

USING MIND MAPS IN TEACHING ENGLISH GRAMMAR TO GRADE-10 STUDENTS

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ABSTRACT

Language teachers have already employed mind mapping techniques to encourage their students to learn vocabulary. The current study aimed at investigating the effectiveness of using mind mapping on grade-10 students' grammar learning. The sample of the study consisted of 20 students from grade 10 at Thai Nguyen High School for Gifted Students, who were equally divided into two groups (experimental and control). The research was conducted based on mixed methods since it employed experimental, qualitative and quantitative methods. First of all, an experiment was carried out to examine the impact of mind maps on grade 10 students' mastery of English grammar. The results of the experiment showed that there are statistically significant differences in the mean scores of the experimental and control groups in the grammar posttest due to the use of mind mapping in favor of the experimental group. Along with the experiment, classroom observation was carried out to gather data related to students' reaction and attitudes in grammar lessons. Finally, questionnaires were administered before and after the experiment to collect learners' problems related to learning grammar as well as their feedback toward using mind maps in grammar classes. Based on the findings, the research provided suggestions that help students and teachers use mind maps in learning and teaching grammar successfully.

Keywords: *English grammar; grade 10 students; grade-10 English textbooks; mind maps; traditional teaching methods.*

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SỬ DỤNG SƠ ĐỒ TƯ DUY TRONG VIỆC DẠY NGŨ PHÁP TIẾNG ANH CHO HỌC SINH LỚP 10

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TÓM TẮT

Giáo viên ngoại ngữ đã sử dụng sơ đồ tư duy để khuyến khích học sinh học từ vựng. Mục đích của nghiên cứu này là điều tra tính hiệu quả của việc sử dụng sơ đồ tư duy trong việc dạy và học ngữ pháp của học sinh lớp 10. Đối tượng nghiên cứu bao gồm 20 học sinh lớp 10 trường THPT Chuyên Thái Nguyên, được chia thành hai nhóm (thực nghiệm và đối chứng). Nghiên cứu được thực hiện dựa trên các phương pháp thực nghiệm, định tính và định lượng. Trước hết, một thực nghiệm đã được tiến hành để kiểm tra tác động của sơ đồ tư duy đối với trình độ ngữ pháp của học sinh lớp 10. Kết quả thực nghiệm cho thấy có sự khác biệt không nhỏ trong điểm trung bình của nhóm thực nghiệm và nhóm đối chứng trong bài kiểm tra ngữ pháp vì việc sử dụng sơ đồ tư duy trong việc dạy và học ngữ pháp đã có tác động tích cực lên nhóm thực nghiệm. Cùng với thực nghiệm, việc quan sát lớp học cũng được thực hiện để thu thập dữ liệu liên quan đến phản hồi và thái độ của học sinh trong các bài học ngữ pháp. Cuối cùng, bảng hỏi được sử dụng trước và sau thực nghiệm nhằm thu thập khó khăn liên quan đến việc học ngữ pháp cũng như phản hồi của người học đối với việc sử dụng sơ đồ tư duy trong các lớp học ngữ pháp. Dựa trên kết quả điều tra, nghiên cứu đã đưa ra những gợi ý giúp học sinh và giáo viên sử dụng sơ đồ tư duy trong học tập và giảng dạy ngữ pháp một cách hiệu quả.

Từ khóa: *Ngữ pháp Tiếng Anh; học sinh lớp 10; sách giáo khoa Tiếng Anh 10; sơ đồ tư duy; phương pháp dạy học truyền thống.*

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1. Introduction

In different studies, researchers discussed different techniques and methods of learning and teaching English grammar. As Gower, Phillip & Walters [1] stated that visual aids add variety and interest to the lesson and help make a classroom a stimulating and attractive place. Mind maps also provide students with a great motivation to study well because mind maps make learners creative and interested in studying grammar. They find out advantages of using mind maps in teaching languages, and both of them show disadvantages of mind maps while reviewing this technique. However, none of them has a research done with the grammatical knowledge in new English high school textbooks for grade-10 students. Therefore, in this research, we investigated the impact of mind-maps on students' grammar learning process and results. We do hope that mind maps could motivate students to learn grammar through the use of colourful images and drawings as colourful pictures and lines in mind maps can enhance the knowledge acquisition and memory processes.

2. Aims of the study

The study aims at, firstly, investigating the effectiveness of using mind maps in teaching grammar to grade 10 students at high school. Secondly, the researcher intends to suggest some solutions to improve the effectiveness of using mind maps in teaching and learning grammar in new English textbooks for students at a high school.

The following research questions were posed:

- (i) What is the current situation of learning and teaching Grammar at Thai Nguyen High School for Gifted Students?
- (ii) To what extent do mind maps have impact on grade 10 students' mastery of English grammar?
- (iii) What might be done to enhance the effectiveness of using mind maps in teaching and learning grammar?

3. Literature review

3.1. Definition of mind mapping

Mind mapping is also known as visual mapping, flow charting, visual thinking and spider diagramming. According to Budd [2] "a mind map is an outline in which the major categories radiate from a central image and lesser categories are portrayed as branches of larger branches". Biktimirov and Nilson [3] defined mind mapping (or "idea" mapping) as "visual, non-linear representations of ideas and their relationships".

3.2. Use of mind mapping techniques in language teaching

Mind mapping techniques have been developed since the late 1960s, and they are now being successfully applied in teaching and learning languages thanks to their great benefits. They can be used for creative thinking, note making, decision making and report writing. According to Buzan [4] in order to create a mind map, students have to activate both sides of the brain; therefore their productivity and memory were enhanced. The strong visual appeal of mind maps can accelerate the learning process and help students memorise and retrieve information effectively [5]. Buzan [6] added that "the more personalised the mind maps, the more easily the learner could recall information". As stated by Kotcherlakota, Zimmerman, & Berger [7], "mind maps help students clarify their thinking and lay the foundation for in-depth expertise related to their research focus, review of the literature, and conceptual framework".

As stated by Wen [8], visual learning can create learning motivation and develop self-study abilities for students; therefore, it can enhance students' reading and writing skills. Besides, the fact that students can make their own maps with colourful images and lines raises their interests and creativity and consequently their competences in reading and writing [9]. As pointed out by Li, Yang & Chen [10], mind mapping is effective for knowledge

building and understanding, vocabulary learning and ideas association. Mind-mapping has been studied in such areas as spelling, categorisation, synonyms and free association.

In the article “Real-time feedback systems in a foreign language teaching: A case of presentation course” [11] the authors emphasised that mind maps give learners the opportunities of promoting a new awareness, various kinds of discoveries, and a deeper reflection about their works. They come to the conclusion that their “system can be incorporated into Learning Management Systems (LMS), and it has a large potential for further use in a distant learning environment to capture an overall reaction from the audience all over the world”.

Al Naqbi [12] observed the use of mind mapping to develop writing skills for students in UAE schools. He proved that mind mapping helped “students to plan and organize their ideas for writing tasks under exam conditions”.

Heidari and Karimi [13] investigated the impact of mind mapping on learning and remembering vocabulary. The research results showed that this technique helped the learners master the new words quickly.

Al Zahrani [14] tried to explore the impact of using mind maps in teaching the future tense to third-year students in secondary schools, Sabya, Saudi Arabia at the three levels of Bloom’s Taxonomy (Knowledge, Comprehension and Application). The researcher recommended the necessity of using mind maps in teaching grammar, and the necessity of providing training courses for language teachers.

4. The study

4.1. The research design

The research was conducted based on mixed methods since it employed experimental, qualitative and quantitative methods. First of all, an experiment was carried out to examine the impact of mind maps on grade 10 students’ mastery of English grammar. Coupled with the experimental method,

qualitative method was carried out with observation checklists during the process of the experiment to gather data related to students’ reaction and attitudes in grammar lessons. Finally, quantitative method was undertaken by questionnaires to collect learners’ problems related to learning grammar as well as their feedback toward using mind maps in grammar classes.

4.2. The participants

20 students from Class Chemistry 10, Thai Nguyen High School for Gifted Students were asked to take part in the research. The researcher put 10 students into the experimental class (the experimental group) and 10 in the traditional class (the control group), and only the experimental class was taught grammar with mind maps.

4.3. Research instruments and procedure

4.3.1. Pre-questionnaire

The researcher used survey questionnaires as the data collection instruments of this research. Three questionnaires were briefly designed concentrating on the research questions, one for the teachers, one for the students in both groups and the other for the experimental group only. Each questionnaire consisted of three kinds of questions: “factual”, “behavioral”, and “attitudinal” ones. In the design of questions, the researcher combined two types of items: open- ended questions and close – ended questions. Open- ended questions were designed to exploit more information from respondents.

Firstly, questionnaires were administered among 10 English teachers of Thai Nguyen High School for Gifted Students at the beginning of the experimental time. The questionnaire for teachers included 7 questions. Question 1 was to find out the students’ difficulties in studying English grammar. Question 2 was for exploring the teachers’ teaching techniques. Questions 3, 4, 5 and 6 were about the teachers’ experiences of using mind maps for teaching grammar. Last but not least, question 7 was designed for the teachers to give suggestions for using

mind maps effectively. The number of survey questionnaires collected from teachers was 10. As a result, the researcher knew the difficulties with which the teachers cope while teaching English grammar as well as their opinions and attitudes relating to the techniques that they use in grammar lessons. This helped the researcher design useful lesson plans for the experimental class.

In addition, questionnaires for the students in both groups (the experimental class and the traditional class) were also delivered before the experiment. These questionnaires were employed to figure out the techniques their teachers have used to teach grammar and their difficulties in learning grammar such as understanding, interest and memorizing rules.

Finally, a questionnaire for the experimental group was given at the end of the experimental time. This questionnaire was utilized to discover data regarding learners' experience of using mind maps, their attitude to experimental grammar lessons through using mind maps and their suggestions to improve the effectiveness of using mind maps.

4.3.2. Pre-Test

The pre-test aimed to know students' grammar mastery before being taught with mind maps. The researcher came to the Chemistry class which has a total number of 30 students and introduced the research to ask for their help. Next, the researcher let them do a pre-test for 30 minutes. All the 26 questions items were multiple-choice, which covered all the grammatical points in grade-10 English textbooks, including English tenses, comparisons, passive voice, conditionals, reported speech, etc. Then, the researcher collected and marked the students' pre-tests and placed the 20 chosen students into 2 groups: the experimental group (studying with mind maps) and the control group (studying without mind maps) on a condition that both groups' level of English proficiency is in a perfect balance. In other words, each group consists of 10 non-English majors.

4.3.3. Lesson Plans

Ten grammar lessons in which mind-mapping was integrated were delivered to the experimental class by the researcher teacher while the traditional class experienced their normal lessons with their teacher. In each of the experimental lesson, the teacher introduced grammar points with mind maps and then required students (individually or in groups) to make their own mind maps to illustrate the grammar point. During the first lesson, the teacher instructed the students how to draw mind-maps so that they could get familiar with the mind-mapping technique and could make their own mind maps for the later grammar points.

4.3.4. Observation checklist

The researcher designed a checklist with 3 main contents for the experimental class: students' attitude while learning with mind maps in the class, interaction of students during the lessons and atmosphere in the class.

Classroom observation was carried out by the researcher during the ten grammar lessons in the experimental class and traditional class. They were utilized to discover data regarding the activities or tasks designed by the teachers, the interaction among the students in the class when the teacher conducts these activities or tasks.

4.3.5. Post-test

After having delivered the ten grammar lessons, the researcher required students from both groups to sit for another test for 30 minutes, and then collected and evaluated students as a post-test in order to know how much their progress was and find out the differences between the two groups' results. The post-test also comprises 26 multiple-choice questions items.

The post-test covered all the grammar points included in the pre-test, namely English tenses, comparisons, passive voice, conditionals, reported speech, etc. The difficulty level of the pre- and post- tests was the same, but the question items were different.

4.3.6. Post- questionnaire

The post- questionnaires were delivered to the experimental group as the last stage of the data collecting process to gather information regarding students' attitudes towards using mind maps and their suggestions to improve the effectiveness of utilizing mind maps for teaching and learning grammar.

5. Finding and discussion

5.1. The current situation of learning and teaching Grammar at Thai Nguyen High School for Gifted Students

5.1.1. Teachers' techniques for teaching grammar

In the questionnaire for teachers, the researcher asked about techniques that they use for teaching grammar. All of the teachers claimed that they give examples for all the grammar points during the lessons; most of them responded that they design group works and discussions and assign students with a lot of exercises while teaching grammar; half of them put a tick for games. However, only 2-3 of the respondents agreed that they are keen on using pictures, showing videos, and giving reading materials. None of the surveyed teachers said that they just explain or use other techniques in the grammar lessons. Specifically, only two teachers employ mind maps in their grammar lessons. It can be concluded that mind-mapping is not a common technique in teaching grammar at Thai Nguyen High School for Gifted Students (Table 1).

Table 1. Teachers' techniques for teaching grammar

Teachers' techniques	Number of teachers	%
Just explaining	0	0
Using pictures	3	30
Giving examples	10	100
Giving a lot of exercises	7	70
Designing group works and discussions	8	80
Showing videos	2	20
Giving reading materials	3	30
Games	5	50
Mind maps	2	20
Other techniques	0	0

5.1.2. Students' problems in studying English grammar

The researcher also gathered the students' opinions about their problems while leaning grammar. As can be seen in Table 2, the biggest problem that students face is lack of confidence in their ability to use grammar for communication. It can be explained that students usually do not pay attention to grammar while talking. Other common problems are boring lessons, boring materials, complicated grammar points and difficulties in remembering grammar rules. Less serious problems are students' experience with learning grammar. From this analysis it can be seen that students are not very interested in grammar lessons; therefore, it is necessary to make the lessons more interesting to attract students' attention to the grammar points and help them remember all the grammar rules well. Mind-mapping may be a useful technique to raise students' attention and memory.

Table 2. Students' problems in studying English grammar

Problems	Number of Sts	%
I find grammar lessons boring.	9	45
I am not engaged by the material being used.	13	65
I do not like doing grammar homework	7	35
I had a negative experience in the past with another teacher.	5	25
I had a negative experience in the past while trying to study grammar by myself.	6	30
I find the grammar points in the textbook too complicated to master.	9	45
I can not remember all the grammar rules.	15	75
I lack confidence in my ability to use grammar for communication.	19	95
Other problems	0	0

5.2. Impact of mind maps on students' mastery of grammar

5.2.1. Students' scores in the grammar tests

To assess the impact of mind maps on students' mastery of grammar points, a pre-test and a post-test were carried out in the study. The table below summarized the scores that students got in the pre- and post- tests (Table 3).

Table 3. *Students' scores in Grammar tests*

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	Average
Pre-test Results	5.6	5.2	6.4	6.0	4.4	7.6	8.0	6.0	6.4	6.8	6.24
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	
	6.0	6.4	6.4	8.4	5.6	6.8	7.2	4.8	4.4	6.8	
Post-test Results	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	7.84
	7.6	6.4	6.8	8.8	7.2	9.2	8.8	7.6	7.6	8.4	
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	
	7.6	6.8	7.6	9.2	6.0	6.8	8.4	6.0	5.2	6.8	7.04

In the table, names of students are coded as C + number or E + number. C means Control and E means Experimental. From the table, it can be seen that both the experimental group and control group have made significant progress after the 10 grammar lessons since there are noticeable differences between the pre-test and the post-test results. However, the statistics related to the test results of the two groups are noticeably different in many aspects. Specifically:

- The average pre-test score of the experimental and traditional group is 6.24/10 and 6.28/10 respectively. In other words, both groups' level of grammar is almost similar.
- The average score of the experimental group in the post-test is 7.84; however, the average band score of the traditional group is only 7.04 although both groups' level of grammar before the experiment is quite similar. To put it another way, the average score in the control group is lower than that of experimental group. This proves that mind-mapping has a positive effect on learners' mastery of grammar.
- There is a significant difference (1.6) between pre-test scores and post-test scores of the participants in the experimental group while there is a less significant gap (0.76) between pre-test scores and post-test scores of the 10 students in the control group. This demonstrates that although the experiment was implemented in only 10 lessons, the participants' mastery of grammar is improved when learning with mind-maps. In the traditional classroom group, the improvement in grammar mastery is less than that of the experimental class.

5.2.2. Results of classroom observation

In addition, the results from the analysis of the observation checklists show that students' interaction, attitude during the lessons and the atmosphere in the experimental class was always more positive than in the traditional class. Specifically:

- Students in both of the classes listened to instructions, understood directions, was able to work independently and understood the concepts presented. However, in the traditional class, several students sometimes neglected the lessons.
 - While working with mind maps, the students were highly cooperative with the teacher as they followed the teacher's instructions. In addition, these students were more eager to join in group work or discussion related to drawing mind maps. In other words, the students interacted well with each other. In contrast, half of the students in the traditional class usually avoided group work or peer interaction. Furthermore, they were keen on waiting others to initiate communication or answer the teacher's questions.
 - Regarding the classroom atmosphere, in the experimental class, the students looked happy and interested in the lesson, which is the reason why the students were enthusiastic to take part in all the activities and tasks. The students in the control group, on the other hand, sometimes looked bored with yawns.
- Students' feedback on using mind maps while learning grammar.

The researcher designed a post-questionnaire for students in the experimental class to

collect their comment on the grammar lessons with mind maps. The students' responses are shown in the following table:

Table 4. *Students' feedback on using mind maps while learning grammar*

Feedback	Number of students
I can develop ideas fast.	7/10
I remember more.	9/10
I can ease the study process and makes it fun.	8/10
It is easy to add ideas later on.	9/10
I can develop my painting ability or imagining.	9/10
Mind maps give me perfect overview of my ideas.	10/10
I can categorize and organize the ideas that I brainstorm and identify their relationships.	10/10
I can improve my note-taking skills.	10/10

All of the benefits listed in questionnaire are voted by the experimental students with at least 70%. It is interesting to note that all of the students say that they can overview, categorize, organize ideas and identify their relationships as well as improve note-taking skills.

In conclusion, mind maps have positive influences on different aspects of teaching and learning grammar in grade 10 English curriculum. Mind maps can help students have positive attitude in the class and be enthusiastic; moreover, mind maps keep the atmosphere of the class happy, interesting and creative. Therefore, students' knowledge about English grammar is more consolidated, and then they have better study results.

6. Conclusion

The main findings of the study can be summarized as follows:

Firstly, the teachers at Thai Nguyen High School for Gifted Students employed various techniques while teaching grammar like explaining, giving examples, using pictures, designing group works and discussions, etc.; however, only few of them used mind maps.

Secondly, the students at Thai Nguyen High School for Gifted Students had a lot of

problems related to learning grammar. Some of the biggest problems were their ability to use grammar for communication, complicated grammar rules and boring learning materials.

Thirdly, it can be seen that there was a considerable change between pre-test score and post-test score of the participants in the experimental group while the difference between pre-test score and post-test score of students in the control group was much less significant. This shows that after the 10 grammar lessons with mind maps, the students' English grammar was improved significantly.

Finally, by analyzing students' questionnaire responses gathered and observing the classes, the researcher realizes that mind-mapping stimulated students' interest and desire to learn English grammar.

In conclusion, mind-mapping is a useful technique for teaching and learning English grammar. The results of this research have shown that helping grade-10 students to draw their own colorful and interesting mind maps could reduce their difficulties to learn and remember grammar points for a longer period of time. Grammar lessons with the use of mind maps are much more interesting as they can motivate students to study and employ grammar rules regularly. Besides, the skills making mind-maps are easy to develop; therefore, they could apply this technique for not only learning grammar but also for learning other aspects of languages such as new vocabulary and skills like writing and reading.

7. Recommendations for teachers in teaching English grammar with mind maps

Based on the disadvantages and suggestions found out in the study, the researchers would like to give some recommendations for teachers when teaching English grammar with mind maps.

7.1. Notice and solve students' difficulty

As mind maps are stuck on the board or shown on the screen, teachers can stand under the class and go around for observing and realizing students' problems with mind

maps, such as size of letters, colour and information in the mind maps. It means that teachers should correct mistakes or solve problems immediately.

7.2. Make mind maps familiar with students

Teachers should provide students with some preparation and training before requiring them to design their own mind maps. Beside designing mind maps as a technique for teaching goal, teachers should make it common by guiding students to make their own mind maps by drawing or using softwares.

7.3. Let students work in groups or pairs with mind maps

In another way, teachers can design an assignment including making mind maps about any grammatical points and let students work in groups pairs. Before or after any particular grammar lesson, teachers can ask students to make mind maps about the new lesson' contents in groups or in pairs. Then, the teacher will call students to present and explain their knowledge of that grammar points in front of the class. By doing this, students can not only learn English grammar on their own but also share their knowledge with other students in their own ways, and they can review the information again easily.

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