



# Infographics in Higher Education: Instructional Media for Students' Writing Proficiency

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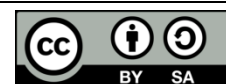
## ABSTRAK

Sebagian besar siswa adalah menulis itu merupakan hal yang menantang dan membuat frustrasi. Kosakata yang terbatas dan pengumpulan ide yang rendah tampaknya menjadi masalah yang paling sulit dalam proses menulis. Penelitian ini merupakan penelitian quasi-experimental dengan post-test only control group design. Penelitian ini bertujuan menganalisis bagaimana infografis memengaruhi keterampilan menulis siswa ketika menggunakannya sebagai media pembelajaran. Sampel terdiri dari dua kelas yang berjumlah 64 siswa, yang diambil dengan menggunakan cluster random sampling. Tes menulis digunakan sebagai instrumen dalam penelitian ini. Dalam menganalisis data digunakan Uji-t independent. Temuan menunjukkan bahwa siswa kelompok eksperimen memiliki kemampuan menulis lebih baik. Nilai rerata kelompok eksperimen lebih tinggi daripada kelompok kontrol (85,97 > 83,48) dan hasil uji-t (3,126 > 3,125). dibandingkan dengan pembelajaran konvensional, terlihat bahwa penggunaan infografis sebagai media pembelajaran memiliki dampak yang besar terhadap kemampuan menulis siswa. Hasil dari tabel Cohen d juga menunjukkan bahwa adanya pengaruh yang tinggi dengan nilai 0,78. sebagai hasilnya, infografis sebagai media pembelajaran memiliki pengaruh yang besar terhadap kemampuan menulis siswa.

## ABSTRACT

The majority of ESL/EFL students is that writing is challenging and frustrating. Limited vocabulary and low idea gathering appears to be most difficult issues in writing process. This research was quasi-experimental, with a control group that was only used for the post-test. This research aims to analyses the effectiveness of infographics as instructional media on students' writing proficiency. Two classes totalling 64 students made up the sample, which was drawn using random cluster sampling. A writing test served as the research instrument. An independent t-test was used to assess the data. The findings indicated that the experimental group's students were more proficient writers. The experimental group did better than the control group in terms of means (85.97 > 83.48) and the t-test results (3.126 > 3.125). In comparison to the conventional instruction, it was shown that using infographics as instructional media had a substantial impact on students writing proficiency. The effect size computation yielded a result of 0.78, which was examined in the Cohen's d table. In conclusion, infographics had a significant effect on students' writing proficiency as an instructional media.

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## 1. INTRODUCTION

Many students need to learn English as it widely used as an international language. Writing is one of the English language skills students need to develop because it is crucial for written academic communication. When studying English, students may experience a variety of issues and challenges. They make various learning mistakes in vocabulary, grammar, spelling, and pronunciation (Kassem, 2018; Klimova, 2012; Susanto et al., 2020). A large number of students study as a second or foreign language. Meanwhile, few students succeed in learning English as an ESL or EFL. Writing is one challenge for EFL students to overcome (Bai et al., 2020; Cole & Feng, 2015). Due to its widespread use in higher education and the industry, writing is now considered one of the four fundamental English abilities (Cahyono & Rahayu, 2020; Klimova, 2012). Students with good writing skills are naturally successful in conveying their ideas and achieving their objectives (Al-Ahdal & Abduh, 2021; Cookson & Stirk, 2019). Writing is a crucial tool to enhance other abilities and a fantastic means for students to improve their vocabulary and grammar usage (Huy, 2015; Yulianti et al., 2019). However, students who attempt to write a sentence, a paragraph, or a text frequently encounter difficulties. Vocabulary, grammar, spelling, punctuation, and organization are the most frequent issues that lead to children losing interest in writing (Alisha et al., 2019; Pratiwi, 2016; Wulandari, 2022). Additionally, students make numerous basic faults in their written work when it comes to vocabulary, pronunciation, grammar, punctuation, organization, and

certain flaws such as orthographic, syntactic, and lexical problems as well as when they are expressing their ideas (Barrass, 2005; Cole & Feng, 2015; Ho, 2015; Huy, 2015). Writing stress and irritation may cause an excessive focus on spelling and grammar mistakes rather than the subject (Huerta et al., 2018; Jawas, 2019). All of those factors significantly impact students' motivation to write. They were combined with a lack of writing-related teacher experience and limited study time in the classroom. Lack of time in the classroom when teaching writing skills is not sufficient to increase student's proficiency.

The current issue for most ESL/EFL students is that writing is difficult and frustrating in EFL (Cahyono et al., 2016; Tovar & Council, 2016). Due to their restricted vocabulary or low language skills, language appears to be the most difficult issue for ESL/EFL students in writing exercises. Due to their lack of adequate syntactic and lexical abilities, EFL students cannot construct and produce useful written work (Ahmad, 2020; Pratiwi, 2016). A variety of circumstances brings on numerous mistakes that students frequently make. One illustration of a student's failure is mother tongue interference. Translating from the source language into the target language generates errors in the learners' native language (Langan, 2011; Palupi & Septiana, 2018; Wulandari, 2022). Students' use of tenses, prepositions, and subject-verb agreement all result in writing errors (Alisha et al., 2019; Riddell, 2015). These characteristics are increasingly frequently observed among EFL students. The solution offered is creating a relevant learning environment is essential in 21<sup>st</sup>-century education through infographics as the instructional media during the learning process. Learning in a relevant environment will grab students' attention since they are "plugged in" to technology (Borch, 2019; Williams et al., 2009). Since individuals relate a new notion to an already-existing, well-known concept, meaningful learning indicates longer retention than memorization (Irving, 2006; Torres-Gastelú & Kiss, 2016; Vallori, 2014). Implementing instructional media will be one aster to the issue because the students easily lose their focus during the learning process. Attracting students' attention and conveying information to them is just one of the numerous functions of instructional media (Fatimah & Santiana, 2017; Smaldino & Lowther, 2017). Additionally, instructional media can take the position of the teacher and improve learning while also bringing the classroom environment to life. An infographic is one teaching tool that can be applied to writing instruction in the EFL context (Agustini et al., 2020; Okwara et al., 2017).

Students can study with infographics as one form of instructional media. Infographics are appealing and conveniently pack a variety of information. Text is used as the main source in infographics, while graphics are used to visualize it (Akhmad et al., 2018; Yildirim, 2016). Today's students must learn in a digital world, which necessitates using graphic data representations to grab their attention (Safdar et al., 2012; Vartiainen et al., 2016). With infographics as the visual depiction, students may have the chance to avoid typical writing errors. Instead of using numerous informative pages to communicate the message, the visual representation might do so in a single image (Firat & Laramee, 2018; Kolesnikov et al., 2019). Using infographics for instructional purposes can be demonstrated by outlining the flow of events, connecting disparate concepts, and visualizing abstract ideas (Yildirim, 2017; Yildirim, 2016). It can be difficult to express orally and clearly understand specific facts throughout the learning process. Infographics as visual instructional media help students explain abstract material (Apriyanti et al., 2020; Smaldino & Lowther, 2017). Visual communication is more effective than verbal communication because the human mind can perceive visual representation (Agustini et al., 2020; Damyantov & Tsankov, 2018). Infographics provide students with a successful conclusion in their writing process and be helpful for students.

Numerous studies were conducted to examine how infographics are used in educational learning. A previous research examined used infographics as an instructional tool (Yildirim, 2016). The finding from also supported by previous research which states infographics design techniques from several zones can be used to create effective infographics for teaching and learning purposes (Naparini & Binti Saad, 2017). Other researcher conducted a study on the application of infographics for literacy learning to assist students by utilizing infographics as cognitive aids to help the learning process (Gebre, 2018). The findings demonstrate that infographics successfully give learners the chance and flexibility to engage in literacy contextualization. Moreover there are previous study that investigated the used of infographic in L2 writing courses as a scaffolding technique for writing growth (Maamujav et al., 2019). The finding demonstrated that infographics enable pupils to engage in more complex thinking during the early stages of writing. By using infographics as instructional materials, this study was conducted to analyses the infographics theory among third semester students in the ELE department. This department has been chosen because this department has a writing course in the curriculum. This study was about implementing infographics as instructional media in the higher education level. Implementing infographics in English Language Education became the novelty of this study.

## 2. METHOD

This study was quantitative research. The research methodology used was a quasi-experimental with post-test only control group design. This research was taken place in the ELE department, part of the Ganesha University of Education. This research involved two groups, one group as the experimental group and the other one as the control group. The 3<sup>rd</sup> semester English Language Education students made up the study's population. The population consisted of 7 classes. The sample was selected through random cluster sampling since the population was already divided into clusters or groups. This sampling technique was used because the sample was separated into clusters or groups. Two classes were chosen as a sample, which consisted of 64 students. The A-Class consisted of 33 students with 18 females and 15 males. The C Class consisted of 31 students, with 20 females and 11 males. Then, the lottery was used to decide the control and the experimental group. The instruments used in this research were infographics as the treatment instrument for the experimental group and a lesson plan to support the learning process for both groups. The instrument for collecting data was a writing test in the form of a post-test given in the last meeting of each group. Using the SPSS v25 Program, the post-test result was evaluated both descriptively and inferentially. The independent t-test was conducted to answer whether or not both groups differed significantly after the treatment.

## 3. RESULT AND DISCUSSION

### Result

Once the test was carried out, both groups were given the same post-test to determine whether infographics as instructional media significantly affected students' writing competence. The result descriptive statistic analysis is show in [Table 1](#).

**Table 1.** The Result of Descriptive Statistic Analysis

Group	Mean	Std. Deviation	Median	Mode	Max. Score	Min. Score	Variance
Experiment	85.97	3.167	85	85	93	91	10.030
Control	83.48	3.192	83	83	90	79	10.191

Based on [Table 1](#) shows the result of the data analyzed descriptively. Based on the chart above, the experimental and control groups' mean was different. The experimental group's mean was higher than the control group's (85.97>83.48). The standard deviation between both groups also varied, where the control group had a higher standard deviation than the control group (3.192>3.167). Then the data was analyzed inferentially to answer the hypothesis and proved that an infographic was a significant effect as instructional media after the treatment. Next resulted from an inferential statistical analysis of the SPSS v25 Program, students' homogeneity test is show in [Table 2](#).

**Table 2.** Students' Homogeneity Test

Levene Statistic	df1	df2	Sig.
0.147	1	62	0.702

Based on [Table 2](#) shows that the data was homogeneous. The Levine Statistic (F) value of 0.147, which is higher than the alpha value, served as evidence (0.05). The data were evenly distributed, as seen in [Table 3](#).

**Table 3.** Students' Normality Test

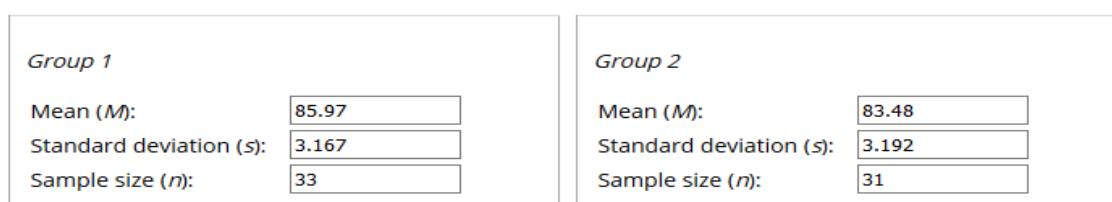
Group	Kolmogorov – Smirnov		
	Statistic	df	Sig.
Experiment	0.133	31	0.172
Control	0.173	31	0.109

Based on [Table 3](#) show the significant values of both groups served as evidence, with the experimental group's significant value being 0.179 and the control group's significant value being 0.109. Both significant values were higher than the alpha value (0.05), which indicated the data was normally distributed. The independent t-test was conducted to answer the hypothesis of this research. [Table 4](#) showed the independent t-test.

Based on Table 4 show that the t observed (tobs) was 3.126, while the t critical (tev) was 3.125. It showed a substantial difference between the experimental group, which used infographics as a teaching aid, and the control group, which conducted traditional learning without the use of any media. The  $t_{obs}$ , which was higher than  $t_{ev}$  and had a  $3.126 > 3.125$  ratio, proved it. Conclusively, the outcome indicated that the alternative hypothesis ( $H_a$ ) should be accepted. The treatment's impact size was measured in the following process. The display of the effect size test's results is show in Figure 1.

**Table 4. The Result of T-test**

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	0.147	0.702	3.126	62	0.003	2.486	0.795	0.896	4.075
	Equal variances not assumed			3.125	61.685	0.003	2.486	0.795	0.896	4.076



$$\text{Cohen's } d = (83.48 - 85.97) / 3.179525 = 0.783136$$

**Figure 1. Effect Size Result**

Based on Figure 1, the outcome of the effect size test revealed that Cohen's d was calculated to be 0.783136. It revealed a significant difference in the two groups' responses to the treatment. Additionally, using infographics as a teaching tool greatly impacted how well students could write. Moreover, infographics were used with the students at every stage of the writing process to influence how they write and form ideas from the written product. The test group demonstrated the value of infographics as educational tools for improving students' writing skills. Learning writing could be more interesting by using infographics as instructional media. Using infographics as instructional media provides a tool for students to learn with and facilitate the students during the learning process to achieve students' goals. Infographics created a visual narrative for the readers, which helped them to concretize an abstract notion. The result supported the findings from the post-test result of the experimental and control groups, which sought to determine that infographics as educational tool have a significant effect on pupil's writing proficiency in the 3<sup>rd</sup> semester. The finding also addressed the statements of the research problem.

In this study, the implementation of the infographic as instructional media for the students was on the narrative essay writing subject. It was chosen because the narrative essay required the students to think deeply and gather more ideas based on their imagination. In this study, lesson plans were used to teach both samples. Nearly identical lesson plans were used in both courses. Only the media employed to deliver the treatment was different. The experimental group learned with infographics as instructional media, but the control group learned conventionally without using any media. The teaching process of both groups was the same, using the communicative approach, one-on-one discussion, and peer feedback. Before the commencement of the learning process, the lecturer welcomed the students, verified their attendance, and assessed their readiness. Afterward, the lecturer told the students about the activities to take. In the main activity, the lecturer briefly explained the narrative essay. In the explanation session, the lecturer gave instructional material, such as an infographic containing information about the narrative essay. Then, the lecturer gave a narrative essay and an infographic that contained an essential part of an essay, such as the hook, thesis statement, the topic sentence of each paragraph, and conclusion. The narrative essay and infographics the lecturer gave functioned as guidance for the students. It purposed to tell them the difference between those critical parts of the essay and how to create a hook, thesis statement, topic sentence, etc. After the students understood the basic knowledge of the narrative

essay, the lecturer gave an infographic, which was the draft of an unfinished narrative essay. The students were asked to develop an infographic-based narrative essay. They could add or change any element of the draft given, as long as they can improve the story creatively. During developing a narrative essay based on the infographic provided, the students were free to consult their essay development with the lecturer to get any advice.

The following observation was in the control group. The pupils in the control group received no care or instruction utilizing infographics as teaching tools. The lecturer carried out the same teaching methodology as what was used in the experimental group. Yet, the lecturer did not use infographics or any other instructional media during the educational process in the control group. The lecturer only provided them with an explanation of the narrative essay and consultation about their written progress as well as the experimental group. It can be found during the initiation of both group treatments that the learning experience from both groups showed a difference. In the experimental group, where the infographic was implemented as instructional media, the students showed interest in learning with infographics. Some of them said that infographics helped them to understand what the narrative essay was and helped them to gather ideas while creating a narrative essay. In contrast to students in the control group, the infographic was not implemented. Some of the students said they suffered during the learning process. The students in the control group said they were confused about deciding what kind of story they should write, even though they could consult their idea to the lecturer.

In the last meeting, the post-test was conducted for both groups. In this meeting, students were given two topics that would be developed into a narrative essay. From the two themes given, students could learn which one they liked the most to be written as a narrative essay for their post-test. The SPSSv25 program was used to examine the data both descriptively and inferentially. The outcome revealed that the control group's mean was 83.48 while the experimental group's mean was 85.97. The experimental group did better than the control group, as seen by the difference in group standards. According to inferences drawn from the data, the significance 2-tailed test's value of Sig. (2-tailed) was 0.003, which suggested it was less significant than the test's alpha value of 0.05. based on the degree of freedom (df) 62, it was evident that the  $t_{obs}$  was 3.126 and the  $t_{ev}$  3.125. It revealed that the  $t_{obs}$  were greater than the  $t_{ev}$ , with 3.126 being greater than 3.125. Conclusively, the result suggested acceptance of the alternative hypothesis ( $H\alpha$ ). The finding confirmed that using infographics as instructional media for students' writing competence is significantly effective.

## Discussion

The research proved that infographics were sufficient to be implemented as instructional media in writing class to enhance students writing proficiency. Infographics and instructional media helped the students during the development of ideas and writing step. Employing infographics might considerably improve students' critical thinking and practical language skill which is consistent with the research's finding (Naparini & Binti Saad, 2017; Ozdamli & Ozdal, 2018). Based on the data analyzed descriptively showed that A class that used infographics had superior writing proficiency than the C class that used traditional methods of instruction. It can be seen from the result of the post-test between both classes in which A class score was higher than the C class. It meant that infographics as instructional media helped students achieve better than without using infographics during the learning process. Previous study support the idea that students would not feel bored during the learning process if they use infographics media, rather than will feel thrilled and more focused (Nasution et al., 2021). In addition, the data analyzed inferentially showed that infographics gave significant impact on students writing proficiency of students in the 3<sup>rd</sup> semester in English Language Education.

Moreover, the result of this research was supported empirically and theoretically. In empirical support, the other researchers investigated numerous previous researches about infographics. A study proposed by previous research investigated the students' achievement and attitude toward geography lessons by implementing infographics as a media (Akhmad et al., 2018). As an outcome, using infographics in geography lessons improves students' attitudes and academic achievement, leading them to visual and verbal learning. The other researcher investigating infographics as visualization in geography (Akhmad et al., 2018). The result showed that infographics as integration visualization in which geography as a subject is seen to be influential in introducing natural phenomena during the lesson. Other research had been researching infographics for educational purposes, also supports it (Lastari & Silvana, 2020). In this report, in addition to informative content, a form of infographic, layout, and infographic preferences, the views of those who used infographics for instructive tenacities were examined. Participants find the result of this research infographic informative and prefer to use them in basic learning processes.

The fact found in this research also supports those arguments above. This research found out that the students in A class of English Language Education who was treated by using infographic achieved better in creating a written work. The research findings exposed that the A-class, treated using infographics, had better-writing competence than the C-class, which was treated conventionally. It showed the advantage of implementing infographics as instructional media during the learning process, helping students achieve better and perform better. Infographics make students easier to understand and remember knowledge during the

learning process (Alrwele, 2017; Bystrova, 2020). Implementing infographics during students writing process also helps students become better writers, and infographics have a lot of promise in the classroom that helps students develop intellectually, socially and emotionally (Alrwele, 2017; Lastari & Silvana, 2020).

This study's results proved that infographics could be implemented in every learning subject. It also in line with a previous study that stated infographics is the alternative solution to be implemented in students learning process to guide and help them in learning. When students write a written text in English, either inside or outside of the classroom, infographics have a favorable effect in guiding the writing process (Shanks et al., 2017; Sukerti & Susana, 2019). It also showed a significant contribution by employing instructional media in form of infographics for the writing process of students to have better writing proficiency. The findings lead to the following suggestions. First, the teachers are suggested to utilize infographics as instructional media during the learning process since the result implementation of infographics as instructional media has been shown in this study to be beneficial. Second, it is advised that future researchers conduct a study on using infographics as instructional media on the other language skills in light of the constraints of the current study. There are still many limitation of this study, one of them is on subject of this study that only involving students in one department which makes this research narrow and cannot be thoroughly validated that students in other areas will obtain the same results.

#### 4. CONCLUSION

In conclusion, infographics as instructional media significantly affected students' writing proficiency. The instructional media of infographics greatly affected the writing process and idea development. It showed that the performance of the students who used infographics during the writing process had better performance than the others. Implementing infographics as instructional media could facilitate students' better knowledge, ideas, and understanding of the learning materials.

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