

## A METAL-ANALYSIS STUDY OF MIND MAPPING EFFECTIVENESS IN ENGLISH LANGUAGE TEACHING AT A HIGHER EDUCATION INSTITUTION

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ARTICLE INFO		ABSTRACT
<b>Received:</b>	<b>03/4/2021</b>	Teaching English is a demanding job, and the challenge to reform its pedagogical approaches requires educators to adapt themselves to constant changes in teaching. This study investigated the effectiveness of one typically practical mind map technique in English language teaching at the tertiary level, particularly a case study at a higher education institution – Hanoi Law University during the first term of the school year 2020-2021. The research was conducted as a quasi-experimental method, employing primary sources such as questionnaire and the analyzed results of pre-and-post tests. Almost teachers and students expressed high preferences for the implementation of mind map technique in English language teaching and learning. In addition, the results from the comparison between the experimental group and control one pointed out that mind map technique brought back positive academic performance in learning and teaching English. These research findings suggest that there should be more supportive policies to promote the use of mind map technique in the educational context, especially in English acquisition.
<b>Revised:</b>	<b>23/4/2021</b>	
<b>Published:</b>	<b>08/6/2021</b>	

### KEYWORDS

Meta-analysis

Mind map

Control group

English language teaching

Experimental group

## PHÂN TÍCH TỔNG THỂ TÍNH HIỆU QUẢ CỦA SỬ DỤNG THỦ THUẬT SƠ PHẠM SƠ ĐỒ TƯ DUY TRONG DẠY TIẾNG ANH TẠI CƠ SỞ GIÁO DỤC ĐẠI HỌC

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THÔNG TIN BÀI BÁO		TÓM TẮT
<b>Ngày nhận bài:</b>	<b>03/4/2021</b>	Giảng dạy tiếng Anh là một nghề đòi hỏi khắt khe, và yêu cầu các nhà giáo dục phải cải tiến phương pháp sư phạm của mình để thích ứng sự thay đổi liên tục trong dạy học. Nghiên cứu này điều tra tính hiệu quả của việc sử dụng thủ thuật sơ đồ tư duy trong giảng dạy tiếng Anh ở trình độ đại học, cụ thể là nghiên cứu tình huống tại trường Đại học Luật Hà Nội trong học kỳ 1 năm học 2020-2021. Nghiên cứu sử dụng phương pháp bán thực nghiệm với nguồn dữ liệu khai thác chính thông qua phiếu điều tra đối với giảng viên và sinh viên, bên cạnh việc phân tích kết quả của bài kiểm tra đầu vào, đầu ra. Kết quả cho thấy rằng hầu như giảng viên và sinh viên đều đánh giá cao việc sử dụng sơ đồ tư duy vào dạy học tiếng Anh. Ngoài ra, kết quả so sánh giữa nhóm quan sát và nhóm thực nghiệm chỉ ra rằng học tiếng Anh với thủ thuật sơ đồ tư duy mang lại kết quả học tập tích cực. Kết quả của nghiên cứu đề xuất rằng cần có những chính sách hỗ trợ trong việc sử dụng sơ đồ tư duy trong môi trường giáo dục, đặc biệt là việc học tiếng Anh.
<b>Ngày hoàn thiện:</b>	<b>23/4/2021</b>	
<b>Ngày đăng:</b>	<b>08/6/2021</b>	

### TỪ KHÓA

Phân tích tổng thể

Sơ đồ tư duy

Nhóm quan sát

Dạy tiếng Anh

Nhóm thực nghiệm

DOI: <https://doi.org/10.34238/tnu-jst.4255>

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<http://jst.tnu.edu.vn>

## 1. Introduction

The development of socio-economics has far-reaching consequences on all aspects of a society, which requires the adaptation of educational policies to keep up with human civilization, especially to meet the requirements of high-tech employment currently. Reforming approaches and methods in language teaching has been discussed at length in many studies [1] – [5]. As far as this study concerned, it examined the assessment of the effectiveness of mind mapping technique in teaching English. The term “mind map or mind mapping” might be easily confused with task-based or project-based approaches. Specifically, mind map (*also* word maps, spidergrams) is a technique for organizing new vocabulary or other learning contents, which involves organizing learning items in a way that shows groupings or relationships between words. A key word may serve as a link between related words and concepts, expressing diagrammatically. Mind map is sometimes used as part of the planning stage in composition classes. For task-based approach, it represents a significant paradigm shift since the focus on content has changed to skills and competencies. Thus, planning and design are not about what is taught, but why it is taught. This approach also isolates individual skills and competencies in order to teach material students actually need to know to meet their goals and objectives. In this approach, the language taught revolves around the task itself, not the other way around. For this method to work, teachers must understand their students’ needs and expectations in order to design lessons that help their students succeed. Grammar, vocabulary and language skills are likened to the vehicles that enable students to achieve their final outcomes [2], [3]. Much like the task-based approach, the project-based approach is meant to address students’ real needs by adapting language to the skills and competencies they truly need personally and/or professionally. The application of this approach begins by determining the one, global objective that the individual or group of students have [4], [5]. Therefore, mind map is one of many techniques in methodological approaches that teachers employ to help students easily understand the lessons better.

Mind map demonstrates how a brain works inside basing on radiant thinking in which a variety of ideas associates to a central idea or theme and related ideas forms a hierarchical map together via relationship hooks. As a matter of fact, each learner acquires new knowledge in different ways through sensory organs such as hearing, vision, tastes, touch or smell. Recognizing the practical influence of using mind map in educational contexts [4], [6] – [10], some researchers [11] – [13] have generally investigated the implementation of using mind map in English language teaching (ELT). These scholars, however, have concentrated on the descriptive mind map technique in ELT, especially teaching English skills such as vocabulary, reading, grammatical structure or writing styles. On the other hand, none of studies has been carried out a quasi-experimental research to prove the practical effectiveness of the applied mind map technique in ELT at the tertiary context. This study was conducted to answer the following questions:

1. What are teachers’ and students’ perceptions for the effectiveness of mind map technique in English language teaching?

2. What is the difference between the experimental groups’ learning outcome in comparison with a traditional class?

This study would bring a better understanding about the usefulness of implementing mind map technique to improve students’ English acquisition. This study was also served as a resourceful reference for university administrators for enacting innovative ELT policies, and teachers of English for reforming pedagogical practices.

## 2. Materials and methods

### 2.1. Research design

The study was basically conducted as a quasi-experimental case study at Hanoi Law University (HLU), employing a quantitative, descriptive method. The study used researcher-made questionnaires for two batches of participants, namely 9 teachers of English and 288 non-

English major students, and results from pre- and post-tests of two classes, particularly an experimental class and a control one. The researcher chose non-probability sampling method with purposive sampling for the selection of sample population thanks to the confidence level (CL = 95%) and margin of error (E =  $\pm$  5%). The participants were asked to respond to the questionnaires with clearly understandable instructions on the hand-outs. The raw results went through the data screen step before the acceptable data were treated for the purpose of data analysis using IBM SPSS program.

## **2.2. Sample population**

As the case study at HLU, the researcher chose non-probability sampling method with purposive sampling to determine the sample population. When the raw data passed the screening stage, 9 out of 15 teachers of English confessed to apply mind map technique to teach English, particularly 8 female teachers (88.9%) and one male lecturer (11.1%). 4 teachers, accounting for 44.4%, had under 10 years on the teaching position, 3 instructors (33.3%) experienced under 15 years, and 2 lecturers, representing for 22.2%, spent under 20 years teaching English. In addition, the majority of teacher participants earned master degrees (N = 7, equivalent to 77.8%), and 2 teachers (22.2%) got doctoral diplomas. In terms of student participants, Slovin's formula (CL = 95%; E =  $\pm$  5%) for 1140 estimated students was employed to select 228 respondents. Specifically, 45 male students (19.7%), together with 183 female respondents (80.3%) participated in this study. They mostly had less than 10 years of learning English with the number of 162 students (71.9%), less than 15 years with 36 participants (15.8%); and the least rank was 30 students, equivalent to 13.2% studying English for over 15 years. The majority of the participants were 188 sophomores, accounting for 82.5%, which is simply based on the academic credit system of HLU. The participants included 35 juniors (15.4%) and 5 seniors (2.2%).

## **2.3. Research instrument**

There are two research instrumental tools, namely two types of questionnaire for teachers' and students' respondents, and a pre-test and a post-test for the experimental and control groups. The teachers' questionnaire includes two parts, i.e. part 1 demographic information, and part 2 with 32 items subdivided into four classifications. The teachers' participants were asked to rate (1) strongly disagree, (2) disagree, (3) unsure, (4) agree, and (5) strongly agree. In regard with students' questionnaire, it also had two parts, similar to the teachers' format. This questionnaire had 18 items to examine students' attitudes and masked into three groups of classification, namely social, knowledgeable, and psychological categories. Another research instrument for the experimental and control groups consisted of one pre-test, which followed A2 VSTEP for adult format [14], and one post-test, designed as B1 VSTEP format [15]. These two tests meet the standards set by Ministry of Education and Training, Vietnam (MOET) for the expected learning outcomes at the tertiary level for non-English major university students. Before officially floating the questionnaire, all research instrumental tools were validated by two experts on educational assessment and accreditation. A pilot study was, then, done to evaluate the strength and weakness of the instruments to fine-tune the final versions with the acceptable scales ( $0.9 > \alpha \geq 0.8$ ) [16]. Having proper instrumental tools, the researcher distributed them to the targeted participants.

## **2.4. Statistical tools**

Frequency statistics was employed to treat the participants' demographic information. Descriptive statistics was used to analyze the respondents' assessment towards the items in part 2 basing on the Likert's scales such as (1.0 - 1.79) very low, (1.8 - 2.59) low, (2.6 - 3.39) neutral, (3.4 - 4.19) high, and (4.2 - 5.0) very high. Paired-samples T-Test was applied to compare means

of the pre-test and post-test to highlight the differences regarding the implementation of mind map technique in ELT.

### 3. Results and Discussion

As for teachers' assessment on the utilization of mind map technique, the results of its usefulness in ELT reveal that teachers rated very high for facilitating students' recalling ( $M = 4.44$ ;  $SD = 0.53\%$ ), assuring the relations between the concepts and thoughts to be seen or interrelated ( $M = 4.78$ ;  $SD = 0.44\%$ ), and facilitating learning ( $M = 4.22$ ;  $SD = 0.44\%$ ). In this regard, the participants highly reckoned that mind map technique assured the information to be permanent ( $M = 3.78$ ;  $SD = 0.44\%$ ), enhanced the interest of the students toward the lesson ( $M = 3.67$ ;  $SD = 0.50\%$ ), assured the acquired knowledge and misconceptions to be identified ( $M = 3.56$ ;  $SD = 0.53\%$ ), and assured mental development of the students ( $M = 3.78$ ;  $SD = 0.44\%$ ). To this final aspect, teachers neutrally remarked that mind map technique prevented the information from being memorized ( $M = 3.22$ ;  $SD = 0.44\%$ ), and assured students to gain time ( $M = 3.33$ ;  $SD = 0.50\%$ ). Obviously, teacher participants show their high preference and acknowledge the benefits, necessities and resourcefulness of using mind map technique in ELT. Project-based learning and task-based learning approach concentrate on specific areas of ELT, which could be demonstrated thanks to the denotation of mind map [3], [4], [9], [12]. These findings ascertain that mind map plays an important role in engraving new English input language on the learners' long-term memories [5].

Another major aspect concerning mind map technique is to figure out its effects in ELT on students. Teachers generally had high attitudes towards its effects as they thought that mind map developed student cognition in terms of motivating and attracting attention ( $M = 3.67$ ;  $SD = 0.50\%$ ), assuring permanent learning ( $M = 3.42$ ;  $SD = 0.44\%$ ), assuring to set interrelations between concepts ( $M = 3.67$ ;  $SD = 0.50\%$ ), and displaying how much students learned the concepts ( $M = 3.78$ ;  $SD = 0.67\%$ ). Moreover, they believed that mind map created an environment that students would have fun ( $M = 4.00$ ;  $SD = 0.71\%$ ), helped to learn the subject ( $M = 4.0$ ;  $SD = 0.71\%$ ), and assured to express the subject with main lines and visually ( $M = 3.78$ ;  $SD = 0.44\%$ ). The results, thus, denote that teachers clearly recognize the effects results from enhancing students' metacognitive skills and active language learning environments where students enthusiastically participate in improving their English competence [6], [8], [13].

When considering mind map technique as an appropriate tool for constructive approach, teachers took a high stance on this perspective, and viewed that it socially assured students' active participation, attracted attention, and assured efficient teaching ( $M = 3.89$ ;  $SD = 0.60\%$ ). As for the psychological dimension, it was believed to help to determine and repair misconceptions and missing knowledge ( $M = 3.89$ ;  $SD = 0.60\%$ ), move creativity forefront ( $M = 4.00$ ;  $SD = 0.71\%$ ), and assure contemplation ( $M = 3.44$ ;  $SD = 0.53\%$ ). In addition, regarding knowledgeable angle, it was thought to help to learn the subject better ( $M = 4.00$ ;  $SD = 0.71\%$ ), assure to interrelate the knowledge ( $M = 4.11$ ;  $SD = 0.60\%$ ), encourage students to express themselves ( $M = 4.67$ ;  $SD = 0.50\%$ ), and guarantee knowledge to be permanent ( $M = 3.44$ ;  $SD = 0.53\%$ ). Overall, teachers share the similarities in that they have positive opinions on the use of mind map technique by seeing the standard deviations, which are under 1.0%, denoting that they have same choices in this aspect. Furthermore, the findings indicate that it is beneficial for teachers to use this technique for ELT as it has a remarkable impact on students' social, knowledgeable, and psychological abilities. These results are also in line with other research findings [2], [3], [5], [6].

On examining mind map technique in teaching practice, teachers had a very high perception towards mind map in evaluating and determining students' knowledge and misconceptions ( $M = 4.44$ ;  $SD = 0.53\%$ ). They also had high attitudes about making students join the lesson and arouse their interests ( $M = 4.00$ ;  $SD = 0.50\%$ ), improving creativity ( $M = 3.67$ ;  $SD = 0.50\%$ ), helping

students learn easier and more efficiently ( $M = 3.78$ ;  $SD = 0.44\%$ ), setting relations between subjects and daily life ( $M = 3.56$ ;  $SD = 0.53\%$ ), and strengthening subjects to be recalled or permanent knowledge ( $M = 3.78$ ;  $SD = 0.67\%$ ). Besides, teachers expressed neutral viewpoints when supposing that mind map technique encouraged students to speculate on the subject ( $M = 3.33$ ;  $SD = 0.50\%$ ), and it ensured students not to make a mess in the classroom ( $M = 2.67$ ;  $SD = 0.50\%$ ). Similar to the aforementioned findings, mind map technique highly contributes to the success of teaching English. It is preferably chosen by teachers of English as the findings confirm its vital role in orienting students in English acquisition. In this perspective, teachers expressed similar choices by looking at the standard deviations as these figures were lower than 1.0%. Additionally, the results indicate the fact that teachers consider using mind map technique useful and practically pedagogical tactics [1], [4], [6], [10].

As far as student participants concerned, two sources of information would be exploited, particularly questionnaire, and pre-test and post-test for the control and quasi-experimental groups. When examining the knowledge mind map technique influenced students, 228 students claimed that they had a very high preference for it and remarked that they could understand the lesson better because the vision from mind mapping helped them gain knowledge deeply ( $M = 4.28$ ;  $SD = 0.76\%$ ). Students had high attitudes to believe that they had sufficient time to complete activities displayed by mind mapping ( $M = 4.04$ ;  $SD = 0.58\%$ ), mind mapping required them to spend more time preparing their lessons carefully and efficiently ( $M = 3.98$ ;  $SD = 0.55\%$ ), and when using mind mapping it encouraged them to brainstorm their ideas to the lesson ( $M = 3.98$ ;  $SD = 0.57\%$ ). Besides, they expressed neutral ideas to reckon that mind mapping helped them improve their ICT skills in studies ( $M = 3.03$ ;  $SD = 0.52\%$ ), and mind mapping could cover most of details relating to the lessons which textbooks could not ( $M = 3.21$ ;  $SD = 0.63\%$ ). In general, mind map technique facilitates students in improving their knowledge thanks to the similar reproduction of its visual head and branches with the radiant thinking inside the human brain [3], [6], [11]. With the high requirements of organizing ideas scientifically, students confess to spend more time preparing their lessons, which, however, does not mean that students do not have enough time to get ready for their study.

In terms of the social factor that mind map technique impacted on student respondents, they highly admitted that mind mapping assisted their communications with others in group work and pair work ( $M = 3.52$ ;  $SD = 0.74\%$ ), and mind mapping improved their problem-solving skills with others ( $M = 3.93$ ;  $SD = 0.59\%$ ). Furthermore, they expressed their neutral opinions when commenting that mind mapping put their ideas across with other friends ( $M = 3.33$ ;  $SD = 0.47\%$ ), it enhanced their friendships with others in community ( $M = 3.24$ ;  $SD = 0.68\%$ ), and it improved their outdoor activities with others ( $M = 2.88$ ;  $SD = 0.58\%$ ). The results indicate that students developed their interpersonal skills or thinking and reasoning skills. Nevertheless, they were undecided as to whether mind map technique had good or bad influences on making acquaintance of friendship or socializing themselves in public places. The figures in standard deviations denote that the participants somehow bear similar choices. These findings are in line with those of other previous studies [2], [5], [8].

Regarding the psychological aspect of using mind map technique in learning English, students highly thought that mind mapping allowed them to be creative ( $M = 3.95$ ;  $SD = 0.47\%$ ). They felt neutral when remarking that mind mapping helped them organize their thoughts ( $M = 3.03$ ;  $SD = 0.62\%$ ), it provided them with a wider perspective on critical thinking ( $M = 3.35$ ;  $SD = 0.64\%$ ), it drew their attention to contribute ideas to the lessons ( $M = 3.29$ ;  $SD = 0.46\%$ ), and it enhanced their creativity ( $M = 3.13$ ;  $SD = 0.55\%$ ). Moreover, they had low views on claiming that mind mapping destroyed the role of teachers in the class but highlighted that of learners ( $M = 2.29$ ;  $SD = 0.74\%$ ), and lessons using mind mapping was a boring experience ( $M = 2.05$ ;  $SD = 0.55\%$ ). So, mind map technique seems not to affect clearly students' psychology. Basing on the aforementioned information, it can be concluded that the respondents do not perceive distinctly

the psychological effect that mind map technique has on them. In addition, they disagree to refute the conventional role of teachers in the classroom which should be highlighted by that of students'. Thus, they still respect the great influence of teachers on their English achievements. These viewpoints are proved in other studies [6], [8], [11], [13].

Table 1 illustrates the comparison of the progressive academic performance between the control and experimental groups to highlight the effectiveness of mind map technique in ELT.

**Table 1.** *The comparison between academic performance of the control group and the experimental one*

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pre-test control group (A)	30	6.1	0.37	0.07		
Pre-test experimental group (B)	30	5.9	0.37	0.07		
Pre-test (A) & Pre-test (B)					0.21	0.27
Post-test control group (A)	30	6.6	0.28	0.05		
Post-test experimental group (B)	30	7.5	0.26	0.05		
Post-test (A) & post-test (B)					0.12	0.52

As glimpsed from Table 1, the differences in the pre-test scores of the control and experimental groups yielded nearly the same with the mean of the control group ( $\mu = 6.1$ ), a bit higher than that of the experimental one ( $\mu = 5.9$ ). Standard deviation of both groups ( $SD = 0.37\%$ ) indicated that students did not have differences in test scores, and standard error mean ( $SE = 0.07\%$ ) showed that the discrepancy between two groups' mean compared to the population mean was very small. Moreover, the significance level ( $Sig. = 0.27$ , higher than 0.005) also confirmed the slight difference when comparing the pre-test scores of both groups. In regard to the post-test scores, the results presented significant changes between two groups. Specifically, the mean of the post-test experimental group ( $\mu = 7.5$ ) was clearly higher than that of the control group ( $\mu = 6.6$ ), which was 0.9 higher. Similar to the pre-test SD and SE, the proportion of post-test scores was lower, which meant that students did not have much difference in terms of academic performance. Thus, the results illustrated in Table 1 confirmed the effectiveness of mind map technique in ELT.

#### 4. Conclusion

This quasi-experimental study provides the metal-analysis of teachers' and students' beliefs toward the implementation of mind map technique in teaching English at one higher educational institute. Both teachers and students participating in this study acknowledge the positive effectiveness which mind map technique has demonstrated in ELT. Teacher participants recognize its useful influences as appropriate tools for constructivist approach and innovative pedagogical practices. Similarly, student respondents prefer learning with mind map technique because it has positive impacts on social, pedagogical, and knowledgeable aspects [3], [5], [8], [11], [13]. Additionally, the results of the experimental group compared with the control one prove that the positive influence of mind map technique on students' academic achievement in ELT is persuasively recognized. Although the pre-test scores of the experimental group in comparison with the control one is a little bit lower, the post-test grades of the experimental group are much higher than that of the control one under the impacts of the mind map technique. This finding is considered as pioneering and unique in this perspective.

#### Acknowledgments

This paper is supported by Hanoi Law University.

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