

Conference Paper

Infographics: Media for Improving Students' Writing Abilities

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Abstract

Writing is acknowledged as a skill that needs a high order thinking and a deep understanding of developing ideas. It also deals with the students' ability in organizing a proper paragraph, various vocabularies, and decent grammar application through written text. To create a worthy writing product, it requires the integration of numerous aspects involving diction, organization, grammar, cohesion, and sequence. Due to the complexity of writing, students may find obstacles in transforming and organizing their ideas into written text. Specifically, in this paper, Information Technology (IT) Department students of State Polytechnic of Malang faced problems in writing a text. Thus, the researchers applied infographics media to improve students' writing skills in composing instruction in the form of procedure text to solve the problems. The results of the research showed that infographics are beneficial and successful in improving students' writing skills, especially in using sequence adverbs and imperative verbs.

Keywords: infographics, writing skills, procedure text

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Received: 17 February 2020
Accepted: 20 February 2020
Published: 27 February 2020

Publishing services provided by
Knowledge E

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Selection and Peer-review under
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1. Introduction

Writing is acknowledged as a skill that needs a high order thinking and a deep understanding of developing ideas. Brown (2007) claims that writing is a thinking process that should be planned and requires plentiful of revisions before being published. Furthermore, it also deals with the students' ability in organizing a proper paragraph, various vocabularies, and decent grammar application through written text. To create a worthy writing product, it requires the integration of numerous aspects involving diction, organization, grammar, cohesion, and sequence. In addition, the ability to get ideas should be done accordingly in composing the written form.

Due to the complexity of writing, obstacles may arise for the students in transforming and organizing their ideas into written text. Among the five aspects of writing above, grammar is one of the problems that mostly occur in English for Foreign Learners (EFL) students. Asassfeh (2013) classifies common grammatical errors in four aspects, namely

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definite and indefinite article, subject-verb agreement, prepositions, spelling, and logical connector use. Specifically, in this paper, Information Technology (IT) Department students of State Polytechnic of Malang have difficulties in writing. In writing instructions in the form of a procedure text, they often miss the sequence adverbs and imperative words. In this study, the researchers would like to improve the students' writing by implementing the infographics media.

1.1. Infographics Media

The term infographics stand for the word combination of "information" and "graphics". It involves visual representation and text information that is presented in numerous forms. Infographics are a mixture of descriptive text and graphics in the form of charts, bar graphs, diagrams, and pictures (Rezaei & Sayadian, 2015; Wertz & Saine, 2014). By combining the text and visual chart, the readers will convey and get the meaning of the information quickly and easily.

Previously, infographics could only be done in certain specified, exclusive, yet high-priced applications such as *Adobe InDesign*, *Adobe Photoshop*, and *CorelDRAW* (Newman & Smith, 2014). Due to the following limitation, only certain users specializing in the design and related professionals could design and create infographics. Nowadays, tools to build infographics come up in various free, low-priced, and easy-to-use programs. Several literature reviews suggest certain websites in creating infographics namely, *Canva*, *Piktochart*, *Infogr.am*, *Easi.ly*, and *Visua.ly* (Parkinson, 2016; Davis & Quinn, 2014; Guevara & Moore, 2013). Each website has its uniqueness, features and specific characteristics for the users in visualizing information.

In this study, the researchers choose *Canva* for the learners to apply their ideas of procedure text into visualization. It is chosen due to numerous reasons: first, *Canva* presents thousands of templates and designs to edit and modify. Secondly, it also provides hundreds of font options that can be used easily. Next, the application stores the edited or saved designs in their cloud storage, so the users can access their data anywhere. Last, *Canva* has an android application that can be accessed on mobile phones. Thus, the design can be edited in any given moment without having to log in into the website.

1.2. Applying Infographics Media on Writing Procedure Text

The combination of infographics and written text is proven to maximize students' ability in comprehending the meaning of information in a visual context. Davis & Quinn (2014) states that infographics enhance reading comprehension and writing skills. Another study by Alrwele (2017) claims that infographic can be implemented as an instrument to make students understand the information and able to create instruction easier and accessible.

The application of infographics for IT students in this study focuses on the grammar errors in writing procedure text. Procedure text is chosen since it is in line with one of the topics in the English for Informatics course. The students should be able to write down an instruction related to computer security in the written form. Based on the preliminary study, the researchers found that the students still face difficulties in organizing and writing procedure text. Thus, the researchers should improve their writing skills using infographics media to minimize the number of errors made by the students.

2. Method

Classroom Action Research (CAR) is used to investigate the utilization of infographics media to improve students' writing skills. According to Ary, Jacobs, and Razavieh (2009) CAR focuses on a calculated and organized approach to understanding the learning process as well as analyzing the problems that occur in the classroom area. Moreover, CAR is conducted in four steps, namely planning, acting, observing, and reflecting. Figure 1 presents the cycle of the research as adapted from Kemmis & Mc Taggart (2005).

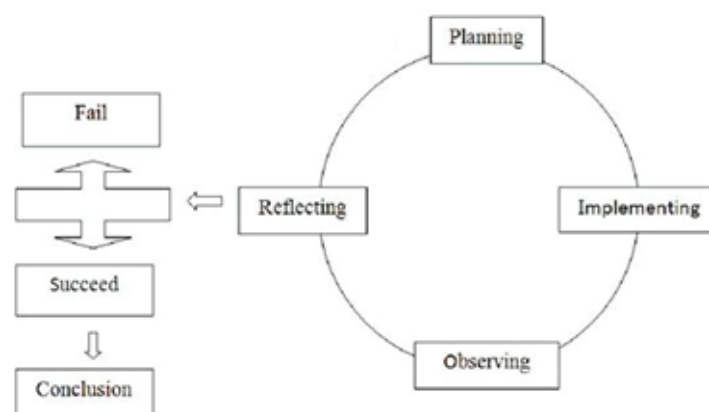


Figure 1: Class Action Research cycle, adapted from Kemmis & Mc Taggart (2005)

Before the implementation, the preliminary study was conducted to find out the main obstacles that the students' face in the class by giving a pre-test before the cycle was implemented. Out of 30 college students were involved in this research, specifically 21 male and 9 female students. Meanwhile, a post-test was given after the end of the first cycle of the research. In the implementation, the students were grouped and asked to create an infographic about how to secure their computer from any threats, such as virus, malware, and hacking and present it in front of the class before submitting it. The researchers acted as a teacher and gave some feedback to the students to revise their works. Then, the results of the infographics products were observed and compared based on the before and after being revised. Unfortunately, the study should finish after Cycle 1 ended due to the time limitation.

3. Findings and Discussion

3.1. Pre-test

At first, the students were asked to write an instruction in the form of a procedure text in a paper. The topic of the pre-test was "computer security". Students may choose one of the topics related to computer security, i.e. "How to protect your computer", "How to avoid phishing", and "How to prevent malware". They were not allowed to open the dictionary in writing the text. The time limit for the procedure writing was 45 minutes and most of the students submitted their papers on time.

The results of the preliminary study showed that the students made numerous grammar errors in writing their products. Furthermore, most of the problems were on the missing sequence adverbs and imperative verbs in sentences. Some mistakes also occurred on the vocabulary when they could not find the exact words in English and wrote them down in Indonesian with an italic mode. However, they were able to put their ideas properly in order and appropriate steps. Based on the preliminary study above, the researchers focused on the improvement of the students' grammar errors, specifically in sequence adverbs and imperative verbs.

TABLE 1: The result of the pre-test

Grammar in Infographics Writing	
Sequence adverbs	Imperative verbs
54.62	58.21
Mean total in Pre-test = 56.41	

3.2. Cycle 1

3.2.1. Planning

After the students got the result of their writings, the researcher asked them about their products. They were not pleased with the pre-test and acknowledged that their writings need to be improved in several aspects. Additionally, they faced difficulties in vocabulary especially in translating the Indonesian words to English and did not input the sequence adverbs and imperative verbs in writing instructions.

Next, the researchers explained how to write an instruction in the form of a procedure text properly. The researchers asked the students to create imperative sentences. In the following step, we guided them starting from adding imperative verbs and sequence adverbs in sentences. The researchers provided examples and explained how to organize sentences. Then, the students learned about the organization of procedure text. Next, they were paired and asked to compose an instruction in the form of procedure text with the topic “computer security”.

Besides that, the researchers also designed criteria of success to assess students' writings. They measured the bar of successful criteria by using *t paired-test* in comparing means in both pre-test and post-test. In addition, they also used triangulation instruments in this study namely field notes, observation checklist and assessment rubric. Triangulation was done to ensure and validate students' success in this research. Further, the instruments are included in the attachment page.

3.2.2. Implementing

In this phase, the researchers asked the students to apply their writings on infographics media. First, the researchers explained what infographic is and presented each fragment of the media. After that, the students were given a tutorial on how to make infographics using *Canva* since the template, as well as the font and the accessibility, were already available on the website.

By implementing the text in the infographics, most students stated that they could understand and comprehend the instruction better. In the web app, they could easily edit, add the image with logo, and input each sentence in infographics based on their own creativity. Then, the result of their creation was presented in front of the class in pairs.

3.2.3. Observing

In the observing phase, the researchers wrote field notes to record students' activities. It was done to monitor students' actions and cross-checking their understanding in writing procedure text in infographic media. After the students finished writing the text, they presented their works in pairs. While presenting their infographics, the students also had to make sure that their instruction writings were in line with the rules of procedure text. During the presentation, the researchers observed based on the observation checklist according to four criteria: 1) students' grammar ability in writing 2) teacher and students' interaction 3) students' ability to connect infographics and procedure text, 4) students' cooperativeness. Meanwhile, the other students observed and checked their classmates' products, also using the observation checklist and gave some feedbacks such as which aspects should be omitted and improved to make the media better. The researchers also gave suggestions and additional revisions related to their content writing. The students were asked to revise their work based on the feedback from both the researchers and their classmates and submitted the final product on the prepared google drive. Figure 2 is the detailed results of the infographics.

3.3. Post-test

After having the cycle by using infographics media in Cycle 1, the students were given a post-test. The topic of the post-test was "computer security". The following table is the complete results of infographics media in post-test.

TABLE 2: T-paired test calculation

	Grammar in Infographics Writing	
	Sequence adverbs	Imperative verbs
Post-test	65.2	66.6
Increase	10.58	8.39
Mean total in post-test	65.9	
Mean difference in pre-test and post-test	-9.5	
Standard Deviation difference	13.45	
T Paired Test Count	-4.03, rejecting h0 since it exceeds 0.05	

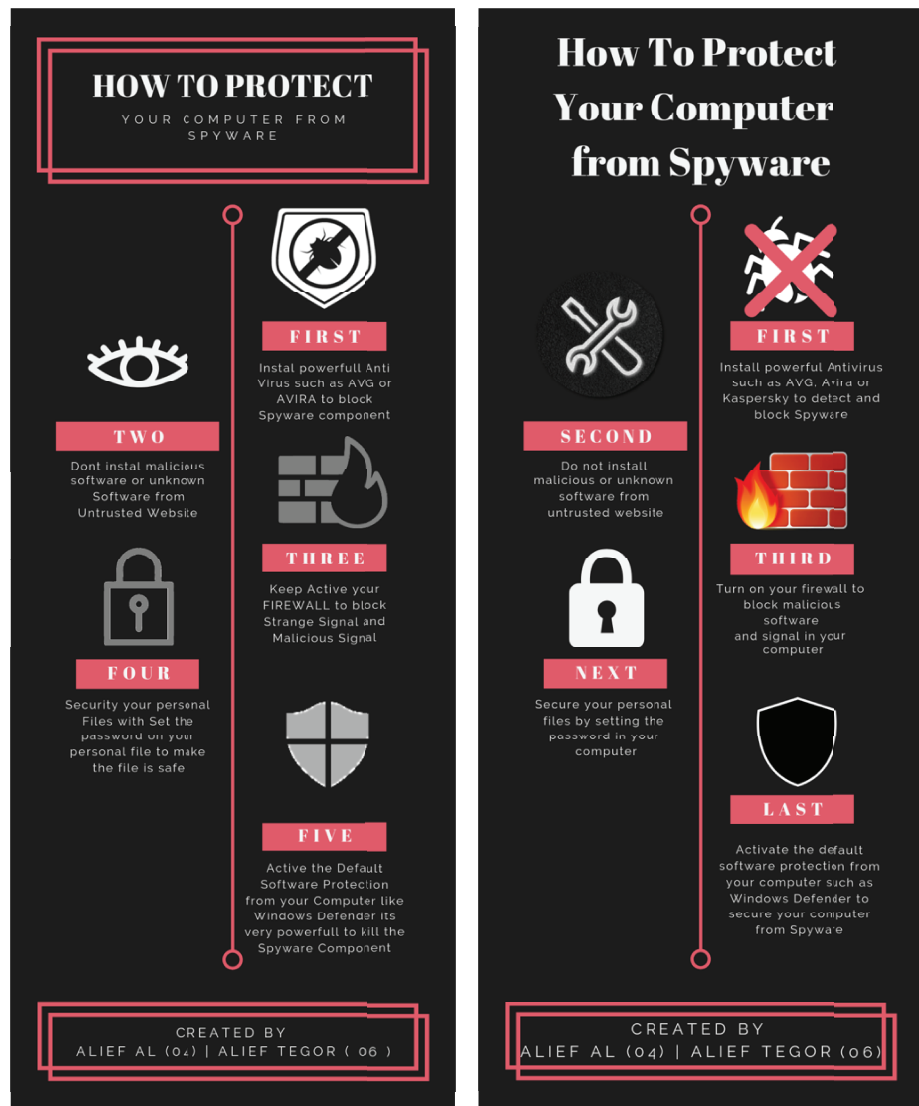


Figure 2: Infographics Media made by students (Before – Left, After - Right)

3.4. Reflecting

After the end of the meeting, the researchers analyzed data taken from all the designed instruments, namely fieldnotes, observation checklist, pre-test, and post-test scores, and the products, i.e. the infographics. All and all, it could be concluded that most students were able to create decent infographics, but several of them still faced obstacles in writing instructions. Some of their works were outstanding in graphics, but they tended to set aside the content itself. Mostly, they could not differentiate between the ordinal and cardinal numbers for making sequence adverbs in sentences. In addition, they also still faced problems in making imperative verb in making sentences. For instance, they added “active the antivirus program” as an instruction instead of writing “activate the antivirus program”.

Moreover, it can also be concluded that there were no notable problems for the students in creating the infographics. Since they belong to the IT Department, they could easily adapt and implement their works on internet design and implement its features. However, students still faced obstacles in composing sentences, especially in putting sequence adverbs and imperative verbs, only some pairs could create them properly.

Based on the results of *t paired-test* above, it showed that the students improved their grammar aspects in writing. In the first aspect, the score of sequence adverbs has enhanced 10.58 points from 54.62 to 65.3. Meanwhile, the imperative verbs showed that it increased from 58.21 to 66.6 points. Table 2 above presented that the null hypothesis was rejected since the t-test result is -4.03. All improvement presents that the application of procedure text in infographics media could improve students' writing skills significantly. Therefore, Cycle 1 was ended.

4. Conclusions and Suggestions

In conclusion, the results of the research showed that infographics are beneficial and successful to improve students' writing skills. The increasing mean scores from pre-test and post-test of procedure text in the form of infographics media implies that there were some improvements in students' writing skills, specifically in the grammar aspect. Furthermore, infographics could also enhance students' creativity and understanding ideas by implementing the graphic and text in a single picture.

Knowing the effectiveness and advantages of infographics in writing, the researchers highly appreciate the utilization of the media for teachers and future researchers to apply it in other related teaching and learning purposes. Infographics have considerable potential to attract interests and characteristics of digital native students. For the teachers, it can be supplementary media to simplify complicated materials that are difficult to explain and understand for the students.

Attachment 1

Attachment 2 - observation checklist

Classroom Observation Checklist

Name:

Observer:

Scoring criteria	Imperative verbs	Sequence adverb
76-100	Imperative verbs are present more than 6 words, and correctly used in sentences.	Students use transition words or apply a definite sequence of events. The text is easy to read and follow. The reader is not confused.
51-75	Imperative verbs and sequence adverbs are present in 3-5 words, but some are misused in sentences.	There is a definite sequence or flow to the writing, but the reader might be slightly confused.
26-50	Imperative verbs and sequence adverbs are present in 1-2 words, but frequent errors used in sentences.	There is very little sequence to the writing. The writing tends to ramble and repeat, but there is a beginning and end.
0-25	Imperative verbs and sequence adverbs are not present.	There is no sequence to the writing. The reader is confused.

Adapted from rubistar.4teachers.org

Criteria	Could improve	Acceptable	Excellent	Not observed
Grammar Skills 1. Able to create sequence adverbs in sentences 2. Able to put imperative verbs in sentences 3. Able to make correct sentences				
Procedure text and Infographics Media 1. Able to create an infographic media in Canva 2. Able to put logo and icons in the infographics media 3. Able to transform procedure text into infographics 4. Able to make				
Students' cooperativeness 1. Willing to divide each task with his/her pair 2. Able to work cooperatively with his/her pair 3. Able to discuss and share information with his pair				
Teacher and students' interaction 1. students are able to answer the questions raised by the teacher 2. Students are able to engage and present their works				

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