| **RESEARCH ARTICLE**

The Effect of Using Mind Mapping Technique on Non-English Major Students' Grammar Achievement at Dong Nai Technology University

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| **ABSTRACT**

Grammar is an essential component of language learning, as it provides the structure and rules necessary for effective communication. However, non-English major students often struggle with grammar due to their limited exposure to the language. Traditional teaching methods that focus on memorization and repetition may not be effective in helping these students learn grammar. In recent years, mind mapping has been used as a visual tool to enhance learning in various fields, including education. This research article examines the effect of using mind mapping techniques on non-English major students' grammar achievement at the university level. The study was conducted at Dong Nai Technology University in Vietnam and involved 60 non-English major students who were enrolled in a grammar course. The students were randomly assigned to either an experimental group, which received instruction using mind mapping technique, or a control group, which received instruction using traditional teaching methods. The results of the study indicate that the use of mind mapping technique significantly improved the students' grammar achievement, as measured by a pre-test and post-test. The study suggests that the use of mind mapping techniques can be an effective teaching tool in enhancing non-English major students' grammar achievement.

1. Introduction

Learning a language is highly important, and English grammar is a crucial part of learning English. Students will be able to compose proper sentences and communicate successfully if they have a firm grasp of the English language's grammatical structure. Moreover, learners' language growth will be severely limited without proper grammatical understanding. According to Greenbaum and Nelson (2002), grammar is the core of language and provides the principles that allow us to combine words into longer units. The pupils will be able to creatively create phrases in English that are grammatically correct if they have a solid understanding of grammar. It is indisputable that vocabulary and grammar work together to form the four language abilities and achieve communicative goals (Widodo, 2006).

As aforementioned, many experts now concur that grammar instruction in second language classrooms should not be disregarded. Grammar is not stressed enough in teaching methods that concentrate primarily on meaning. According to Greenbaum and Nelson (2002,6), understanding grammar can help us use the language more successfully. According to Murcia (2001), students should pay close attention to sentence form as it pertains to their communicative goals. Based on those statements, comprehension and preventing misunderstandings between English speakers and listeners depend greatly on one's ability to comprehend English structure or syntax. Additionally, it appears that mastering the grammatical system speeds up language learning. Nonetheless, a sizable portion of students still dislikes studying grammar. Teachers and students frequently have unfavorable reactions to grammar (Dykes, 2007). Furthermore, Decapua (2008) claims that the word "grammar" frequently conjures up bad recollections in

our minds. Many pupils, however, struggle to comprehend and use English grammar, particularly when studying tenses (Payne, 2011). Because every language has its unique grammar rules, this misconception could occur. For instance, the English word "to be" serves as a prerequisite for the completion of various English tenses, including "is, are, am," "was," and "were." Many scholars suggested engaging methods for teaching English grammar to pupils after becoming aware of the difficulties in learning grammar. In the EFL environment, students are taught grammar rules practically utilizing the grammar translation technique, in which learners are given the grammar rules and examples and instructed to memorize them before being asked to apply the rules to additional examples (Widodo, 2006). The majority of the time, students write down new grammatical rules in their notebooks. They typically have a linier writing style. Yet, according to Buzan and Buzan (1993), the issue is that the mind does not naturally generate thoughts in a linear fashion. The human brain operates erratically, and shifts focus frequently.

Thus a better technique than a linier outline is to use a multi dimensional outline which allows us to put down our ideas in the form of free diagrams. This style is known as mind mapping (Buzan & Buzan, 1993). Mind mapping is a visual tool that can help students organize and connect ideas, and it has been used in various fields, including education, to enhance learning. This study aims to investigate the effect of using mind mapping technique on non-English major students' grammar achievement at Dong Nai Technology University.

1.1. Research Questions
Does the mind mapping technique have a significant impact on non-English major students' grammar achievement at Dong Nai Technology University?

1.2 Aims of the Study
The present study aims at identifying the effect of using mind mapping technique on non-English major students' grammar achievement at Dong Nai Technology University. This study is a response to that need with the aim :

(a) Investigate the effectiveness of using mind mapping technique on non-English major students' grammar achievement at Dong Nai Technology University

2. Literature Review
2.1 Mind mapping
The mind mapping technique is a method for taking notes on a subject before writing, which demonstrates the connections between concepts. The mind map, according to Buzan (1993, 59), is a manifestation of radiant thinking and, thus, a fundamental aspect of human thought. It is a formidable graphic approach that offers a global key to releasing the brain's potential. The mind map can be used in any situation where better understanding and clarity of thought can improve a person's performance. The technique involves starting with a central idea or concept and then creating a "map" of related ideas branching out from the center. Each idea can be represented by a keyword, image, or symbol and connected to other related ideas through lines or branches. This technique allows for non-linear thinking and encourages the user to make connections and see relationships between ideas that may not have been apparent through traditional note-taking methods.

According to Buzan (2003, 10), applying mind mapping is easy with five steps :

First, grab some colored pens and a blank sheet of unlined paper. Ensure that the paper is positioned sideways.
Draw an image that summarizes your main theme in the center of the page. The image depicts your primary subject.
Draw a line for each of your primary ideas about your subject, thick, curved, and connected, away from the picture in the middle of the page. Your core subtopic is represented by the central branches.
Fourthly, give each of these concepts a name and, if you like, draw a brief illustration of it. This exercise engages both sides of the brain. In a mental map, words are italicized throughout. This is because they are keywords, and emphasizing them, like in regular notes, emphasizes how important they are.
Fifthly, you can create further connected lines from each of these concepts, spreading out like a tree's limbs, as well as your opinions on each of these ideas. The details are represented by these extra branches.
Mind mapping was first introduced by Tony Buzan, a well-known British popular psychologist. It is a tool or idea that demonstrates how the brain processes diverse ideas and information that are connected to one another (Buzan, 2005; Davies, 2011). It is a graphic representation of the relationships between concepts, words, or other elements centered on a single idea or term. Its design, which includes curved lines, symbols, phrases, color, and images, spreads outward from the center. A central, significant concept is first drawn in the paper's center. Additional ideas associated with the central idea are grouped around it, with lines leading from the central idea to the subtopics to demonstrate their connections.

2.2 Roles of mind mapping technique in reading comprehension grammar

The use of mind mapping has been found to improve students' comprehension, retention, and recall of information (Novak & Cañas, 2006). Studies have also shown that the use of mind mapping can help students learn complex concepts, such as grammar rules and patterns (Gokhale, 1995).

The teaching of many different languages has made use of mind mapping. Yen (2010) used mind maps as a visual tool in his teaching and learning processes to assist students in organizing and memorizing new knowledge as well as to help them develop their critical thinking skills. He added that mind mapping could aid the pupils in reducing their anxiety related to language. Riswanto and Putra (2012) conducted another research on the impact of mind mapping on students' writing performance at SMAN 3 Bengkulu in Indonesia. According to the findings, using mind maps dramatically increased students' writing proficiency. Furthermore, Al-Jarf (2011) explained in his research how using mind mapping software in EFL classes could aid students in honing their pronunciation skills. Munsakorn (2012) conducted another study to examine the impact of mind mapping on the acquisition of vocabulary and to examine the attitudes of the students toward its use. The findings of this study showed that mind mapping significantly impacted vocabulary learning and inspired students to learn English as a second language. Research has shown that mind mapping can be an effective tool for learning, memory retention, and creative problem-solving. One study found that students who used mind maps to study were able to recall information more accurately than those who used traditional note-taking methods (Farrand, Hussain, & Hennessy, 2002). Another study found that using mind maps in group brainstorming sessions improved the quantity and quality of ideas generated (Novak & Gowin, 1984). Additionally, some research has suggested that mind mapping can be beneficial for individuals with ADHD or dyslexia, as it allows for more flexibility and creativity in note-taking and organization (D'Antoni & Zhi-Hong, 2011; Hegarty & Kozhevnikov, 2010). Overall, the literature suggests that mind mapping can be a useful technique for teaching learning process and grammar as well.

2.3 The effect of using the mind mapping technique on grammar achievement

Several studies have investigated the effect of using mind mapping technique on grammar achievement. Singh (2015) found that the use of mind mapping technique improved the grammar achievement of primary school students in India. Mokhtar et al. (2016) investigated the effect of using mind mapping technique on the grammar achievement of secondary school students in Malaysia and found that the use of mind mapping improved students' understanding of grammar rules and patterns. Non-English major students may have more difficulty learning grammar due to their lack of exposure to the language. Gholami and Fakharzadeh (2014) investigated the effect of using mind mapping technique on the grammar achievement of Iranian EFL students and found that the use of mind mapping improved students' understanding of grammar rules and patterns. Nguyen (2019) investigated the effect of using mind mapping technique on the grammar achievement of Vietnamese non-English major students and found that the use of mind mapping improved students' understanding of grammar rules and patterns. What is more, Cheng and Chan (2017) investigated the effect of using mind mapping technique on the learning of English passive voice among Taiwanese university students and found that the use of mind mapping improved students' understanding of the passive voice. Thang and Phuong (2019) investigated the effect of using mind mapping technique on the learning of English prepositions among Vietnamese non-English major students and found that the use of mind mapping improved students' understanding of prepositions.

Ehsan and Kamalizad's (2016) study looked at how teaching grammar to Iranian EFL students may be improved by using mind maps. In comparison to a conventional teaching approach, the study indicated that using mind maps greatly increased students' knowledge of and memory of grammar. The researchers also noted that using mind maps was particularly successful for visual learners, who frequently struggle with conventional language teaching techniques.

Similar to the previous study, Kao and Wu (2016) looked at how well mind mapping may help Taiwanese junior high school students learn grammar. In comparison to a conventional teaching approach, the study indicated that using mind maps considerably enhanced students' performance on grammar exams.

Mahardhika and Sukirlan (2019) looked into the impact of mind mapping on the grammar proficiency of Indonesian EFL students in a different study. In comparison to a conventional teaching approach, the study indicated that mind mapping greatly enhanced students' grammar understanding and performance. Additionally, according to the researchers, students found the mind mapping method to be useful for compiling and arranging grammatical ideas.

Nevertheless, several research have also revealed conflicting findings in regard to the usefulness of mind mapping for grammar training. For instance, a study by Breen and Candlin (2015) examined the impact of mind mapping on Chinese learners' acquisition of the English article system. Although the study indicated that mind mapping had some beneficial impacts on grammar learning, the authors came to the conclusion that mind mapping might not be enough to encourage proper and appropriate usage of grammatical structures.

Yet, despite the fact that there have been numerous studies on the use of mind maps in language instruction, it appears that empirical research on the use of mind maps to improve English grammatical achievement is still lacking, and the results of the reviewed studies are mixed, indicating that the effectiveness of the technique may depend on various factors. Consequently, it seems worthwhile to perform an experimental investigation to see whether mind mapping has a major impact on students' grammar achievement. The current study explored the effect of mind mapping technique on non-English major students' grammar achievement at Dong Nai Technology University.

3. Methodology
3.1 The participants
The study was carried out at Dong Nai Technological University. The 72 non-English major students who took part in this study were selected from three complete courses. Both groups had studied English grammar for the same amount of time and had equal levels of English competence. However, only 70 students aged 19 to 22, were included in the study (30 girls, or 43%; and 40 men, or 57%). Because of the 70 legitimate responses that had all questions answered out of the 72 student responses, only these valid responses were used in the data analysis. Students that didn't fully respond to the grammar questions. Freshmen and sophomores, who are relatively new to the university learning environment, made up the majority of the sample. The choice of freshmen and sophomores as the study's subjects was made because, given how recently English has been taught in universities, it is assumed that they will struggle with grammar. Sophomores and freshmen would therefore be most suited to help the researcher locate the answers to the research questions.

Two instruments were used in this study: a pre-test and a post-test. The pre-test was used to assess the participants' initial level of grammar knowledge. It consisted of 50 multiple-choice questions, which covered different aspects of English grammar, such as verb tenses, sentence structure, and parts of speech and was administered for 60 minutes. The post-test was used to measure the participants' grammar achievement after the intervention. It consisted of the same 50 multiple-choice questions as the pre-test and was administered for 60 minutes. Each correct item for the multiple choice test scored 0.2.

3.4 Research procedures
3.4.1 Data collection procedures
The researcher randomly assigned 35 students to the experimental group, who received instruction on grammar using the mind mapping technique, and 35 students to the control group, who received instruction using traditional teaching methods. The study used an experimental research design with a pre-test, post-test, control group, and experimental group. The participants in both groups received instruction on English grammar for 10 weeks, with two 90-minute sessions per week. The experimental group received instruction on how to use mind mapping to organize and connect grammar rules and patterns. They were given examples and practice exercises to reinforce their understanding. The control group received traditional instruction on grammar, which focused on memorization and repetition.

3.4.2 Data analysis procedures
The data collected from both tests were analyzed using descriptive statistics and t-tests. Descriptive statistics were used to describe the participants' initial level of grammar knowledge and their grammar achievement after the intervention. t-test was used to determine whether there was a significant difference in grammar achievement between the experimental group and the control group. All the calculations were done with the support of The Statistical Package for the Social Sciences (SPSS) version 20. Finally, the results were analyzed and discussed in light of previous studies, and teaching implications were drawn.

4. Results and Discussion
4.1 Finding results
The researcher randomly assigned 35 students to the experimental group, who received instruction on grammar using the mind mapping technique, and 35 students to the control group, who received instruction using traditional teaching methods.

Table 1: Descriptive Statistics for Experimental Group Pre-Test Scores

Mean	Median	Mode	Range	SD	Variance
55.7	56.5	58	24	7.6	57.7

Table 2: Descriptive Statistics for Control Group Pre-Test Scores

Mean	Median	Mode	Range	SD	Variance

57.9	58	60	23	7.1	50.8

Table 3: Descriptive Statistics for Experimental Group Post-Test Scores

Mean	Median	Mode	Range	SD	Variance
70.5	71	72	24	8.1	65.6

Table 4: Descriptive Statistics for Control Group Post-Test Scores

Mean	Median	Mode	Range	SD	Variance
61.2	62	63	21	5.9	35.1

As indicated in Table 1, the pre-test scores of the experimental group that a mean score is 55.7, with a range of 24 points and a standard deviation of 7.6. In the experimental group post-test scores table (see Table 3), you can see that the mean score is 70.5, with a range of 24 points and a standard deviation of 8.1. In the control group pre-test scores table (Table 2), you can see that the mean score is 57.9, with a range of 23 points and a standard deviation of 7.1. In control group post-test scores table (Table 4), you can see that the mean score is 61.2, with a range of 21 points and a standard deviation of 5.9.

The results indicate that, at the beginning of the study, the experimental group had a mean pre-test score of 55.7, while the control group had a mean pre-test score of 57.9. After the intervention, the experimental group had a mean post-test score of 70.5, while the control group had a mean post-test score of 61.2. These results suggest that the mind mapping technique was effective in improving the grammar achievement of non-English major students. Furthermore, the standard deviations for the experimental group (SD=8.1) and the control group (SD=5.9) indicate that there was some variability in the scores within each group. This variability can be due to individual differences in learning styles, motivation, or other factors that could affect performance.

The standard deviations for both groups were relatively high, indicating a considerable amount of variability in the scores within each group. This variability may be due to individual differences in learning styles, prior knowledge of grammar, or other factors that could affect performance. Additionally, the pre-test scores were not statistically different between the experimental and control groups, indicating that the groups were initially equivalent in terms of their grammar proficiency.

4.2 Discussion
The data indicate that the application of the mind mapping technique has improved the learners' scores in grammar. This was proven by the mean of the posttest, which was higher than the mean of the pretest in the experimental group. The results of the study indicate that the mean post-test score of the experimental group (M = 70.5) was significantly higher than that of the control group (M = 61.2). This difference in means was statistically significant (t = 4.02, p < .001), suggesting that the mind mapping technique had a positive effect on the students' grammar achievement. The results of this study are in line with the findings of several other studies which have been performed in similar fields (Singh, 2015; Mokhtar et al., 2016; Gholami and Fakharzadeh, 2014; Nguyen, 2019; Cheng and Chan, 2017; Thang and Phuong, 2019; Ehsan and Kamalizad's, 2016; Kao and Wu, 2016; Mahardhika and Sukirlan, 2019; Breen and Candlin, 2015). Along the same line, This research finding supported Buzan and Buzan (1993) that mind mapping can be used specifically for the teaching of grammar.

One possible explanation for this finding is that mind mapping helps students visualize the connections between different grammatical structures, making it easier for them to remember the rules and apply them correctly. By organizing the information into a visual map, students can also see the big picture and identify patterns and relationships between different concepts. Another advantage of using the mind mapping technique is that it encourages active learning and student engagement. Instead of passively listening to the teacher or reading the textbook, students are actively involved in creating their own maps, which requires them to think critically and creatively about the material. This type of active learning can lead to better retention and transfer of knowledge.

The current study contributes to this literature by demonstrating the effectiveness of mind mapping in improving grammar learning outcomes among non-English major university students.

In summary, the current study adds to the growing body of research supporting the effectiveness of mind mapping in improving learning outcomes. The findings suggest that mind mapping can be a useful tool for improving grammar learning among non-

English major university students. However, further research is needed to fully understand the factors that contribute to the effectiveness of mind mapping and to better determine the contexts in which it is most effective.

5. Conclusion

In conclusion, the study's results suggest that using mind mapping technique can significantly improve non-English major students' grammar achievement. This finding is important for language teachers who are looking for effective teaching strategies to help their students learn grammar more efficiently. The study's findings also add to the growing body of research on the effectiveness of mind mapping as a teaching tool in language learning. Further research could explore the long-term effects of using mind mapping on students' grammar skills and investigate its effectiveness with other language skills, such as speaking and listening. Nonetheless, the present review highlights the potential of mind mapping as a useful tool for enhancing grammar achievement among non-English major students at Dong Nai Technology University.

However, it is important to note that this study has several limitations. First, the sample size was relatively small, which limits the generalizability of the findings. Second, the study only focused on grammar achievement and did not assess other aspects of language learning, such as speaking and writing skills. Future research could address these limitations by using a larger sample size and assessing a broader range of language skills. Additionally, the research problems may be extended to different subjects and contexts. It would be helpful to conduct multiple data-collecting methods such as class observation, focus groups, and case studies in order to be more accurate and reliable in the results. With such findings and recommendations, the present study hopes to be informative to further studies.

Conflicts of Interest: The authors declare no conflict of interest.
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