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The effect of visual thinking strategy on vocabulary mastery

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ABSTRACT

The objectives of this research are to find out whether the Visual Thinking Technique has a significant effect on students' vocabulary mastery. This study used a quantitative method and employed T-test to inquire any significance change of the participant score of vocabulary mastery. The second and third meetings are the treatments, the students are taught vocabulary using Visual Thinking Techniques in the experimental class, and the students are taught vocabulary with the lecturing method in the control class. In pre-test Data Normality Test Classes N p-value Experiment 10 0,677, Control 10 0,623. From the results of the normality test it is known that the p-value for pre-test data in the experimental class and control class is 0.677 and 0.623 respectively, this p-value is greater than the 0.05 significance level. Post-test Data Normality Test Classes N p-value Experiment 10 0,125 Control 10 0,423. From the results of the normality test it is known that the p-value for post-test data in the experimental class and control class is 0.125 and 0.423 respectively, this p-value is greater than the 0.05 significance level. This means that H0 is rejected or there is a significant difference in the average students' vocabulary mastery between students in the control class and the experimental class**.** Therefore, the visual thinking strategy has a significant effect on students' vocabulary mastery.

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1. INTRODUCTION

A major issue in education is language mastering. Due to students' interests, vocabulary can be an issue. When they don't understand the meaning of the word in the book, they find it challenging to grasp it. It is challenging to teach English vocabulary in a foreign language setting. English teachers cannot just give their students a list of words to learn and expect them to remember them. They are supposed to give the students engaging and varied assignments that will aid in vocabulary development. (Dronjic, 2019). Becker (2020) explains how the arts may increasingly contribute to the possibilities that universal design for learning needs, including a variety of modes of participation, representation, and expression. By incorporating the visual arts into the curriculum, teachers can give their lessons more depth and give students more opportunities for multimodal engagement with and development of academic material. This can be accommodated by employing visual thinking strategy. The writer discovered that the Visual Thinking technique is one method utilised to expand students' English vocabulary. However, only a small number of studies have examined specific and explicit teaching approaches for visual thinking strategies in the context of English education, particularly for students learning the language for the first time. Additionally, it appears that the idea of visual thinking and its benefits are relatively new concepts in the field of English education (Huh, 2016).

The Visual Thinking Strategy (VTS) is a constructivist teaching approach that was developed by cognitive psychologist Abigail Housen in partnership with seasoned museum educator Philip Yenawine. It is based on significant research. It calls for active participation and is a learner-centered, interactive, interpretative technique. When they build upon and extend their personal and societal contexts, learners create knowledge. Efficiency of the assisted VTS conversation is related to its design, which builds on already developed abilities and interests, is developmentally based, encourages peer involvement, and gradually increases challenges (Huh, 2016)**.** According to the VTS framework, "linking and paraphrasing are particularly empowering tactics that develop students' sense of self and of the distinctiveness of their voice" (Lannes, 2012). The teacher might further explore unfamiliar terms or ideas with the students by having them paraphrase. For students to relate the meaning of the terms to their written form during the VTS discussion, teachers should be encouraged to write this new vocabulary on a large piece of paper (Lannes, 2012).

VTS aligns with sociocultural theory and draws on several elements of the work of Vygotsky who demonstrated the social nature of learning that occurs through interactions with the environment and especially with other people. VTS lessons are structured to nurture the process by which a child can "grow into the intellectual life of those around him" It is a student-centered, interactive, interpretive method that requires active participation. Learners create knowledge as they build from and on their personal and social backgrounds(Cappello & Walker, 2016). Implementation of VTS can make students find supporting evidence in the text. VTS can expand students understanding of text-dependent questioning, which is a key component of close reading which is also supported by Rapp et al ((2018)found that middle school students who participated in VTS discussions of the literature showed greater improvement in their ability to identify and analyze textual evidence than a control group who did not participate in VTS.

The adaption of VTS depends on teacher's prior experience, the level of support and training, students' characteristics and learning environment. Teachers who receive training in VTS can implement it successfully in their classrooms (Abowitz & Tozer, 2011). Implementation of VTS can make students finding supporting evidence in the text. VTS can expand students understanding of text-dependent questioning, which is a key component of close reading which is also supported by Rapp et al (2018) found that middle school students who participated in VTS discussions of literature showed greater improvement in their ability to identify and analyze textual evidence than a control group who did not participate in VTS. According to research by McEvoy and McElvany (2012), using VTS discussions of visual art improved the comprehension of academic vocabulary linked to art and aesthetics in second language learners. The study discovered that students who took part in VTS discussions demonstrated better advances in their academic vocabulary usage and knowledge than a control group who did not take part in VTS.

Some previous studies have been conducted related to VTS. The quality of sustained attention in fourth and fifth graders in two Quebec primary schools can be improved by VTS (Mendonça et al., 2023). VTS may be viewed as a metacognitive method that supports the development of cognitive skills connected to executive processes by encouraging participants to consider what others are experiencing or thinking through artistic creations. Another study conducted by The third study was conducted by Farouk and Ali (2018), in Egypt using quantitative and qualitative research methods and found that visual thinking strategy develop adult learners' English language fluency, particularly in writing fluency. Lastly, research by Albert *et.al.* (2022) shows that visual thinking strategies have been proven to have significant advantages related to enhancing communicative skills and meta-cognitive awareness, with the latter adding to the knowledge-acquisition process and contents. Many studies have been conducted regarding the impact and effectiveness of VTT implementation. VTT has been implemented for elementary school students, geography and landscaping students, and even helping students majoring in medicine. And all of them have a positive impact.

However, researcher believes that no comprehensive research has been undertaken on the use of VTS in boosting students' vocabulary knowledge, particularly at the vocational high school level. As stated in the introduction, the goal of this study is to determine whether the Visual Thinking Technique has a substantial effect on students' vocabulary mastery. Therefore, the hypothesis of this study, H0: students who are taught with Visual Thinking Strategy have no significant effect on students' vocabulary at Trisakti Pasuruan Vocational School, especially in class X ITM 1. H1: Students who are taught with Visual Thinking Techniques have a significant effect on students' vocabulary at Trisakti Pasuruan Vocational School, especially in class X ITM 1.

2. RESEARCH METHOD

In line with this study background and objective, this study used a quantitative method and employed T-test to inquire any significant change of the participant score of vocabulary mastery. This

research used aquasi-experimental research design.. A quasi-experimental design was used in this research, it was a design to identify comparison group; experimental and control group. The population of this research was tenth-grade students of SMK Trisakti Beji Pasuruan with the population were about 208 students in 7 classes. The authors chose two classes for experimental and control classes, X-TITL and X-TPM with the sample were about 40 students.

The writers conducted four meetings in each class, four times in the experimental class and another four times in the control class, the time taken in each meeting was about 2x45 minutes (the time allocation of English lesson in SMK Trisakti Beji Pasuruan). The first meeting was pre-test, a test conducted by the writer to determine the ability of students to master vocabularies before any treatment is given. The second and third meetings were the treatments, the students were taught vocabulary using Visual Thinking Techniques in the experimental class, and the students were taught vocabularies with lecturing method in the control class. The last meeting was post-test. It was conducted to see the difference ability of students to master vocabularies in the experimental class after the treatments are given. After conducting the pre-test and post-test, the writers analyzed the score of the students in both classes after performing the pre-test and post-test and then made a report on the research finding.

The writers used test as the instrument – pre-test and post-test. Multiple choice tests contained some questions about vocabulary that the writer has already taught to the students. The purpose of the test was to know students' vocabulary mastery. Therefore, the tests have met the criterion of content validity.

3. RESULTS AND DISCUSSION

This section provides the results and discussion which provides the result and the interpretation of the study. The results are presented and carefully analyzed in this section, which represents the end of the research process. It acts as a link between the gathered empirical data and the conclusions' more general implications. The following is the result of pretest and post-test of from the students.

Table 1. The students' pre-test and post-test

Descriptive Statistics			
Classes	N	Mean	Std.
Pre-Test	10	73.0000	9.80929
Pre-Test Control	10	70.9000	9.53881
Post-Test	10	90.9000	6.85484
Post-Test Control	10	78.7000	7.88881

The table above shows us the different mean of control and experimental class's pre-test score. The pre-test mean score of experimental class is 73.0 meanwhile mean score of control class is 70.9. We can conclude that the experimental class has higher pre-test mean score.

The difference of the mean scores in the post-test collected from both classes can also be spotted in the table above. The mean score of the post- test in the control class was 78.7. Meanwhile, the mean score in the experimental class was 90.9. The outcome was that both of the experimental class's mean score and the control classes are increased.

The fact that the mean score increased from the pre-test to the post-test was evident from the difference in mean values either the experimental nor control classes. Between the pre-test and the post-test, there was an increase.

The control class had seen a 7.8 point increase, increasing from 70.9 to 78.7. Meanwhile, the experimental class's mean pre- and post-test scores increased by 17.9 points from 73 to 90.9. However, after implementing the VTT, the mean value in the experimental class increased significantly. It may be stated that using VTT resulted in a considerable increase in scores when compared to non-VTT.

3.1. Hypothesis Test

After the prerequisite tests for normality and homogeneity are met, a pretest equivalence test can then be carried out. Test the hypothesis using an Independent sample t-test. The purpose of this test is to determine the equality of students' initial abilities. The sound of the hypothesis being tested is as follows.

The basis for decision making in the t-test, can be done through the probability approach, the significance used is α=0.05. The basis for decision making is to look at the probability figures, with the

following conditions: (1) If the p-value > 0.05 then H0 is accepted (2) If the p-value < 0.05 then H0 is rejected.

Tabel 6. Hypothesis Test

t	df	*p-value*
3,692	18	0,002

Based on the results of the t-test data in the table above, it is known that the p-value is 0.02, which is smaller than the significance level of 0.05. This means that H0 is rejected or there is a significant difference in the average students' vocabulary mastery between students in the control class and the experimental class.

The analysis conducted in this study aimed to test the effect of VTS on the students' vocabulary mastery of vocational high school. Before conducting the hypothesis test, several prerequisite tests were carried out, including normality test and homogeneity test. The normality test results indicated that the assumption of normality was met for both pretest and posttest data in the experimental and control classes. This means that the data distribution was relatively normal, allowing for the use of parametric tests in further analysis. Meanwhile, the homogeneity test results indicated that the data variance was homogeneous, which was important for ensuring the validity of the hypothesis test results.

The hypothesis test conducted using an independent sample t-test aimed to determine the equality of students' initial abilities between the experimental and control classes. The results showed that there was a significant difference in the pretest average scores between the experimental and control classes. This suggests that the two classes had different initial abilities before implementing the VTS. Finally, the results of the post-test analysis showed a significant improvement in the experimental class's learning outcomes after implementing the treatment or the technic, compared to the control class. The mean score in the experimental class increased significantly by 17.9 points, whereas the control class's mean score increased by only 7.8 points. This indicates that the VTS was effective in improving student learning outcomes in vocabulary mastery.

It means that the use of VTS in this study has proven to be effective in improving student learning outcomes. The results of the normality and homogeneity tests provided support for the validity of the hypothesis test results, which showed a significant difference in pretest scores between the experimental and control classes. These findings show that VTS could be a valuable tool for improving the students' vocabulary mastery learning outcomes in Vocational High School settings.

3.2. Discussion

In the class with VTS treatment, the students showed more interest in learning vocabulary compared to the control group since they learn through art by making diagram and mind map. They seemed more focus and preoccupied with pictures and the link with other pictures. Moreover, they collaborated to finish their project which help them to improve their communication skill. In line with the previous study which compared VTS in museum and class context. the difference in evaluations between the two conditions was mitigated as the VTS classes progressed. Additionally, participants increased their art-viewing time throughout the educational program regardless of the educational setting (Ishiguro, Sato, et al., 2021).

Compared to the control group, the experimental group displayed enjoyment in learning in class using VTS. They did not need to make a harder effort to understand and memorize the vocabulary since they only needed to observe and imagine the pictures that has been presented by the researcher. This is in line with the previous study, The participants who were assigned to the VTS condition increased the amount of time they spent viewing the artworks (Ishiguro, Takagishi, et al., 2021). Another study also shows that most students who participated in the intervention reported considerable improvements in the skills the method promises to improve, and a reduction in personal and work burnout scores, suggesting that the use of the VTS method in health professions curricula is viable (Ferrara et al., 2022).

Students in the experimental group also show an ability in observation and communication. In the class they had to make project such as making mind map and diagram, in the process of collaboration, they were forced to communicate with their teammates and the researcher to elaborate on their projects. A previous study also shows that engaging social work students in VTS can advance skills in observing, processing, and communicating reasoning to peers in situations of ambiguity, which are critical for assessment and decision-making in their future professional practice. There is a potential for students to

engage with VTS in inter-professional education with medical, nursing and allied health students to facilitate communication and collaborative problem-solving. The article identifies the need for research to evaluate the use of VTS in the context of art-based pedagogies in social work (Lynch, 2022).

4. CONCLUSION

This study found that only a small number of studies have examined specific and explicit teaching approaches for visual thinking strategies in the context of English education, particularly for students learning the language for the first time. VTT has been implemented for elementary school students, geography and landscaping students, and even helping students majoring in medicine. However, no one has conducted thorough research regarding the implementation of VTT in improving students' vocabulary mastery, especially at the vocational high school level.

The writer discovered that students who took part in VTS discussions demonstrated better advances in their academic vocabulary usage and knowledge than a control group who did not take part in VTS. The Visual Thinking Technique has a significant effect on students' vocabulary mastery. Find out whether there is an interaction between the VTS and the students' vocabulary mastery. Students who are taught with Visual Thinking Techniques have a significant effect on students' vocabulary at Trisakti Pasuruan Vocational School, especially in class X ITM 1. The students also showed more interest in learning vocabulary, enjoying, and engaging their observation and communication ability.

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