

DIGITAL VISUAL AIDS FOR ENHANCING VOCATIONAL STUDENTS' WRITING SKILLS

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Abstract

This research examined how the use of digital visual aids could enhance the writing ability of vocational students at SMK Muhammadiyah Lebaksiu. The purpose of the study was to identify whether digital visual aids could improve students' overall writing performance and to investigate students' responses to the learning activities. A quasi-experimental method was used in this research, involving two classes with 27 students in each group. The experimental group was instructed using digital visual aids, while the comparison group learned through traditional teaching techniques. The data were gathered from pre-test and post-test results as well as questionnaires, and then processed using descriptive statistical analysis along with paired-sample and independent-sample t-tests. The results revealed that students in the experimental group showed better progress than those in the comparison group, particularly in the content aspect ($p = 0.037 < 0.05$), even though the difference in overall writing scores was not statistically significant. Students also reported increased motivation, engagement, and confidence during writing activities.

Keywords: digital visual aids; writing skills; vocational students; motivation; EFL learning;

1. INTRODUCTION

Writing is an important skill in learning a second or foreign language because it allows students to communicate ideas, opinions, and information in written form. Compared with other language abilities, writing is frequently viewed as a challenging skill since learners are required to integrate multiple linguistic components, such as grammar, vocabulary, organization, coherence, and mechanics (Richard & Renandya., 2002; Syafira et al., 2021). In addition, writing involves complex thinking processes in which learners must generate ideas, organize them logically, and express them clearly in a written text. Due to these challenges, a large number of learners studying English as a foreign language frequently struggle to accomplish writing tasks.

The challenges in writing are not only related to limited language proficiency but also to the cognitive processes involved in composing a text. Flower & Hayes (1981) describe writing as a dynamic activity where writers repeatedly go through different phases, including planning ideas, producing drafts, revising content, and editing the final text. Each stage requires learners to think critically and make decisions about how ideas should be expressed in written form. These challenges frequently make it difficult for learners to arrange their ideas, choose suitable vocabulary, and expand their thoughts into a well-organized paragraph. These difficulties are often visible in descriptive writing tasks, where students are expected to describe a person, place, object, or phenomenon in a clear and detailed manner (Agustini et al., 2024).

These problems are frequently observed among vocational students. Vocational education generally focuses on developing practical and technical skills that prepare students for the workplace, while academic skills such as writing may receive less attention. Consequently, vocational students sometimes show lower performance in writing compared to students in general academic programs. Previous research has indicated that vocational students often face difficulties in generating ideas, organizing their writing logically, and applying appropriate language features in their texts (Siregar et al., 2022).

In addition, writing instruction in many classrooms still relies on traditional methods such as memorization or repetitive exercises. These approaches may not fully engage students or encourage them to think creatively when producing written texts (Yoandita & Helmie, 2019). Therefore, it is important for teachers to adopt instructional approaches that are both engaging and supportive in order to improve students' writing ability.

In the digital era, technology has become an important part of the learning process. Digital learning environments provide various forms of information, including text, images, animations, and other multimedia elements that can support students' understanding of learning materials (Mayer, 2021, p. 54). According to the Cognitive Theory of Multimedia Learning, individuals receive and interpret information using two separate channels: the visual channel, which handles images, and the verbal channel, which handles spoken or written words. Each channel has limited capacity, so learning becomes more effective when information is presented in a clear and meaningful way. Multimedia materials that combine visual and verbal information can therefore help students understand concepts more easily.

One teaching approach that utilizes both visual and verbal information is the use of digital visual aids. Digital visual aids refer to visual materials presented through digital technology, such as digital images, diagrams, animated illustrations, and interactive presentation slides. These materials can assist students in developing ideas and organizing information when writing. The effectiveness of combining visual and verbal input is supported by Dual Coding Theory, this theory support the ide that learning is enhanced when information is presented both visually and verbally, as the brain manages data through two connected systems: a verbal system and a visual or imagery system (Chung, 2023; Clark & Paivio, 1991, p.151). When both systems are used together, learners are able to understand information more effectively and remember it for a longer time.

Several previous studies have the use of digital media contributes to improving learners' writing competence. Digital tools have been reported to improve idea development, vocabulary use, and students' confidence in writing activities (Nur & Ramadhani, 2025). Similarly, multimedia-based learning approaches such as digital storytelling can help students in planning their ideas systematically and producing structured, coherent writing (Sartipa et al., 2025). Other research has also found that visual digital media, including digital serial images, can enhance students' writing performance (Saputri & Subrata, 2023). However, most of these studies focus on students in general secondary schools or universities. Research that specifically examines vocational students is still relatively limited.

Considering the learning characteristics of vocational students, it is important to explore instructional approaches that can better support their writing development. Writing performance is not solely determined by cognitive skills but is also impacted by emotional factors, including motivation, confidence, and anxiety (Jamaludin, S. & Nurdawati, D., 2021). Students with higher levels of motivation and self-confidence generally take a more active role in writing activities. Digital visual aids may help address both cognitive and affective aspects by providing visual support for idea generation while also creating a more engaging learning environment.

Considering the factors above, this research aims to evaluate the impact of digital visual aids on the writing performance of vocational students. Moreover, it investigates students' responses regarding the implementation of digital visual aids in writing activities. The outcomes are expected to provide practical insights for teachers to design instructional strategies that are both effective and engaging in vocational contexts.

2. METHOD

Research Design

The research employed a quantitative method utilizing a quasi-experimental design. This approach aimed to assess the impact of digital visual aids on students' writing abilities. The

research applied a pre-test and post-test control group design that involved two different classes: an experimental class and a control class. This design was selected because the existing classroom situation did not allow the researcher to randomly assign students into groups. In this research, the independent variable was the use of digital visual aids in teaching writing, while the dependent variable was students' descriptive writing performance. Through this design, the researcher was able to examine whether the use of digital visual aids contributed to students' improvement in writing skills.

Time and Place of the Research

This study was carried out at SMK Muhammadiyah Lebaksiu in the 2025/2026 academic year. The data collection process was conducted during English learning sessions in the classroom. The researcher administered the treatment across several meetings to investigate the influence of digital visual aids on students' writing achievements.

Research Subjects

This study focused on eleventh-grade students of SMK Muhammadiyah Lebaksiu as the population. Two classes from this group were chosen as the sample through a cluster sampling method, resulting in a total of 54 participants.

Students were assigned to two groups for the study. The experimental group, consisting of 27 learners, was taught writing using digital visual aids, while the control group, also with 27 students, received conventional instruction without digital visual aids support. This arrangement enabled the researcher to examine differences in learning outcomes between the two groups.

Procedure

The study followed several stages. Initially, a pre-test was given to both the experimental and comparison groups to assess the students' baseline writing ability before the treatment was applied. Following the pre-test, the researcher implemented the instructional sessions. In the experimental group, writing lessons were delivered with the aid of digital visual tools, including images and presentation slides. These materials supported students in generating ideas and expressing the assigned topics more effectively. Meanwhile, the control group received writing instruction through conventional writing instruction without the use of digital visual aids.

After completing the treatment, all participants were given a post-test to determine the extent of improvement in their writing skills. Moreover, the experimental group completed a questionnaire aimed at collecting their responses regarding the use of digital visual materials throughout the writing instruction.

Research Instruments, and Data Collection

The instruments applied in this research included writing assessments and a questionnaire. The writing assessments included a pre-test and a post-test, which were given to both the experimental and control groups. During these tests, students were instructed to produce a descriptive text based on a topic provided by the researcher. The assessments aimed to evaluate students' writing performance in aspects such as idea generation, text organization, vocabulary usage, grammar, and mechanics.

Additionally, a questionnaire was employed to gather students' feedback regarding the integration of digital visual aids in writing instruction. The questionnaire was provided to the experimental group following the completion of the treatment sessions.

Data for this study were collected using both writing assessments and the questionnaire. The writing assessments were conducted twice, consisting of a pre-test and a post-test. The pre-test took place prior to the treatment to evaluate students' baseline writing ability, whereas the post-test was administered after the intervention to determine improvements in students' writing performance. Furthermore, the questionnaire was distributed to the students in the

experimental group to gather information about their responses and perceptions regarding the use of digital visual aids in learning writing.

Data Analysis Technique

The scores obtained from the writing assessments were examined through statistical analysis using SPSS. To begin, descriptive statistics were employed to present a summary of the students' results on both the pre-test and post-test, reflecting the general performance of the groups. Afterwards, a normality analysis was performed to assess whether the dataset was normally distributed. A homogeneity analysis was also conducted to determine if the two groups had equal variance.

In addition, a paired-samples *t*-test was performed to examine whether there were significant differences between the pre-test and post-test scores within each group. Subsequently, an independent-samples *t*-test was carried out to compare the post-test results of the experimental and control groups, aiming to evaluate the impact of digital visual aids on students' writing performance.

3. RESULT AND DISCUSSION

Students' Writing Test Results

The research involved administering pre-tests and post-tests to assess students' initial writing performance and following the instructional intervention. Table 1 presents the descriptive statistics of the writing scores.

Table 1. Descriptive Statistics of Students' Writing Scores

Group	Test	N	Mean	Std. Deviation
Experimental	Pre-test	27	70.89	6.658
Experimental	Post-test	27	80.93	6.850
Control	Pre-test	27	75.96	7.346
Control	Post-test	27	78.89	6.958

According to Table 1, both the experimental and control groups experienced improvement throughout the learning process. The experimental group, in particular, showed greater enhancement in writing performance. Its mean score increased from 70.89 in the pre-test to 80.93 in the post-test, representing a gain of 10.04 points. Meanwhile, the control group demonstrated a smaller improvement, rising from 75.96 to 78.89, with a gain of 2.93 points.

Based on the results, students who received writing instruction supported by digital visual aids tended to demonstrate greater improvement in writing compared with those who received conventional lessons.

Hypothesis Testing

In order to evaluate whether the changes within each group were significant, the researcher conducted a paired-samples *t*-test. The findings are summarized in Table 2.

Table 2. Paired Sample *t*-test

Group	Mean Difference	t-value	Sig. (2-tailed)
Experimental	10.04	9.203	0.000
Control	2.93	1.874	0.072

The analysis shows that the experimental group obtained a significance value of 0.000, which is lower than the significance level of 0.05. This result indicates that students' writing scores in the experimental group improved significantly after the implementation of digital visual aids. Meanwhile, the control group obtained a significance value of 0.072, which is higher than 0.05, indicating that the improvement in this group was not statistically significant.

Furthermore, an independent t-test was carried out to compare the post-test outcomes between the experimental and control groups.

Table 3. Independent Sample t-test of Post-test Scores

Group	N	Mean	t-value	Sig.
Experimental	27	80.93	1.084	0.283
Control	27	78.89		

The findings indicate that the p-value (0.283) is above 0.05, suggesting that overall post-test writing scores did not significantly differ between the experimental and control groups. Although the experimental group's mean was slightly higher, the variation was not substantial enough to reach significance.

However, further analysis of individual writing components revealed meaningful improvement in several aspects, including content, organization, vocabulary, grammar, and mechanics.

Table 4. Improvement of Writing Components

Writing Components	Pre-test Mean	Post-test Mean
Content	22.67	24.85
Organization	14.19	16.56
Vocabulary	17.56	20.33
Grammar	13.44	15.63
Mechanics	3.04	3.54

Table 4 shows that all writing components improved after the treatment. The most noticeable improvements appeared in the vocabulary, organization, and content aspects. This finding indicates that digital visual aids helped students generate ideas, develop descriptions, and organize their writing more effectively.

The presence of visual materials provided concrete references that allowed students to observe objects more carefully and identify relevant details. As a result, students were able to produce clearer and more structured descriptive texts. Visual stimuli may also reduce students' difficulty in starting the writing process by providing a clear context for idea development.

These findings support the concept of Dual Coding Theory, which emphasizes that learning is facilitated when visual and verbal information are presented together, improving cognitive processing. When students receive both visual input and textual explanation, they can construct mental representations more easily, which supports idea generation during writing tasks.

Students' Responses toward Digital Visual Aids

To explore students' views of the learning process, a questionnaire was administered to the experimental class following the treatment. The instrument contained fifteen items related to integrating digital visual aids into descriptive writing lessons. Participants rated each statement on a four-point Likert scale, ranging from strongly disagree to strongly agree. Table 5 provides a summary of the students' responses.

Table 5. Students' Responses toward the Use of Digital Visual Aids

No	Questionnaire Statement	mean
1	Digital visual aids helped me generate ideas for writing	3.22
2	Digital visual aids helped me organize my ideas before writing	3.11
3	I was able to describe objects or situations more clearly	3.07
4	Digital visual aids helped me use more vocabulary	3.07
5	Digital visual aids helped me start writing more easily	2.85
6	I became more interested in writing activities	2.85
7	Writing activities felt more enjoyable	2.74
8	I felt more confident in my writing ability	3.00
9	Digital visual aids helped me stay focused while writing	3.00
10	I hope digital visual aids will continue to be used in writing lessons	3.07
11	Digital visual aids helped me understand the writing task	2.93
12	My writing became more detailed with visual support	3.11
13	Digital visual aids improved my descriptive writing ability	3.11
14	Digital visual aids are effective for learning descriptive writing	3.00
15	I would recommend the use of digital visual aids in writing class	3.04

The data collected from the questionnaire show that learners generally gave favorable feedback regarding the integration of digital visual aids in writing instruction. Most items obtained mean scores close to or above 3.00, which reflects favorable perceptions of the learning approach.

The highest mean score (3.22) appeared in the statement indicating that digital visual aids helped students generate ideas for writing. This indicates that visual materials were crucial in assisting students during the idea development stage. Several items related to organizing ideas and vocabulary use also showed relatively high scores, indicating that visual support contributed to students' ability to structure and elaborate their writing.

In addition, students reported that digital visual aids made writing activities more engaging and helped them maintain focus during the task. Many students also expressed willingness to continue using visual materials in future writing lessons.

Overall, the questionnaire results demonstrate that students responded positively to the integration of digital visual aids in writing instruction. The findings align with the outcomes of the writing tests, showing that the use of digital visual aids contributed to improving learners' writing abilities as well as increasing their participation and interest during instruction.

4. CONCLUSION

This research examined the impact of digital visual aids on vocational students' descriptive writing skills. The findings revealed that incorporating digital visual aids enhanced the writing performance of the experimental group. Results from the paired-samples t-test indicated a statistically significant improvement in the experimental group following the treatment, whereas the control group showed no notable increase.

However, the independent-samples t-test indicated that the post-test score differences between the experimental and control groups were not significant ($p = 0.283 > 0.05$). This suggests that, although learners using digital visual aids showed more progress, the overall gap between the two groups was insufficient to reach statistical significance.

Further analysis of writing components showed noticeable improvement in several aspects, particularly in content and vocabulary. The use of visual materials helped students generate ideas, observe details, and develop more descriptive explanations in their writing. These findings indicate that digital visual aids supported students during the idea development stage of the writing process.

According to the questionnaire, students provided overall positive feedback regarding the incorporation of digital visual aids in writing lessons. A number of respondents indicated that the visual aids facilitated idea development, improved organization of thoughts, and encouraged active participation during writing activities. The presence of visual support also appeared to increase students' motivation and confidence in completing writing tasks.

The findings align with Dual Coding Theory, suggesting that combining visual and verbal inputs can support learning and improve cognitive functioning. When students were exposed to visual stimuli before writing, they were able to construct clearer mental representations that supported idea development.

Overall, even though the use of digital visual aids did not produce a significant difference in overall post-test results between the experimental and control groups, they positively influenced critical aspects of writing and heightened learners' engagement during instruction. Therefore, digital visual aids can function as a supportive method for facilitating descriptive writing lessons in vocational EFL settings. Future studies may explore the use of digital visual aids with larger samples, longer instructional periods, or different writing genres to further examine their impact on students' writing development.

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