMPN 1 Kota Tangerang Selatan.

In addition, the researcher also calculated the effect size as follows:

$n_1 = 39$
$n_2 = 39$

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Sd_1= 7.650
Sd_2= 7.597

$$Pooled\ Standard\ Deviation = \frac{\sqrt{(n_1-1)Sd_1^2 + (n_2-1)Sd_2^2}}{n_1+n_2}$$
$$= \frac{\sqrt{(39-1)7.650^2+(39-1)7.597^2}}{39+39}$$
$$= \frac{\sqrt{(38)58.52+(38)57.71}}{78}$$
$$= \frac{\sqrt{2223.76+2192.58}}{78}$$
$$= \frac{\sqrt{4416.74}}{78}$$
$$= \sqrt{56.62}$$
$$= 7.52$$

$$\mathrm{d} = \frac{X_1 - X_2}{Pooled\ Standard\ Deviation}$$

X_1= Means of group 1= 77.44
X_2= Means of group 2= 71.38
$Pooled\ Standard\ Deviation = 7.52$

$$\mathrm{d} = \frac{77.44 - 71.38}{7.52}$$
$$= \frac{6.06}{7.52}$$
$$= 0.80$$

The result shows that the use of infographics as a teaching medium has a moderate effect since the result was 0.80 (referred to the classification level of the effect size by Cohen, 2018).

Discussions

This study demonstrated the efficacy of infographics in enhancing students' vocabulary mastery. The analysis of data conducted by the researcher reveals significant differences in post-test scores between the experimental and control groups; specifically, the experimental class's post-test scores were higher than those of the control class. The research findings of Aldalalah (2020) support the current study, as they demonstrate that students exposed to infographics exhibited improved performance in their post-test scores. The level of effectiveness observed in this study can be classified as moderate. Thus, the researcher concluded that this recent study is also effective as infographics moderately enhanced students' vocabulary mastery.

In addition, the results of this study showed that infographics enhanced students' vocabulary mastery. The researcher found that there was a distinct contrast between the scores of the pretest and post-test in the experimental class and control class; the mean score of the pretest and post-test in the experimental class was 61.28 and 77.44, in the control class was 59.74, and 71.38 – it showed that students in the experimental class who learned using infographics could obtain a higher score in the post-test than those in the control class who learned vocabulary without infographics. These results can be supported by Fitriani et al. (2021), which, based on the results of the research, reveals that students used infographics with a mark (70.15) higher than the control class (68.82). Therefore, the students who were taught using infographics were better than the students who were taught using conventional methods.

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Furthermore, related to this research findings, there was an enhancement in students' vocabulary mastery since infographics are visual media that are easy to use and contain complete information. This statement was supported by Alqudah et al. (2019), who revealed the application of infographics in learning activities was practical since infographics are media that summarize information. Thus, students will understand better learning through infographic media, and using infographics as a teaching medium makes it easier for students to learn. So, it can be concluded that infographics are effective for vocabulary learning because they contain complete information.

Moreover, the findings of this study indicate that using infographics in classroom settings was effective since infographics are easy to use, specifically in the context of vocabulary acquisition. The utilization of straightforward infographic packaging encourages a sense of enhanced efficacy among students while engaging with educational content presented through infographic media; this is supported by Alyahya's (2019) research findings. This is also in line with Dewantari et al. (2021), which examined the use of infographics for English learning at the secondary level (junior high school), and the results of this study considered infographics to be a perfect teaching medium for English learning, particularly in independent learning. To conclude, using infographics as media to learn vocabulary is effective since infographics are attractive and can increase students' interest in English learning, and they are also encourage to do independent learning by using this kind of media.

Additionally, to enhance the efficacy of vocabulary learning activities, educators must employ technology to develop new media appropriately. That is because students frequently express a better comprehension of the instructional content when technology is utilized (Miranty et al., 2023). Teachers should also create and choose suitable media for students since it is needed to support a learning atmosphere in the classroom (Juniardi et al., 2020). Infographics are one example of teachers using technology to generate visual media to improve the teaching and learning process, particularly those focused on vocabulary.

Besides, this study's findings suggest that using infographics as a media in the learning process has a beneficial impact, as students are more involved in vocabulary acquisition. This statement was strengthened by Yıldırım et al. (2016), who stated infographics could facilitate learning activities and can be used to teach about a subject or present new information; if compared to text materials, infographics are more instructive. As a form of instructional media, infographics offer a number of benefits as well (Lankow, 2012, p. 39; Evenddy et al., 2023). Hence, infographics can be said to be an effective medium for educational purposes, including to be used to teach or learn vocabulary.

Regarding several explanations above, many researchers have shown that utilizing infographics as a teaching medium has a positive effect on the process of English teaching and learning. This research also showed that infographics positively impact students, particularly vocabulary mastery. However, this research specifically used static-informational kinds of infographics.

CONCLUSION

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Regarding the student's scores in vocabulary tests (post-test), which were then analyzed and previously discussed, the experimental class's score of 77.44 was higher than the control class's 71.38; it demonstrates a significant difference. In addition, the alternative hypothesis was considered acceptable based on the results of the hypothesis. The two-tailed significance level (sig.) was significantly less than 0.05, precisely 0.001. Also, the effect size of the infographics was determined to be 0.80, indicating a moderate level of impact (according to Cohen's scale of effect size, which ranges from 0.51 to 1.00). Thus, it can be inferred that infographics have a significant effect on students' vocabulary mastery at the SMPN 1 Kota Tangerang Selatan eighth-grade students.

On the other hand, for other researchers that will use infographics in further research; it is hoped that the study that will be conducted to discover whether infographics are effective for teaching English vocabulary can be conducted in different fields or using other methods. And the researcher also hoped that other researchers could develop or design more innovative infographics for research purposes.

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