Improving students' vocabulary mastery using rotating trio exchange model at the tenth grade of vocational high school

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ABSTRACT

The objectives of this research are to find out whether there was significant difference on students' vocabulary mastery after being taught using the Rotating Trio Exchange model, to find out what aspects of vocabulary improve the most after students are taught using the Rotating Trio Exchange (RTE) model, and to find out students' responses after being taught using this model. This research was designed as mixed method research and it was conducted at SMK Amal Bakti Jatimulyo. The subjects of the research were 30 students from the tenth grade of Accounting. The data were collected through vocabulary test and closed-ended questionnaire. After that, the researcher used mixed method analysis to analyze the data. The results showed that there is significant difference on students' vocabulary mastery after being taught using the Rotating Trio Exchange model. The students' mean score improved by 14.75 from pretest to posttest. Through hypothesis testing, it shown that the result of computation of the value of two tailed significance was 0.000<0.005, it means that H1 is accepted and H0 is rejected. In addition, there was also an improvement in four vocabulary aspects on the posttest: nouns (2.21, 14.99%), verbs (4.06, 27.52%), adjectives (4.42, 29.97%), and adverbs (4.06, 27.52%) and adjectives became the most improved aspect. The results also showed that the majority of students give positive response to this model. There is 91% of positive responses and 9% of negative responses in using this model. This suggest that RTE model has a positive effect on students' vocabulary mastery.

Keywords: model, vocabulary mastery, Rotating Trio Exchange

I. INTRODUCTION

English is the most crucial language to master for communicating internationally. There are a number of abilities that students need to acquire in order to learn English. The four skills of language acquisition are speaking, reading, and writing. To begin learning and perfect these four skills, students must start with the most fundamental element. The most fundamental element is learning vocabulary. Vocabulary, as a field of knowledge in language, plays a big role for learners in acquiring language. By knowing and mastering the vocabulary of a language we would be able to understand the meaning of these words.

Vocabulary learning is still a challenge to be applied to students in several Indonesian schools, one of which is Amal Bakti Vocational School. This is due to the lack of proper preparation for the implementation of learning. Every lesson has a particular objective and prerequisites, for example learning vocabulary.

Based on the pre-research interviews that the researcher conducted with one of the English teachers at SMK Amal Bakti, Researcher could observe that Amal Bakti students also had trouble learning vocabulary. This can be seen from the scores of most students who are still low and have to do remedial. This put students under pressure before class even started. As a result of these issues also have an impact on student achievement, some students must do remedial work in order for their final grades to reach the target.

The teacher at this school used the rote memorization technique to teach English, which was considered effective for learning English vocabulary. This technique emphasized individual learning, in contrast to the Rotating Trio Exchange, which prioritized group discussions. In this traditional, one-way learning model, when the teacher was more involved in the application of learning, students also became less engaged. Students continued to struggle with reading questions and comprehending materials written in English due to their inadequate vocabulary knowledge. The teacher needed to devise a teaching model that would effectively convey the material to the students. The solution involved assessing the learning process and considering potential solutions to these issues. One of the key factors that contributes to the success of learning is the teaching model chosen. Selecting the appropriate model is a deliberate effort that has a significant impact on learning outcomes. One model that can be employed is the Rotating Trio Exchange.

The Rotating Trio Exchange, which is one of the cooperative learning models, involves students being placed in small groups of three individuals to engage in discussions. Through this activity, students can communicate with each other and share ideas to address the question at hand. This teaching model has proven to be not only effective in helping students comprehend complex ideas but also highly beneficial for developing critical thinking skills and fostering cooperation among students. Additionally, students have the opportunity to enhance their vocabulary acquisition skills through the implementation of this learning model.

According to Amin, S., & Sumendap, L. (2022), the RTE learning model has the following benefits: 1) Allowing students to express their thoughts and opinions; 2) Teaching students to think critically and to articulate their thoughts 3) Having a high level of motivation, etc. As a result, this type of learning helps students to obtain the best learning outcomes. Through the use of the RTE model in the learning process, students can interact with both their own group and other groups in a course. Making learning activities more pleasurable is believed to increase students' motivation to learn (Hasanah et al., 2019).

The Rotating Trio Exchange (RTE) learning model was chosen by the researcher because it emphasized the chances for students to share their opinions and the learning that occurred when they worked together. As a result, the researcher was interested whether group learning using the Rotating Trio Exchange (RTE) model could improve students' vocabulary mastery. The researcher wanted to study whether this model had a significant effect on the standard of student learning in an effort to improve vocabulary mastery. Students were expected to increase their vocabulary during learning. It was also intended that student learning results would be improved or increased by using this Rotating Trio Exchange (RTE) learning model.

II. METHOD

The research used a mixed methods research with a one-group pretest-posttest design. The researcher employed purposive sampling to select the tenth-grade students of SMK Amal Bakti in the second semester as the research population. This choice was made because, among all the tenth-grade classes at SMK Amal Bakti, only the accounting class had a student population that was a multiple of 30, which was necessary to implement the Rotating Trio Exchange model. The data were collected through a vocabulary test and a closed-ended questionnaire. Subsequently, the researcher used mixed-method analysis to analyze the data.

III. RESULT AND DISCUSSION

Result
In this research, the researcher aims to identify whether there is a significant difference in students' vocabulary mastery before and after being taught through the Rotating Trio Exchange (RTE) model at SMK Amal Bakti Jatimulyo. Additionally, this research also aims to discover which aspects of vocabulary improve the most after students are taught using the RTE model and to find students' responses after being taught using this model.

a) **Result of the Pretest**

Table 3. 1 Distribution of the Students' Score in the pretest

Interval Score	Frequency	Percentage (100%)	The Lowest Score	The Highest Score	Mean Score
20-24	1	3.3			
25-29	0	0			
30-34	5	16.7	20	50	38,66
35-39	7	23.3			
40-44	11	36.7			
45-50	6	20			
Total	**30**	**100%**	**20**	**50**	**38,66**

The table showed that the mean of the pretest was 38,66. The highest score was 50 and the lowest score was 20. There were 1 student (3,3%) who got the score 20-24, 0 student (0%) got 25-29, 5 students (16,7%) got 30-34, 7 students (23,3%) got 35-39, 11 students (36,7%) got 40-44, and 6 students (20%) got 45-50. The mean of the students' pretest score was 38,66 and it means that the most of the students still got low scores.

b) **Result of the Posttest**

Table 3. 2 Distributions of the Students' Score in the Posttest

Interval Score	Frequency	Percentage (100%)	The Lowest Score	The Largest Score	Mean Score
35-40	1	3.3			
41-46	4	13.3			
47-52	6	20	35	72,5	53,41
53-58	11	36.7			
59-65	7	23.3			
66-72.5	1	3.3			
Total	**30**	**100%**	**35**	**72,5**	**53,41**

The table showed that the mean of the posttest score was 53,41. The highest score was 72,5 and the lowest score was 35. There were 1 student (3,3%) who got 35-40, 4 students (13,3%) got 41-46, 6 students (20%) got 47-52, 11 students (36,7%) got 53-58, 7 students (23,3%) got 59-65, and 1 student (3,3%) got 66-72,5. The mean of the students' posttest score was 53,41 and it means that the most of the students had improved their scores.

c) **The improvement of Students Pretest and Posttest**

Table 3. 3 Students' Mean Score of Pretest and Posttest

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	38.6667	30	6.28810	1.14805
	Posttest	53.4167	30	7.44182	1.35868

The table showed the mean score results of the pretest and posttest. The mean score for the pretest was 38.66, with a standard deviation of 6.28. In contrast, the mean score for the posttest was 53.41, with a standard deviation of 7.44. Based on these

results, it can be concluded that the mean score on the posttest exceeded that of the pretest, indicating an improvement in the mean score from the pretest to the posttest, with a significant difference of 14.75.

Table 3. 4 The Improvement from Pretest to Posttest in Each Aspect

No	Aspects	Pretest	Posttest	Improvement	Percentage
1	Noun	5.80	8.01	2.21	14.99%
2	Verb	10.63	14.69	4.06	27.52%
3	Adjective	11.60	16.02	4.42	29.97%
4	Adverb	10.63	14.69	4.06	27.52%
	Total	**38.66**	**53.41**	**14.75**	**100%**

The pretest and posttest results from the table above demonstrate that the students' vocabulary mastery skills improved in four aspects of vocabulary. The information in the table is based on the mean scores in each aspect for the pretest: 5.80 for nouns, 10.63 for verbs, 11.60 for adjectives, and 10.63 for adverbs. Meanwhile, the mean scores in each aspect for the posttest were: 8.01 for nouns, 14.69 for verbs, 16.02 for adjectives, and 14.69 for adverbs. According to these results, there was improvement in all four vocabulary aspects in the posttest: 2.21 (14.99%) for nouns, 4.06 (27.52%) for verbs, 4.42 (29.97%) for adjectives, and 4.06 (27.52%) for adverbs. Therefore, it can be concluded that teaching students the linguistic elements of recount text, such as simple past tense (verb) and vocabulary (noun, adjective, and adverb), using the Rotating Trio Exchange model, resulted in significant improvements in their vocabulary. The table also shows that the aspect that improved the most after students were taught using the Rotating Trio Exchange model was adjectives.

d) Hypothesis Testing

Table 3. 5 Paired Sample Test

Paired Samples Test

					95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	Pretest - Posttest	-14.75000	6.51093	1.18873	-17.18122	-12.31878	-12.408	29	.000

The table reveals that the computed two-tailed significance value was 0.000. This implies that H1 was accepted, and H0 was rejected since 0.000<0.005. This finding

demonstrates a significant difference in students' vocabulary mastery after being taught through the Rotating Trio Exchange (RTE) model. Furthermore, based on the results of the T-Test computation, the T-value exceeded the T-table, with 12.408 > 2.045. This also indicates a significant difference in students' vocabulary mastery after being taught through the Rotating Trio Exchange (RTE) model.

e)   Students' Response

Table 3. 6 Students' Response to Rotating Trio Exchange

No.	Statements	Response		Percentage	
		Yes	No	Yes	No
1.	You experienced no difficulties and were satisfied when learning English using the Rotating Trio Exchange model.	28	2	93%	7%
2.	This Rotating Trio Exchange model helped you to improve your vocabulary and makes you more confident.	29	1	97%	3%
3.	This model could motivate you to learn vocabulary.	27	3	90%	10%
4.	You were very interested in learning English especially vocabulary using the Rotating Trio Exchange model.	28	2	93%	7%
5.	This method was very simple and not complicated during its application in learning English.	25	5	83%	17%
	Total	137	13	457%	53%
	Mean			91%	9%

The researcher used a closed-ended questionnaire adopted by Robinson (2001), to determine how much of a positive or negative response a student had towards Rotating Trio Exchange as a learning model.

Based on Table 3.6, the first statement received 93% positive response which 28 out of 30 students chose "Yes". The second statement received 97% positive response which 29 students chose "Yes" and only 1 student chose "No". The third statement received 90% positive response which 27 students answered "Yes". The fourth statement received 93% positive response which 28 students answered "Yes". The last statement got 83% which 25 students answered "Yes" and 5 students answered "No". Overall, there were 91% positive responses and 9% negative responses from students in response to vocabulary mastery after being taught using the Rotating Trio Exchange Model.

Discussion

Discussion 1
The researchers used Microsoft Excel and SPSS to analyze data on students' pretest and posttest scores in order to address the first research question. The results indicated that tenth-grade accounting students at SMK Amal Bakti Jatimulyo had improved their vocabulary mastery abilities as a result of being taught using the Rotating Trio Exchange model. This is supported by the calculation results, where the two-sided significance value is 0.000. This indicates that H1 is accepted, and H0 is rejected because $0.000 < 0.005$. This demonstrates that there is indeed a significant difference in students' vocabulary mastery after being taught using the Rotating Trio Exchange model. Furthermore, the high percentage of positive responses from students (97%) to the second statement in the questionnaire, "This Rotating Trio Exchange model helped you improve your vocabulary and made you more confident," further supports the notion that the Rotating Trio Exchange teaching model aids students in enhancing their vocabulary mastery, positively impacting their learning achievements, and boosting their confidence in learning English.

The findings of this study are consistent with those of a study by Maharida, M. (2015), which revealed that the use of the Rotating Trio Exchange model to enhance students' speaking skills, particularly in terms of accuracy and fluency, was successful and significant. These results reinforce the idea that the Rotating Trio Exchange model is effectively employed in English language learning. This effectiveness is strongly influenced by the interaction among students in groups, as students are enthusiastic about collaborating when teachers use the Rotating Trio Exchange model for classroom instruction. This approach prevents boredom and allows various tactics to complement one another. It is worth noting that the previous research focused on speaking skills, whereas this research delves into vocabulary. Group study fosters an interactive learning atmosphere that is conducive to students practicing their ability to work cooperatively in groups to solve problems. This aligns with the statement made by Silberman (2016), who described the Rotating Trio Exchange (RTE) as a learning model in which students learn by discussing topics with some of their classmates, fostering collaboration and mutual support in solving tasks assigned by the teacher.

The researcher conducted the treatment in three meetings. During each meeting, the researcher provided two exercises. In the first meeting, the researcher initiated a brainstorming session by asking the students about their vocabulary and their understanding of the simple past tense. The researcher then explained the material to the students. Following that, the students were divided into ten groups of three, each represented by the numbers 0, 1, and 2, with the student chairs arranged in a U shape. Subsequently, the researcher gave them exercises related to vocabulary (nouns, verbs, adjectives, and adverbs), which the students discussed within their groups. After receiving the discussion material and assignments, group members numbered 0 presented the results of their discussions for exercise 1. The outcomes of their work

were then evaluated collectively. Next, group members rotated, with member number 1 moving to another group clockwise, and member number 2 moving to another group in the opposite direction. This rotation formed new groups to discuss exercises 1 and 2.

In the second meeting, the researcher reviewed the material, questions, and discussions from the previous meeting before dividing the students into trios as before. The group discussions continued for exercises 3 and 4. During the third session, the researcher provided students with the opportunity to ask questions about anything they did not understand. Afterward, the students were once again divided into trios and engaged in group discussions for exercises 5 and 6. This teaching approach aligns with Palmer (2014), who described Rotating Trio Exchange (RTE) as a classroom exercise in which students are divided into groups of three and rotated. This model encourages active participation, as students collaborate in groups, making the class more dynamic. Active and comprehensive learning ensures that students remain engaged from the beginning to the end of the group work (Silberman 2016).

Discussion 2
In this second discussion part, the researcher aim to address the second research question, which pertains to identifying the aspects of vocabulary that showed the most improvement after students were taught using the Rotating Trio Exchange (RTE) model. For this research, the types of vocabulary used included content words, specifically nouns, adjectives, verbs, and adverbs. These four aspects were integrated into the linguistic elements of recount text within the learning material, encompassing simple past tense (verb) and vocabulary (noun, adjective, and adverb).

To assess the improvement in students' vocabulary mastery, the researcher administered a vocabulary test covering these aspects. The test consisted of 12 questions for the noun aspect, 12 questions for the adverb aspect, 13 questions for the adjective aspect, and 13 questions for the verb aspect, totaling 50 questions. Content validity was applied to the questions, resulting in 40 valid questions and 10 invalid questions due to an imbalance of correct and incorrect answers provided by students for each question. The test results were then analyzed in detail for the four vocabulary aspects.

Based on the findings related to vocabulary learning following instruction using the Rotating Trio Exchange model, all four aspects of vocabulary exhibited improvement. This is evident from the data, where the mean score of each aspect in the post-test showed improvement compared to the mean score in the pretest. In the pretest, the students' mean scores for each aspect were as follows: 5.80 for nouns, 10.63 for verbs, 11.60 for adjectives, and 10.63 for adverbs. In contrast, the mean scores for each aspect in the posttest were as follows: 8.01 for nouns, 14.69 for verbs, 16.02 for adjectives, and 14.69 for adverbs. According to these results, there was a noticeable improvement in all four vocabulary aspects in the posttest: nouns (an increase of 2.21, equivalent to 14.99%), verbs (an increase of 4.06, or 27.52%),

adjectives (an increase of 4.42, or 29.97%), and adverbs (an increase of 4.06, or 27.52%).

Adjectives showed the most significant improvement among the aspects because students felt more familiar with adjectives, making it easier for them to recognize these types of words. The adjective words included in the test were common English expressions frequently encountered by students in their regular academic activities. Additionally, the higher number of questions for the adjective aspect contributed to its greater improvement. These factors collectively influenced the test results, resulting in adjectives being the aspect with the highest percentage of improvement. In contrast, the verb aspect posed challenges for students, particularly when they had to identify the past form of a verb. Verbs in the past tense are not uniform due to regular and irregular verbs, making it difficult for students to determine the past tense of a word during the test. For the adverbs aspect, students encountered difficulty distinguishing between some adverb words and adjective words, which made it challenging for them to choose the appropriate word for a sentence. Students could easily recognize this type of word if it ended with "ly." Nouns exhibited the least improvement because students had difficulty selecting terms with similar meanings due to their limited vocabulary. Problems such as synonyms or words with similar meanings in nouns posed challenging questions for students. This difficulty arose because students were accustomed to knowing only one word for each term in Indonesian, while in English, multiple words could have the same meaning depending on the context in which they were used.

These results align with the findings of a previous study conducted by Amalia, L., Suparman, U., & Mahpul (2017), where it was also observed that the aspect that showed the most significant improvement was adjectives among all the aspects aimed at enhancing students' vocabulary mastery. Both the past and current studies indicate that the adjective aspect is the area of learning that exhibited the most significant improvement in efforts to enhance students' vocabulary mastery. This finding underscores the students' familiarity with adjectives, enabling them to quickly identify these words in texts and facilitating their performance on tests related to adjectives.

Discussion 3
This section aims to address the third research question, which focuses on understanding students' responses after they were taught the simple past tense using the Rotating Trio Exchange model. To gather students' responses, the researcher distributed closed-ended questionnaires. As noted by Wang, L., Hong, C., & Hsu, C. (2006), well-designed questionnaires, especially those with closed-ended and rating-scaled questions, are crafted to carefully phrase each question to capture the necessary information effectively. Such questions contain specific keywords to accurately represent the subject of the question.

The researcher adopted a closed-ended questionnaire by Robinson (2001) to find students' responses and assess the effectiveness of the Rotating Trio Exchange model as a learning approach. According to Saris, Willem E., and Gallhofer, Irmtraud N. (2014), closed questionnaires consist solely of answer requests with explicitly stated answer categories. Therefore, the researcher created a questionnaire comprising five statements related to vocabulary learning activities using the Rotating Trio Exchange model, with two answer choices: "agree" and "disagree".

Based on the results of student responses, there were a total of 91% positive responses and 9% negative responses from students regarding the implementation of the Rotating Trio Exchange model in learning about the linguistic elements of a Recount text (simple past tense: verb and vocabulary: noun, adjective, and adverb). The 91% result represents the average percentage of all student responses to each statement.

The positive responses from students in this research are consistent with previous findings by Yuliyati, Y., Baharuddin, & Rafiqah (2016), where student responses to learning using the Rotating Trio Exchange learning model fell within the "very good" category. The average percentage of student learning activity in the affective aspect of students' learning through the Rotating Trio Exchange (RTE) cooperative learning model was 74.78%.

Among the five items on the questionnaire provided to students in this research, the first statement received a 93% positive response, with 28 out of 30 students selecting "Yes." This indicates that 28 students felt no difficulty and were satisfied with learning English using this learning model. The second statement received a 97% positive response, with 29 students choosing "Yes," while only 1 student chose "No." This implies that only 1 student out of 30 did not feel more confident in learning English after using this model. The third statement received a 90% positive response, with 27 students answering "Yes," indicating that 27 students were motivated to learn using the Rotating Trio Exchange model. The fourth statement received a 93% positive response, with 28 students answering "Yes," revealing that only 2 students were not interested in learning English using this model. The last statement received an 83% positive response, with 25 students selecting "Yes" and 5 students choosing "No." This suggests that 25 students found this model quite simple, while 5 students considered it somewhat complicated.

The second statement received the most positive responses among the others. Statement number 2 was "This Rotating Trio Exchange model helped you to improve your vocabulary and made you more confident." There were 29 out of 30 students whose learning process was aided by using this learning model. Therefore, the increase in students' vocabulary had a positive impact on enhancing their confidence in learning English. Students who felt more self-assured were more actively engaged in the learning process and were less intimidated by English, particularly its vocabulary.

On the other hand, the statements that received the least positive responses compared to the others were statements number 3 and 5. Statement number 3 was "This model can motivate you to learn vocabulary." Some students felt that this model was not sufficiently motivating for them. Meanwhile, statement number 5 was "This method was very simple and not complicated during its application in learning English." Several students argued that this model was not simple enough to be applied effectively in learning English. Based on the results of the 91% positive response rate, it is evident that students generally had a more positive response toward the Rotating Trio Exchange as a learning model.

IV. CONCLUSION AND SUGGESTION

Conclusion

There is an improvement on students' vocabulary mastery after being taught using the Rotating Trio Exchange model in the tenth grade accounting students at SMK Amal Bakti Jatimulyo. The calculation result on the two tailed significance value is 0.000. This means that H1 is accepted and H0 is rejected because 0.000 <0.005. This proves that there is a significant difference on students' vocabulary mastery after being taught through the Rotating Trio Exchange model.

The aspects that improved the most after students being taught using the Rotating Trio Exchange model is adjectives (29.97%), followed by verbs (27.52%) and adverbs (27.52%) and nouns (14.99%) as the least improved aspect. Adjectives are the most improved aspect because students recognize this type of word more easily than others.

Futhermore, student responses are more positive towards the Rotating Trio Exchange as a learning model. This is based on the results of student responses, which are 91% positive responses and 9% negative responses from students.

Suggestion

The researcher recommended several suggestions for both English teachers and further research. For teachers, the researcher recommend that teachers effectively manage their time and document any issues that may arise during the instruction for later evaluation at the end of the class activities. In addition, teachers can also offer various nouns along with their synonyms, antonyms, or other words with related meanings to enhance students' limited vocabulary of nouns.

The second suggestion is that further researchers can explore the use of the Rotating Trio Exchange model at different school levels. Additionally, future researchers are also advised to explore alternative strategies to ensure a balanced increase in each aspect of vocabulary and calculate further vocabulary growth in each aspect (Noun, Verb, Adjective, and Adverb) using a method that contains more detailed levels of significance.

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