

FOREIGN LANGUAGES AND VIETNAMESE

**USING MIND MAPPING TO IMPROVE ENGLISH
VOCABULARY LEARNING FOR NURSING STUDENTS AT
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ABSTRACT: Vocabulary is known as an integral component of learning English and exerts a substantial influence on students' learning English acquisition. The importance of vocabulary learning is essential for nursing students in gaining knowledge in the medical field at present as well as for their future study. The research aimed to evaluate the effects of mind mapping applied to enhance vocabulary learning for nursing students as well as to find out students' attitudes toward experiencing mind mapping in developing their vocabulary at Thai Nguyen University of Medicine and Pharmacy. A combination of quasi-experimental research and research design with 70 samples from two classes, K19-02 and K19-03, was employed for collecting data. The results revealed significant positive effects of mind mapping on vocabulary learning for nursing students. Furthermore, findings from the pre- and post-tests between the experimental group and the control one pointed out that this approach brought back positive academic performance in teaching and learning English for nursing students.

KEYWORDS: Mind mapping; vocabulary for nursing students; vocabulary learning; enhancing vocabulary; quasi-experimental research.

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1. Introduction

In contemporary society, the indispensability of the English language is undeniable, permeating diverse domains such as medicine, engineering, education, aviation, and more. It serves as the official language in numerous countries and holds sway as the language of choice in the realms of science and technology. Consequently, English is widely regarded as a ubiquitous presence across all facets of life.

Within the context of acquiring a foreign language, vocabulary constitutes a pivotal dimension, serving as an intricate nexus interconnecting the four essential language skills: speaking, listening, reading, and writing. As Wilkins (1972) astutely postulated, "Without grammar, little can be conveyed; without vocabulary, nothing can be conveyed." In essence, the ability to express oneself and engage effectively in a foreign language hinges fundamentally on the acquisition and proficient utilization of an ample lexicon. Nursing students at Thai Nguyen University of Medicine and Pharmacy have faced many challenges in learning English vocabulary, especially when English is not their native language. Mastering this language can become a daunting task, especially in terms of vocabulary acquisition. The English language has an extremely extensive vocabulary, with many words that sound the same but have different meanings or different definitions, especially in their medical study. This poses a challenge for students who speak English as a second language or a foreign language, as they struggle to remember new words and distinguish between similar words. At the same time, knowing how to use words appropriately in a nursing context is also a problem. Overcoming these challenges requires innovative teaching methods, immersive language experiences, and consistent reinforcement to ensure nursing students develop a robust and practical English vocabulary. Thus, the study of vocabulary assumes a pivotal role in the process of language acquisition, particularly in the pursuit of mastering English.

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2. Theoretical background

2.1. The importance of vocabulary

English vocabulary plays a pivotal role in language proficiency and effective communication. A robust vocabulary enhances one's ability to articulate thoughts, express ideas, and comprehend complex concepts. It serves as the foundation for reading comprehension, writing proficiency, and overall language fluency. A rich vocabulary not only allows individuals to convey precise meanings but also enables them to interpret nuanced expressions from others. In academic and professional settings, a strong command of English vocabulary is often associated with higher levels of education and expertise. Moreover, vocabulary is a key component in language acquisition, influencing listening and speaking skills. In essence, an expansive and diverse vocabulary empowers individuals to navigate the linguistic intricacies of English, fostering clearer communication and facilitating success in various aspects of life. There are a variety of vocabulary definitions proposed by famous experts. Linse (2005) argued that vocabulary is the collection of words that an individual knows. Sharing the same ideas about the importance of this, Hatch and Brown (1995) stated Vocabulary can be described as a list of terms specific to a language or as a collection of words that users of that language may employ. Additionally, Webster's Dictionary (1985) defines lexicon as a stock of words used in a language or by class, individual, etc., and vocabulary as a list or collection of terms, typically grouped and described alphabetically.

Learning vocabulary does not entail memorizing individual words. Because a word's meaning can change depending on the situation, it is important to study words in context. A person's vocabulary is also a collection of well-known words in their native tongue. Conversely, vocabulary development depends on the students' prior knowledge. For words to be beneficial in communication, they must be connected to their meaning. Students who lack vocabulary will also have trouble learning English. In depth, the lack of language prevents them from expressing themselves as clearly as they would like, and a lack of vocabulary prevents them from understanding the teacher's explanations. A vocabulary will be a useful and necessary instrument for learning and communication that usually grows with age. Students can benefit from using vocabulary as a tool to help them completely understand what they hear or read.

2.2. Teaching and learning English vocabulary

Teaching and learning English vocabulary are multifaceted endeavors that lie at the very heart of language acquisition. In the context of the study, which explores the use of mind mapping to enhance vocabulary acquisition, it is essential to delve into the intricacies of vocabulary instruction. Vocabulary is often regarded as the building blocks of language, serving as the fundamental unit of communication. It encompasses a vast array of words and phrases, each holding a unique meaning and usage. The significance of vocabulary in language learning cannot be emphasized because it is essential for helping students communicate their ideas, understand texts, have meaningful conversations, and excel academically. In this comprehensive exploration of teaching and learning English vocabulary, we will delve into various aspects, including the importance of vocabulary acquisition, the challenges faced by learners, effective teaching strategies, and the innovative approach of utilizing mind mapping as a pedagogical tool to enhance vocabulary retention and utilization.

Vocabulary acquisition, moreover, is a central pillar of language learning, and it serves as the foundation upon which all language skills are built. Whether it be listening, speaking, reading, or writing, vocabulary is the essential component that underpins proficiency in these areas. It is, quite simply, the words and phrases that enable individuals to communicate effectively and express themselves in a language. Another common challenge faced by high school learners is the retention and meaningful application of vocabulary. Many students struggle to remember newly learned words beyond the immediate context of a lesson or textbook. This issue is compounded by the fact that

vocabulary words often have multiple meanings and nuances, making it essential for learners to grasp not only the basic definition but also the various contexts in which a word can be used.

2.3. Using mind mapping in the textbook “English for Nursing Students”

Mind mapping as an instrument to boost vocabulary acquisition among nursing English students at Thai Nguyen University of Medicine and Pharmacy, in accordance with clinical Vietnamese subjects, demands a methodical and well-thought-out strategy that harmonizes with the precise content and educational goals delineated in English for nursing students. The nursing curriculum covers a diverse range of themes, language skills, and linguistic knowledge, all with the overarching aim of nurturing students' competence in scientific research and professional practice. To seamlessly integrate mind mapping into this curriculum, educators should consider implementing the following strategies:

Create dedicated mind maps for each thematic unit within the textbook “English for Nursing Students”. These mind maps should incorporate essential vocabulary words related to the specific theme, accompanied by their definitions, synonyms, antonyms, and example sentences. Encourage students to continually update these mind maps as they encounter new words throughout the academic year.

While mind mapping primarily focuses on vocabulary and content organization, it can also be utilized to visualize certain grammar concepts. Students can create mind maps illustrating sentence structures, verb tenses, and grammatical rules. Visual aids make things simpler for pupils to comprehend and remember these aspects of language.

Incorporating mind mapping into the textbook “English for Nursing Students” harmonizes with the curriculum's objectives of enhancing language skills, vocabulary, and critical thinking. It empowers students to actively engage in their learning process, deepens their involvement with diverse themes, and equips them with a practical tool for comprehending, discussing, and applying the knowledge they acquire. Mind mapping bridges the gap between theory and practice, rendering the English language learning experience more interactive and meaningful for nursing students at Thai Nguyen University. Ultimately, this approach can lead to improved vocabulary acquisition and enhanced overall language proficiency, aligning perfectly with the goals of the curriculum.

3. Methodology

The study employed quasi-experimental research to find out how mind mapping, as an independent variable, affects students' vocabulary acquisition as a dependent one and their attitudes toward this treatment in learning vocabulary. Particularly, two tools for data collection were utilized such as vocabulary tests and questionnaires. The researcher also uses vocabulary tests to collect data on how well students are able to learn and retain vocabulary. In total, students are given two tests (a pretest and a posttest) spaced eight weeks apart. The target words from the first test are repeated in the second test, but in different linguistic contexts. Multiple-choice questions, gap-filling exercises, matching words to pictures, words that go together, matching words to definitions, and error correction are all included in the test items.

The tests outweighed the questionnaire, and the results of the test were expressed by changing the vocabulary level in the post-test. Then, the opinions of students regarding the value of mind maps for lexical learning were obtained through questionnaires.

3.1. Research setting

The present study is carried out at Thai Nguyen University of Medicine and Pharmacy, located in Thai Nguyen province at the second term of the academic year 2023-2024. There were 3 classes majoring in the nursing program, namely Nursing 1, Nursing 2, and Nursing 3. The researcher chose 2 classes (K19-02 and K19-03) from those to carry out the study because she was the lecturer who taught English for the nursing program of these classes. It seems that most of the students at the university are interested in studying their medical subjects rather than English. They learn English because it is a compulsory subject at the university. Moreover, their subject that they chose to focus

on for their higher education before was not English. Therefore, the teachers face difficulties in teaching English, especially teaching vocabulary. Indeed, the students usually feel bored with learning vocabulary even though most of them are quite good at grammar. They find English vocabulary in the nursing program difficult to acquire by writing words on papers or learning the word lists by heart through the teachers' explanations. Another challenge is that students hardly have chances to use English outside the classes, and they find obstacles to practice the vocabulary they have learned. From the reasons mentioned above, mind mapping is proposed to improve their current situation.

3.2. Participants

The study was carried out with the participation of 70 random students of classes K19-02 and K19-03, out of 105 learners who studied the nursing program in the academic year 2023-2024. In general, the participants were at the age of 20 and studied the fifth term in English—the final term in their whole English program at the university. All of them had learned 4 terms about English in medicine since they were at university. According to the subject assessment guidelines, the majority of students were graded as completed, whereas only a few students were assessed as doing well. It was noted that sometimes some of them hardly focused on lessons, but neglected or chatted in class and easily forgot the vocabulary they had just learned.

After granting permission from the faculty to conduct the research, the total samples of 70 grade K19 nursing students in classes K19-02 and K19-03 at the nursing program in the fifth term were selected by the designated choice. Particularly, 35 students in class K 19-02 were appointed as the experimental group, and 35 students in class K19-03 were destined to be the controlled one. Surprisingly, most of the participants in the experimental group were female (27 or 77%), while 8 male participants made up 23%. They all studied English for the nursing program at the final term of the curriculum exclusively.

3.3. Data collection instruments

3.3.1. Pre-test

The implementation of the pre-test in this study served multiple crucial purposes in assessing and comparing the initial vocabulary knowledge of students in both the control and experimental groups. The pre-test had acted as an essential tool to evaluate the baseline proficiency level of participants before any intervention took place. In this study, the pre-test was used to evaluate the effects of the mind-mapping technique in improving vocabulary learning efficiency.

The author conducted a random selection of two classes at the research unit. Then let these two classes take a test to assess the English proficiency of the two study classes. The pre-test itself consisted of 20 multiple-choice questions, a format that adheres to recognized assessment standards, which was based on vocabulary following the levels A2-B1 of CEFR. Each question presented students with four answer options, including one correct answer. This format not only allowed for efficient and reliable assessment of students' vocabulary knowledge but also facilitated straightforward statistical analysis to establish a baseline understanding of their vocabulary proficiency.

Ultimately, the pre-test provided valuable data that serve as the foundation for comparing the effects of mind mapping techniques in improving vocabulary learning efficiency. By assessing students' initial vocabulary knowledge, the research drew more robust conclusions about the impact of the intervention, shedding light on whether the use of mind maps led to significant vocabulary enhancement among nursing students.

3.3.2. Post-test

The post-test in this study was used as a pivotal tool for assessing the effects of the experimental teaching on students' lexical knowledge. Specifically, the post-test evaluations were conducted at the conclusion of the experimental phase, allowing for a comprehensive measurement of students' vocabulary improvement.

Similar to the pre-test format, the post-tests were meticulously designed to focus exclusively on vocabulary assessment. This chosen design ensures that the post-test effectively measured the specific linguistic domain targeted by the mind mapping intervention. The utilization of 20 multiple-choice questions in the post-test aligned with established assessment standards.

3.3.3. Questionnaire

The survey questionnaires used in this study were based on research by Wei Wu and Weitong Zheng, who conducted a study called "Using mind mapping for English vocabulary teaching" published in the Canadian Center of Science and Education. According to Wei Wu and Weitong Zheng, it was very important to ask questions of students to survey and evaluate cognitive and receptive results.

The students in the experimental group were handed a questionnaire designed by the researcher to find out their attitudes after studying vocabulary with this technique. The questionnaire consisted of 18 items with a five-point scale: (1) strongly disagree, (2) disagree, (3) not certain, (4) agree, (5) strongly agree. The Likert-type questionnaire structure was chosen to change their social contact, knowledge impact, and psychological change. To ensure the liability of the research instrument, the questionnaire was translated into Vietnamese, and a dry run was conducted to ascertain the accountability.

3.4. Research procedures

As the study progressed, the pre-test was given to both groups. These two groups finished the 20-question pretest in 30 minutes. The results of the two were then contrasted and compared by the author. The experimental group was given mind mapping techniques, while the control group was taught using traditional methods like visuals and translation. The two groups were then taught the same vocabulary and revisited four lessons into each unit later, but they received two different treatments. The learners in the treatment group were then given the post-test to evaluate and confirm that they had retained the language items. The questionnaire was then given to the experimental group by the researcher in order to gauge how the students felt about using mind maps to learn vocabulary.

3.5. Data analysis

3.5.1. Quantitative analysis of test

Quantitative analysis of tests, such as pre-test and post-test, is a crucial component of research when carrying out a quasi-experimental study to evaluate how well mind maps work to increase nursing students' language learning efficiency. This analysis helps determine whether there's a statistically significant difference between the two test scores, providing valuable insights into the impact of the teaching method, and all kinds of data were analyzed to meet the requirements of this study.

The pre-test and post-test results for the tests were computed, calculated, and converted into mean scores based on the total number of students that took part. To determine whether there were any noteworthy variations between the pre-test and post-test, the data analysis method first involved calculating the mean scores. The objective of the questionnaire is to discover what the students think and how they feel about the teacher's mind-mapping techniques. The data gathered from the students' feedback was first read through and then sorted out and interpreted to get the answers to the research questions. As a result, the opinions of the students were calculated, converted to percentages, and shown in the form of figures and tables. The researcher then determined the treatment by comparing the legitimate percent of some agreeing opinions with some disagreeing possibilities.

3.5.2. Quantitative analysis of questionnaire

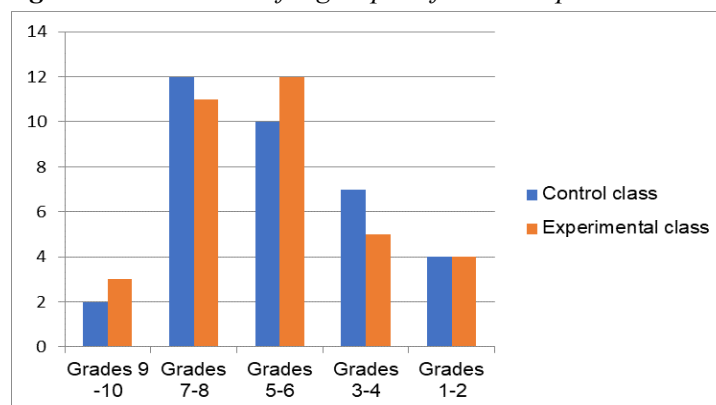
For the questionnaire, its aim is to find out students' opinions and attitudes toward the teacher's activities applying mind-mapping techniques. Data gathered from the students' feedback were firstly read through and then sorted out and interpreted to get the answers for the research questions. Therefore, the students' opinions were counted and converted to percentages and illustrated in the

form of figures and tables. Then, the researcher compared the valid percent of some agree opinions with some disagree options to determine the treatment.

4. Findings and discussion

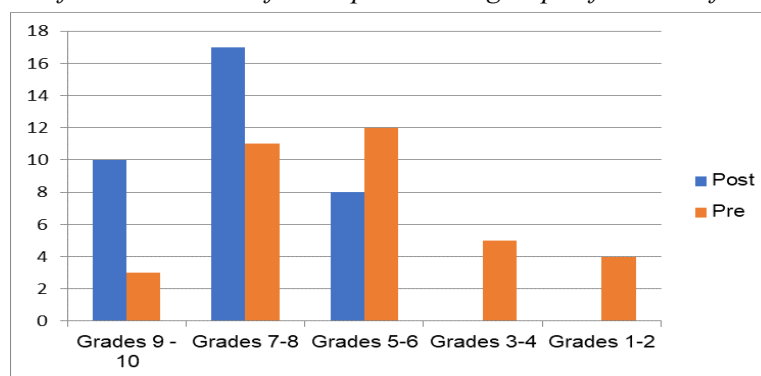
4.1. Results of the tests

Figure 1. Test results of 2 groups before the experiment



Through the initial survey results, the learning situation of students' English vocabulary in 2 control and experimental groups corresponds to each other; there is no big difference in the awareness of English vocabulary, learning English vocabulary, and test results. The proportion of pupils who received "good" scores was comparable for the two groups (12 students for the control group and 11 for the experimental group). Pupils in the control group were more likely to receive a "poor" score (7 pupils), and a similar percentage of students who got "very poor" (4 students) in comparison with the experimental group. This suggested that there were still some students in both groups found struggling significantly with English prior to the treatment.

Figure 2. Comparison of the test results of the experimental group before and after the experiment



As can be seen from Figure 2, the difference between pre-test and post-test results shows that experimental students have achieved a high level of vocabulary after applying mind maps to 4 units. In the latter test, none of the students scored less than 5 points, while 10 students scored 9-10 and 17 students scored 7-8. As a result, scores between the two tests show significant progress in student vocabulary retention. Overall, the results revealed that in the post-test, the experimental group fared better than the control group. demonstrated by the fact that a notably greater percentage of pupils received scores in the excellent and very outstanding ranges. The mean, standard deviation, minimum, and maximum scores for each group's pre-test descriptive data are shown below.

Table 1. Analysis of pretest means scores comparison

Group	Control	Experimental
N	35	35
Mean	6.08	5.67
Std.Deviation	0.75	1.03
Minimum	4	3.5
Maximum	8.5	8.5

The average score of the control group (6.08) was higher than the average score of the experimental group (5.67), according to the results of the English vocabulary test (analysis of pretest means scores comparison). This suggests that the control group performed better overall on the English vocabulary test. It is evident from this score that the control group performs better academically than the experimental group.

Second, the experimental group's standard deviation (1.03) was higher than the control group's (0.75). Standard deviation represents volatility in data. The experimental group had higher volatility, indicating a greater dispersion in their learning outcomes. This may indicate that the experimental group has more diversity in academic performance, with some students scoring high and some scoring lower.

Third, while the highest score for both groups was 8.5, the lowest score for the experimental group (3.5) was lower than the lowest score for the control group (4). This suggests that there is a disparity in the results of the experimental group, with some students not achieving good grades.

Table 2. Independent samples t-test of the two groups after the pre-test

	F	Sig.	T	Df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference
Equal variances assumed	4.315	0.021	3.897	76	<0.001	1.321	0.231	(0.7853 – 1.2301)
Equal variances not assumed	4.42	0.018	3.870	74.3	<0.001	1.123	0.265	(0.8154 – 1.4011)

First, the findings of the F-statistic and the p-values (Sig.) demonstrated that there was a statistically significant difference in the vocabulary test scores between the two groups. The difference is represented by an F-statistic of 4.315 with a p-value of 0.021, assuming that the variance of the two groups is equal. The same result is recovered with a p-value of 0.018 and an F-statistic of 4.42 when it is not assumed that the variance of the two groups is equal. According to both findings, the two groups' vocabulary test scores were impacted by the mind mapping intervention, and this difference was statistically significant.

Second, we can observe that the experimental group had a higher average score than the control group when examining T-statistic values and a 95% confidence interval for mean differences between the two groups. The 95% confidence interval for the mean difference, assuming that the variance of two groups is identical, is between 0.7853 and 1.2301. The same confidence interval, which ranges from 0.8154 to 1.4011, is found when it is not assumed that the variance of two groups is equal. This demonstrated that the control group outperformed the experimental group on

vocabulary tests and that, with 95% confidence, the mean difference between the two groups was positive.

Table 3. *Analysis of post test means scores comparison*

Group	Control	Experimental
N	35	35
Mean	5.72	7.9
Std. Deviation	0.73	0.27
Minimum	3.5	5.8
Maximum	9	10

Following the implementation of the mind map in the learning process, we can observe a significant difference between the two class groups—the experimental group and the control group—based on the updated results of the English vocabulary exam. First of all, the average score results demonstrate the beneficial impact of mind mapping. Compared to the control group, the experimental group's average score was significantly higher. The experimental group's average score was 7.9, whereas the control group's was 5.72. This suggests that the experimental group's performance in learning English vocabulary may have been enhanced by the application of mind mapping.

The experimental group's standard deviation showed less volatility (0.27) than the control group's (0.73), suggesting that their learning outcomes were more stable. It should be highlighted, though, that the experimental group's score range is likewise wider, ranging from 5.8 to 10, whereas the control group's range is between 3.5 and 9. This demonstrates how the experimental group's outcomes varied, with some students receiving the highest scores and others receiving the lowest. The improved results of the experimental groups demonstrated the benefits of using mind mapping to teach nursing students vocabulary.

Table 4. *Independent samples t-test of the two groups after treatment*

	F	Sig.	T	Df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference
Equal variances assumed	0	0	-1.24	76	<0.001	-1.526	0.231	(0.1853 – 0.2301)
Equal variances not assumed	4.42	0.018	-1.870	74.3	<0.001	-1.302	0.265	(0.1154 – 0.4011)

First, the results of the vocabulary test revealed substantial differences between the two groups according to the F-statistic and p-value (Sig.). Both findings demonstrated that the use of mind mapping had a favorable and statistically significant impact on the experimental group in comparison to the control group, both under the assumption that the variance of the two groups was equal and when not assuming so.

Next, T-statistic values and 95% confidence intervals for mean differences showed that the experimental group had lower vocabulary test results than the control group. While there is a difference in T-statistic values between the two assumptions of variance, it is important that both results show that this change is statistically significant.

In summary, these results give a clear picture of the use of mind maps in learning English vocabulary. The differences between the two groups were determined through numerous statistical analyses, and they all showed that the control group, despite the variation in results, had lower

vocabulary test results than the experimental group. This finding may help academics and educators better understand how well mind mapping works for teaching and learning vocabulary in English.

4.2. Results of the Questionnaire

Table 5. Views on social connections of nursing students when teaching mind mapping techniques

Social Connectedness	N	Mean	Std. deviation	Interpretation
1. Mind mapping assists my communications with others in group work and pair work.	35	3.78	0.735	High
2. Mind mapping improves my problem-solving skills with others.	35	4.09	0.748	High
3. Mind mapping puts my ideas across with other friends.	35	3.93	0.715	High
4. Mind mapping enhances my friendships with others in community.	35	3.67	0.553	High
5. Mind mapping improves my outdoor activities with others.	35	3.56	0.616	High

Nursing students' opinions about how teaching mind mapping techniques affected their social relationships are revealed in Table 5. Each of the five assertions in this table is accompanied with the standard deviation, mean score, and number of respondents (N). We can better comprehend the degree of agreement and variety among the students' responses thanks to these statistical measurements.

Looking into the second statement, "Mind mapping improves my problem-solving skills with others," it obtained an impressive mean score of 4.09 and a standard deviation of 0.748. This outcome underscores the strong agreement among the students that mind mapping contributes significantly to their problem-solving abilities when working in groups, further reinforcing the idea of a high impact.

The third statement also brings back positive feedback from nursing students, "Mind mapping puts my ideas across with other friends," receiving an average rating of 3.93, with a standard deviation of 0.715. Once again, there is a consensus among the students, indicating that they believe mind mapping is effective in helping them express their ideas to their peers, thus promoting effective communication.

Regarding the first, fourth, and fifth statements. The result suggests that students generally agree that mind mapping positively influences their relationships within the community, contributes significantly to their communication skills, problem-solving abilities, and interactions with both friends and the broader community, as well as their outdoor activities with peers.

Table 6. Viewpoints on the impact of knowledge of nursing students when applying mind mapping

Knowledge impact	N	Mean	Std. deviation	Interpretation
1. I have sufficient time to complete activities displayed by mind mapping.	35	3.60	0.568	High
2. I can understand the lesson better because the vision from mind mapping helps me gain knowledge deeply.	35	4.11	0.685	High
3. When using mind mapping, it encourages me to brainstorm my ideas to the lesson.	35	3.91	0.521	High
4. Mind mapping helps me improve my ICT skills in studies.	35	4.11	0.585	High

5. Mind mapping can cover most of details relating to the lessons which textbooks cannot.	35	2.15	0.586	Low
6. Mind mapping requires me to spend more time preparing my lessons carefully and efficiently.	35	2.04	0.652	Low

Table 6 presents the viewpoints of nursing students regarding the impact of knowledge when teaching mind mapping techniques. The table provides information on the mean score, standard deviation (Std. Deviation), and number of respondents (N), and the interpretation of the impact.

For the second and the third statements: “I can understand the lesson better because the vision from mind mapping helps me gain knowledge deeply” and “Mind mapping helps me improve my ICT (Information and Communication Technology) skills in studies: with the same mean score of 4.11 and a standard deviation of 0.685 and 0.585, respectively, the impacts are considered higher than other statements. This implies that most students find that mind mapping enhances their understanding of lessons, allowing for deeper knowledge acquisition, and contributes significantly to enhancing their ICT skills in their studies.

In summary, based on the provided data and interpretations, students generally have a positive perception of the impact of mind mapping techniques on their learning. They believe that mind mapping enhances their understanding of lessons, promotes idea generation, and improves their ICT skills. However, they do not consider mind mapping as a comprehensive replacement for textbooks, and it is not seen as overly time-consuming for lesson preparation.

Table 7. Viewpoints on the psychological impact of nursing students when applying mind mapping

Psychological Influences	N	Mean	Std. Deviation	Interpretation
1. Mind mapping provides me with a wider perspective on critical thinking.	35	3.52	0.621	High
2. Mind mapping draws my attention to contribute ideas to the lessons.	35	4.06	0.630	High
3. Mind mapping helps me organize my thoughts.	35	3.87	0.515	High
4. Mind mapping destroys the role of teachers in the class but highlights that of learners.	35	2.22	0.727	Low
5. Mind mapping allows me to be creative.	35	3.80	0.569	High
6. Lessons using mind mapping is a boring experience.	35	1.84	0.643	Low
7. Mind mapping enhances my reasoning skills.	35	3.96	0.852	High

The table above presents the viewpoints of nursing students regarding the psychological impact of teaching mind mapping techniques. The table provides valuable insights into how students perceive the effects of mind mapping on various aspects of their learning experience. The most prominent figure of this group is students' opinion about the statement: “Mind mapping draws my attention to contribute ideas to the lessons”. The mean score of 4.06, along with a standard deviation of 0.630, indicates a high impact. Students highly value mind mapping as a tool that actively engages them in lessons and encourages them to contribute their ideas. Furthermore, they believe that mind mapping enhances their reasoning skills. For this statement, the mean score of 3.96 and a relatively high standard deviation of 0.852 suggest that students, on average, perceive that mind mapping positively affects their reasoning skills.

In summary, students generally have positive perceptions of the psychological impact of mind mapping techniques on their learning. They believe that mind mapping enhances critical thinking, encourages active participation and idea contribution, aids in organizing thoughts, fosters creativity, and improves reasoning skills. While there is some disagreement on the impact of mind mapping on the roles of teachers and learners, students, in general, do not find lessons using mind mapping to be boring.

4.3. Discussion

The objective of this study was to investigate the effectiveness of mind mapping on students' vocabulary learning. The main findings demonstrate that mind mapping has a positive impact on nursing students' vocabulary learning and positively influences their learning attitudes.

Referring to vocabulary retention of students, the improvement of students' vocabulary retention is promising through the use of mind mapping in the study of vocabulary. Three primary tasks demonstrate the use of mind mapping: filling up blank mind maps with the appropriate words, learning English words inside the mind map, and presenting vocabulary using mind mapping. When the English teacher presents a new subject, these exercises are done to help the pupils learn the terminology and get ready for the exercises that will be given in class.

Both English teachers and students benefit from mind mapping's use of features including colors, images, keywords, branching, word associations, and word categorization while teaching and learning vocabulary in English. First of all, mind mapping can help teachers teach terminology to students in an organized and understandable way, as well as help students better comprehend the terms and their definitions. Second, mind mapping aids pupils in remembering and retaining the words they have studied, along with their definitions and spellings.

As a result, the capacity to retain and recall English words, their definitions, and their spellings is probably going to improve. In order to complete tasks in the classroom, students can also experiment with their vocabulary. Given the notable shift in the results between the pre-test and post-test, the discrepancies between the two tests also suggest that students can improve their vocabulary acquisition. Compared to the pre-test, a much higher percentage of students received high scores on the post-test.

5. Conclusion

In conclusion, this study set out to investigate the effectiveness of using the mind mapping technique to enhance vocabulary learning among nursing students at Thai Nguyen University of Medicine and Pharmacy as well as to gauge their attitudes towards this innovative approach. The research findings have provided valuable insights into these areas.

In response to our first research question, the results strongly indicate that employing mind maps as a teaching tool for English vocabulary in classrooms can yield positive outcomes when compared to traditional teaching methods. Notably, the post-test results revealed significant improvements among students who had previously struggled with English. Conversely, the control group, subjected to conventional teaching methods, experienced a decline in their grades. These findings underscore the importance of considering students' proficiency levels before implementing any educational intervention, as these levels can significantly influence the outcomes.

Regarding the second research question concerning students' perceptions of using mind mapping for vocabulary acquisition, our data indicates a favorable reception among the majority of students. They found mind mapping to be a clear and comprehensible method that facilitated vocabulary learning. Moreover, it was seen as a means to expand their vocabulary and inject interest into the otherwise mundane process of vocabulary acquisition. However, there were some drawbacks associated with this method, including concerns about potential time inefficiency and difficulties in retaining vocabulary words. Nonetheless, the overall sentiment was positive, with most students expressing their intent to continue using mind mapping in their future studies.

In summary, the results derived from this quasi-experimental study, combined with questionnaire responses, collectively support the idea that teaching English vocabulary using mind maps can be a highly effective tool for enhancing vocabulary acquisition among nursing students. These findings can serve as a valuable resource for educators and policymakers seeking to design effective interventions aimed at improving student outcomes. It is crucial, however, to consider the unique needs and proficiency levels of individual students when implementing such interventions while also continuously monitoring and evaluating their effectiveness.

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Sử dụng bản đồ tư duy để cải thiện việc học từ vựng tiếng Anh cho sinh viên ngành điều dưỡng tại Trường Đại học Y - Dược, Đại học Thái Nguyên

Tóm tắt: Từ vựng được biết đến là một thành phần không thể thiếu trong việc học tiếng Anh và có ảnh hưởng đáng kể đến việc tiếp thu tiếng Anh của sinh viên. Việc học từ vựng có tầm quan trọng thiết yếu đối với sinh viên điều dưỡng trong việc tiếp thu kiến thức về lĩnh vực y khoa ở hiện tại cũng như cho việc học tập trong tương lai. Nghiên cứu này nhằm đánh giá hiệu quả của việc áp dụng bản đồ tư duy để tăng cường hiệu quả của việc học từ vựng cho sinh viên điều dưỡng cũng như tìm hiểu thái độ của các em khi trải nghiệm học theo bản đồ tư duy trong việc phát triển vốn từ vựng tiếng Anh tại Trường Đại học Y - Dược, Đại học Thái Nguyên. Nghiên cứu bán thực nghiệm và thiết kế nghiên cứu với 70 mẫu từ hai lớp học K19-02 và K19-03 được sử dụng để thu thập dữ liệu. Kết quả cho thấy những tác động tích cực của bản đồ tư duy đối với việc học từ vựng của sinh viên điều dưỡng. Ngoài ra, những kết quả từ các bài kiểm tra trước và sau giữa nhóm thực nghiệm và nhóm đối chứng cũng chỉ ra rằng cách tiếp cận này mang lại kết quả học tập tích cực trong việc dạy và học tiếng Anh cho sinh viên điều dưỡng.

Từ khóa: Bản đồ tư duy; từ vựng cho sinh viên điều dưỡng; học từ vựng; nâng cao vốn từ vựng; nghiên cứu bán thực nghiệm.