

Original Article

# An Investigation Research on Rural Junior High School Vocabulary Cognitive Strategy Based on Mind Map

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**Abstract** - Vocabulary is the basis of English learning. English Curriculum Standards for Compulsory Education (2022 Edition) (hereinafter referred to as New Curriculum Standards, NCS) put forward higher requirements for students' vocabulary learning. However, the traditional vocabulary teaching method is not suitable for developing students' thinking ability, which leads to a considerable number of students, especially rural students, being troubled by vocabulary learning. Through SPSS, it is found that Learners believe that vocabulary learning is very important in their study. Students always remember vocabulary through writing down as well as reciting vocabulary again and again in their real life. Students have a certain understanding of mind maps and recognize that mind maps have a positive role in English vocabulary learning. However, only a small number of students use mind maps to memorize vocabulary in actual learning; even some students have never used mind maps in their English vocabulary learning. In view of the above problems, the author puts forward the following optimized suggestions. First, junior high school English teachers should design diversified mind maps for vocabulary teaching. Secondly, teachers should enhance their own acquisition and practice of mind maps in junior English vocabulary teaching. At last, educational departments and schools should regularly organize teacher training to improve teaching ability by using mind maps in vocabulary teaching.

**Keywords** - Mind Map, Junior High School, English Vocabulary Teaching, English learning strategy.

## 1. Introduction

Vocabulary is the basis of English learning. English Curriculum Standards for Compulsory Education (2022 Edition) (hereinafter referred to as New Curriculum Standards, NCS) put forward higher requirements for students' vocabulary learning. However, the traditional vocabulary teaching method is not suitable for developing students' thinking ability, which leads to a considerable number of students, especially rural students, being troubled by vocabulary learning.

This research surveys the application of mind maps to vocabulary learning in rural junior high schools. The questionnaire is divided into four dimensions: the current situation of vocabulary learning, the student's vocabulary learning methods, the student's understanding of mind maps, and the difficulties in the student's vocabulary learning process.

## 2. Research Design

### 2.1. Research Background

Vocabulary, grammar, and pronunciation are the three major elements of the English language, but the vocabulary is the most basic element of English learning. (Wilkins,1978).In China, the 2022 Compulsory Education English Curriculum Standards(hereinafter referred to as the

"Curriculum Standards")set clear requirements for vocabulary learning of junior high school students. In the actual English teaching process, vocabulary proficiency has almost become an insurmountable barrier to students' English learning. Students usually memorize words in a monotonous and mechanical way. Therefore, the efficiency and effect of students' vocabulary memory are not optimistic, which leads to a decrease in students' interest in English learning and the waste of effective learning time(Chen Min,2005).In this context, mind map as a creative teaching method has been gradually applied to the process of junior English vocabulary teaching.

In this study, the author analyzes the current situation of mind map application in junior high school English vocabulary teaching through questionnaires. This study aims to investigate junior English teachers' cognition status of using mind maps in vocabulary teaching and the specific application of mind maps in English vocabulary teaching. The existing problems of mind maps in junior high school vocabulary teaching will be found through the investigation. In view of the existing problems, the author will provide some suggestions and solutions to promote the development of students' creative and divergent thinking and optimize the use of mind maps in junior high school English vocabulary teaching.



**2.1. Research Significance**

Based on the existing research results, this study investigates junior high school's using condition of mind maps in English vocabulary teaching through questionnaires to find the current situation and existing problems and then puts forward some corresponding suggestions for the use of mind maps in junior high school English vocabulary teaching, which has theoretical and practical significance.

**2.1.1. Practical Significance**

Although some scholars have proved that mind maps can achieve certain results, problems and doubts in the application process have not been clearly investigated and studied. The practical value of this study lies in the investigation of the current situation of the application of mind maps in rural junior high school English vocabulary teaching, finding out the current situation and the existing problems of mind maps in rural junior high school English vocabulary teaching, and then putting forward some countermeasures to solve the problems.

**2.1.2. Practical Significance**

Key Words	Volume
Mind map in English teaching	346
Mind map in English teaching	81
Mind map in junior high school English teaching	22

Fig. 1 Number of Relevant Research from 2012 to 2022 at Home

In order to understand the current research status of this field in China, the author uses China National Knowledge Infrastructure(CNKI)as the main source of literature data, as is shown in Figure 1.1. Firstly, the author used "mind map in English teaching" as the keywords to search and found 346 papers. Secondly, the author used "mind map in English vocabulary teaching" as the keywords for retrieval. In the past decade, there have been 81 papers. Thirdly, the author used "mind map in junior high school English vocabulary teaching" as the keywords for retrieval and found 23 papers.

To sum up, there is much literature on "mind maps in English teaching" and "mind maps in English vocabulary teaching". In contrast, the number of research literature on "an investigation on the application of mind map in English vocabulary teaching in rural junior high school" is very rare. Therefore, mind map research in rural junior high school English vocabulary teaching can enrich its theoretical research.

**2.3. Research Purpose**

At present, there are many problems in vocabulary teaching and learning. Vocabulary teaching is inefficient, and students struggle to understand, remember, and use vocabulary. According to the cognitive strategy requirements for learning strategies in the New Curriculum Standards for

Junior High School English: students should be good at using non-verbal information such as pictures to understand topics and learning and memorizing words with the help of association. Mind map is based on the physiological research on the brain, combining the relatively abstract basic concepts with some basic elements such as lines, graphics and colors and transforming tacit knowledge into explicit visual knowledge by organizing records in an associative and divergent way. Through the form of pictures and texts, a mind map can expand the vision of students' learning knowledge, strengthen the systematization of learning content, and facilitate students to understand and memorize the relevant information(Liu Lanfen,2021). This thesis explores the application of mind maps to students' English vocabulary. Through the teaching research of mind maps, the author hopes to use the mind map method to stimulate students' interest in learning English vocabulary, enhancing the acquisition of target vocabulary and improving English vocabulary proficiency.

**3. Mind map**

**3.1. The Definition of Mind Map**

The mind map is also known as the brain map. In the early 1960s, it was first proposed by British psychologist and educator Tony Buzan (Jin Yanqing,2017). Mind map is a thinking tool that transforms radioactive thinking into concrete visualization. In the cognitive process, people present the thinking process simply and clearly through different lines, colors and images and closely connect patterns and words to realize the concretization of thinking truly.

**3.2. The Features of Mind Map**

Chinese scholar Pei(Mao Haiyan,2008) clearly stated in the article Mind Map and Foreign Language Teaching that a mind map, as a method for creatively organizing information, has the following four characteristics: firstly, the focus is prominent; secondly, the center is prominent, and the primary and secondary levels are clear; thirdly, the subject is clear and closely linked, which is convenient for memory and organization; finally, it is easy to associate and diverge, and easy to grasp the relationship. Its biggest feature is to let the right brain reach its full potential through colors, symbols and images and stimulate creativity and information processing capabilities.

**3.3. Previous Studies of Mind Map in English Vocabulary Teaching at Home and Abroad**

**3.3.1. Previous Studies on Mind Map Abroad**

Since the British scholar Tony Buzan created the "Mind Map" in the 1970s, more and more people have applied mind maps to their personal lives, work, and learning. Later, western primary and secondary schools introduced it into classroom teaching, becoming a learning strategy widely adopted by learners in western countries. European and American countries have more profound and extensive

research for applying mind maps in teaching. More and more educators believe that mind maps can promote the cognitive activities of teachers and students in teaching and form effective classrooms. Professor Novak recognized that a mind map positively stimulates the learner's level of thinking and improves the learner's memory (Li Qiong,2017).

3.3.2. *Previous Studies on Mind Map in China*

Compared with foreign countries' in-depth research on mind maps and their wide application in various fields, domestic research on mind maps is gradually deepening. Relevant research institutes in China are actively promoting mind maps in various fields. Zhao further affirmed the intuitive characteristics of a mind map. He believes that a mind map excavates the invisible knowledge existing in people's minds in the form of a map and takes it as the basis for learning new knowledge. This process not only consolidates the old knowledge but also expands the new knowledge and promotes the internalization of knowledge in an intuitive form(Zhao Jiana,2014).

3.3.3. *Previous Studies on the Application of Mind Map in Vocabulary Teaching Abroad*

Samhudi (2015) showed through empirical research that a mind map improves students' vocabulary and stimulates learning motivation.

Bahadori-Azin and Gorjian-Bahman (2016) thought that mind maps can improve students' vocabulary levels by comparing regular vocabulary teaching with mind map software teaching.

3.3.4. *Previous Studies on the Application of Mind Map in Vocabulary Teaching in China*

Zhao carefully summarized three points that should be paid attention to when using mind map strategies in vocabulary learning. Teachers should "analyze textbooks, integrate textbooks and prepare lessons carefully". Their design and drawing should be consistent with students' English proficiency and combine new vocabulary with old vocabulary. The hierarchical relationship between vocabulary should be clear, and the keywords to express concepts should be general (Zhao Chen,2019).

**4. Research design**

**4.1. Research Questions**

This study used a questionnaire survey. After collecting the questionnaire, SPSS25.0 was used to process and analyze the data. This study aims to solve the following three problems:

- Can the application of mind maps in English vocabulary teaching stimulate junior high school students' interest in English vocabulary learning?

- What is the application of a mind map in junior English vocabulary teaching?
- How can the application of mind maps in junior English vocabulary teaching be optimized?

**4.2. Research Subjects**

The participants of this study are 233 junior high school students in Sichuan.

**4.3. Research Instruments**

This study adopts a questionnaire survey to investigate the current situation of junior high school English teachers' cognition of mind maps in English vocabulary teaching and its application in junior high school English vocabulary teaching, then find out the existing problems and give some meaningful suggestions.

**4.4. Questionnaires**

The questionnaire of this study mainly comes from the "Vocabulary Learning Questionnaire" of Xiao Ying(2020) and Xu Lidan(2021). The author designed the questionnaire on the application status of mind maps in rural junior high school English vocabulary teaching. In order to know students' actual condition, the questionnaires include four dimensions: vocabulary memorizing current situation, vocabulary learning method, mind map cognition and vocabulary learning difficulties. Table 3-1 shows the dimensions of the questionnaire.

The questionnaire is anonymous and does not impact students' academic performance, to avoid inaccurate survey results caused by students' psychological factors. The questionnaire contains five answer options:1-5 indicates the degree of agreement, 1 indicates complete disagreement,2 indicates disagreement,3 indicates uncertainty,4 indicates agreement, and 5 indicates complete agreement. Students can only choose one option for each question and are required to complete it within 15 minutes. Table 3-1 shows the dimensions and corresponding topics of the questionnaire.

**Table 3.1 Questionnaire on the use of cognitive vocabulary strategies**

Dimension	Questions
vocabulary memorizing current situation	3,4,5
vocabulary learning method	6,7,8,9,12,13
mind map cognition	10,11,14,15,16
vocabulary learning difficulties	17,18

4.5. Research Process

Table 3.2 Reliability and validity analysis

item	divisor1	divisor2	divisor3	Commonality
1. What grade are you in ____ ?	-0.03	-0.18	0.53	0.311
2. What is your gender ____ ?	-0.12	0.49	-0.01	0.256
3. I'm interested in vocabulary learning.	0.56	0.48	-0.25	0.601
4. I believe that vocabulary learning is very important.	0.29	0.73	-0.24	0.679
5. I'm very satisfied with my English performance.	0.71	-0.02	0.09	0.518
6. I think the teacher's vocabulary teaching method is boring and dull.	-0.05	0.07	0.82	0.678
7. I usually memorize English vocabulary by repeatedly copying and reading.	0.42	0.13	0.49	0.428
8. I will memorize the words indicating the same kind of things or the same collocation according to the classification of things.	0.81	0.13	0.03	0.681
9. I will memorize vocabulary by reading a lot of books.	0.83	0.14	0.05	0.710
10. When I memorize words, it is easy to associate one word with another.	0.77	0.09	-0.11	0.606
11. I will summarize the vocabulary that I have learned.	0.82	0.12	0.08	0.688
12. I think my current learning method is very useful in learning vocabulary.	0.78	0.18	-0.14	0.662
13. I'm willing to try new vocabulary learning methods in vocabulary learning.	0.58	0.45	0.01	0.536
14. I know something about mind mapping.	0.56	0.47	0.17	0.566
15. I have used mind maps in English vocabulary learning.	0.65	0.41	0.16	0.621

16. I think mind mapping is very useful for English vocabulary learning.	0.41	0.67	0.12	0.622
KMO	0.883		-	
df	120.000		-	
Cronbach	0.879		-	

According to analyzing the reliability and validity of the collected data through SPSS software, Cronbach's Alpha coefficient was selected for the reliability test of the questionnaire. It is generally considered that Cronbach's Alpha is acceptable between 0.7-0.8, with high reliability between 0.8-0.9. KMO values have high validity between 0.8-0.9. It can be seen from Table 3-2 that the  $\alpha$  reliability coefficient of this questionnaire is equal to 0.879, and the KMO value is 0.883, which means that the validity and reliability indicators of this questionnaire are ideal.

5. Results and Discussion

Through a questionnaire survey, this chapter principally analyzes junior high school English teachers' cognition status of mind maps in English vocabulary teaching, the current situation and existing problems of mind map application in junior high school English vocabulary teaching, as well as some optimized suggestions. The survey is divided into five parts. It includes the subject's basic information, vocabulary memorizing current situation, vocabulary learning method, mind map cognition and vocabulary learning difficulties.

Table 4.1 Basic Information  
1. What grade are you in \_\_\_\_ ?

option	quantity	proportion
A. Seven	34	14.59%
B. Eight	44	18.88%
C. Nine	155	66.52%
Number of valid	233	

2. What is your gender \_\_\_\_ ?

option	quantity	proportion
A. male	97	41.63%
B. female	136	58.37%
Number of valid	233	

The 233 students surveyed in this survey cover students of three grades. Investigating students of different grades helps to master the learning difficulties students encounter at different stages to find and solve problems accurately. In addition, this survey fully considers the differences in thinking between male and female students. Hence, the proportion of the total number of male and female students is close to balance. Therefore, the survey results can more intuitively reflect the students' vocabulary learning problems and put forward more convincing and targeted suggestions.

**5.1. Vocabulary memorizing current situation**

**Table 4.2. First dimension**

3. I'm interested in vocabulary learning.	
Mean	3.36
Median	3.00

**3. I'm interested in vocabulary learning.**

option	quantity	proportion
one	17	7.3%
two	23	9.87%
three	82	35.19%
four	82	35.19%
five	29	12.45%
Number of valid	233	

In response to the first question, 47.64% of the students expressed interest in English vocabulary learning, 35.19% felt general, and 17.17% were not interested. The average value of this group of data is 3.36, which shows that most students are interested in English vocabulary learning; nearly eight out of ten of them hold a positive attitude.

**Table 4.3. First dimension**

4. I believe that vocabulary learning is very important.	
Mean	3.86
Median	4.00

**4. I believe that vocabulary learning is very important.**

In response to the second question, 87.98% of the students said that English vocabulary learning was very important, and they affirmed the importance of vocabulary learning. Only 12.02% of the students think English

vocabulary learning is not important. The average value of this group data is 3.86, which shows that most students recognize the importance of English vocabulary learning.

option	quantity	proportion
one	12	5.15%
two	16	6.87%
three	40	17.17%
four	90	38.63%
five	75	32.19%
Number of valid	233	

**Table 4.4. First dimension**

5. I'm very satisfied with my English performance.	
Mean	2.87
Median	3.00

**5. I'm very satisfied with my English performance.**

option	quantity	proportion
one	38	16.31%
two	47	20.17%
three	73	31.33%
four	58	24.89%
five	17	7.3%
Number of valid	233	

Regarding the third question, 7.3% of the students are completely satisfied with their English scores, 24.89% of the students are very satisfied with their English scores, and 31.33% of the students are basically satisfied with their English scores. 20.17% of the students were unsatisfied with their English scores, and 16.31% were not satisfied with their English scores. The average value of this group data is 2.87, which shows that at least half of the students are satisfied with their English grades.

5.2. Vocabulary Learning Method

Table 4.5 Second dimension

Questions	Mean	Median
7. I usually memorize English vocabulary by repeatedly copying and reading.	3.14	3.00
8. I will memorize the words indicating the same kind of things or the same collocation according to the classification of things.	3.16	3.00
9. I will memorize vocabulary by reading a lot of books.	3.03	3.00

6. I think the teacher's vocabulary teaching method is boring and dull.

option	quantity	proportion
one	43	18.45%
two	66	28.33%
three	60	25.75%
four	41	17.6%
five	23	9.87%
Number of valid	233	

In response to the fourth question, 53.22% of the students think that the vocabulary teaching methods adopted by English teachers are very boring, and 46.78% of the students are satisfied with the vocabulary teaching methods adopted by English teachers. The average value of this group data is 2.72, which shows that at least half of the students think their English teacher's vocabulary teaching method is boring. The proportion is close to equilibrium. Although nearly half of the students are satisfied with the current teaching methods, however, the feelings of the other half should also be considered. Therefore, English teachers should try some new vocabulary teaching methods in practical teaching.

Table 4.6. Second dimension

7. I usually memorize English vocabulary by repeatedly copying and reading.

option	quantity	proportion
one	27	11.59%
two	30	12.88%
three	79	33.91%

four	78	33.48%
five	19	8.15%
Number of valid	233	

8. I will memorize the words indicating the same kind of things or the same collocation according to the classification of things.

option	quantity	proportion
one	22	9.44%
two	42	18.03%
three	69	29.61%
four	77	33.05%
five	23	9.87%
Number of valid	233	

9. I will memorize vocabulary by reading a lot of books.

option	quantity	proportion
one	19	8.15%
two	46	19.74%
three	90	38.63%
four	65	27.9%
five	13	5.58%
Number of valid	233	

As for the seventh question, the average value of this group data is 3.14. From the above table, we can see that 42.92% of the students have an awareness of associative memory and often or occasionally associate many words with one word. 33.91% of the students occasionally have this awareness. In comparison, 23.18% of the students do not associate when learning and remembering English words. Combined with the previous questions, we can see that vocabulary memory is easy to have problems without scientific methods and strategies. In the eighth question, 67.82% of the students are aware of summarizing and sorting out the words they have learned, and more than half of them will often or occasionally summarize and sort out the words they have learned. At the same time, the other 32.18% of the students do not conduct induction and collation. The average value of this group is 3.16, which shows that most students are willing to summarize and sort

out the words. These students do not consciously carry out deep-seated processing on what they have learned after vocabulary learning, and what they have learned has not been internalized into their knowledge system. This is not a scientific vocabulary learning strategy.

**Table 4.7. Second dimension**

**12. I think my current learning method is very useful in learning vocabulary.**

option	quantity	proportion
one	18	7.73%
two	46	19.74%
three	84	36.05%
four	62	26.61%
five	23	9.87%
Number of valid	233	

It can be seen from the twelfth question that only 36.48% of the students think that it is useful to learn words with their current methods, 36.05% of the students think that their methods are useful, 27.47% of the students think that their methods of learning words are useless. The average value of this group data is 3.11, which shows that nearly 30% of the students think there are problems in their word memory methods and the learning effect is unsatisfactory.

**Table 4.8. Second dimension**

13. I'm willing to try new vocabulary learning methods in vocabulary learning.	
Mean	3.36
Median	3.00

**13. I'm willing to try new vocabulary learning methods in vocabulary learning.**

option	quantity	proportion
one	8	3.43%
two	34	14.59%
three	89	38.2%
four	69	29.61%
five	33	14.16%
Number of valid	233	

From the thirteenth question, 81.97% of the students said they wanted to try a new method to learn English vocabulary, and only 3.43% of the students held a negative attitude towards the new method. The average value of this group data is 3.36, which shows that most students are willing to explore a new English vocabulary learning method, which paves the way for the introduction of mind mapping in English vocabulary classes.

**5.3. Mind map cognition**

**Table 4.9. Third dimension**

**10. When I memorize words, it is easy to associate one word with another.**

option	quantity	proportion
one	17	7.3%
two	37	15.88%
three	79	33.91%
four	78	33.48%
five	22	9.44%
Number of valid	233	

**10. I will summarize the vocabulary that I have learned.**

option	quantity	proportion
one	21	9.01%
two	54	23.18%
three	89	38.2%
four	55	23.61%
five	14	6.01%
Number of valid	233	

In the tenth question, a total of 16% of the students have an awareness of associative memory, often or occasionally associate many words from one word; 41% of the students occasionally have this awareness, while 43% of the students do not associate when learning and remembering English words. The average value of this group data is 3.22, which shows that most students are easy to associate one word with another when they recite vocabulary. Combined with the above questionnaire questions, it can be seen that without scientific methods and strategies, vocabulary memory can easily be problematic. A total of 48% of the students are aware of summarizing and

sorting out the words they have learned, and less than half of them often or occasionally summarize and sort out the words they have learned. At the same time, the other 52% of the students do not conduct induction and collation. The average value of this group data is 2.94, which shows that a few students do not consciously carry out deep-seated processing on what they have learned after vocabulary learning, and what they have learned has not been internalized into their own knowledge system. This is not a scientific vocabulary learning strategy.

**14. I know something about mind mapping.**

option	quantity	proportion
one	29	12.45%
two	47	20.17%
three	81	34.76%
four	55	23.61%
five	21	9.01%
Number of valid	233	

**15. I have used mind maps in English vocabulary learning.**

option	quantity	proportion
one	15	6.44%
two	38	16.31%
three	90	38.63%
four	63	27.04%
five	27	11.59%
Number of valid	233	

Questions	Mean	Median
14.I know something about mind mapping.	3.21	3.00
15.I have used mind maps in English vocabulary learning.	2.97	3.00
16.I think mind mapping is very useful for English vocabulary learning.	3.47	4.00

**16. I think mind mapping is very useful for English vocabulary learning.**

option	quantity	proportion
one	12	5.15%
two	27	11.59%
three	74	31.76%
four	79	33.91%
five	41	17.6%
Number of valid	233	

The averages of these three sets of data are 3.21, 2.97, and 3.47. From these three questions, it can be seen that 77.25% of the students have some knowledge of mind mapping, and only 22.75% of the students do not know mind mapping. And 67.38% of the students used mind maps to memorize vocabulary in English learning, only 32.62% of the students did not use mind maps, and nearly 70% of the students used mind maps in vocabulary learning. 51.51% of the students think that mind maps are very useful for English vocabulary learning and memory, 31.76% of the students think that mind maps are useful, and only 16.74% of the students hold a negative attitude. It can be seen that the feedback on mind maps from most of the students is good. To sum up, most students think that mind mapping is helpful to vocabulary learning.

**5.4. Vocabulary learning difficulties**

**Table 4.9. Fourth dimension**

**16. What are your problems and difficulties in vocabulary learning?**

option	quantity	proportion
It's easy to forget the words you've learned	162	69.53%
Can't remember the polysemy of a word	143	61.37%
Can't remember the pronunciation and spelling of words	126	54.08%
Can't use words correctly	115	49.36%
Number of valid	233	

It can be seen that almost every student has some difficulties in learning vocabulary. Among them, nearly 70% of the students have the biggest difficulty in learning English vocabulary: forgetting the words they have learned, and about 60% of the students can not remember the multiple meanings of a word.



## 6. Conclusion

### 6.1. Major Findings

This study collected the data by questionnaire and analyzed the data by a combination of quantitative and qualitative methods. The following conclusions are drawn through SPSS23.0 software to analyze the results of students' vocabulary learning: most students believe that vocabulary learning based on a mind map helps improve English vocabulary efficiency. However, some of them do not use the method of mind map to recite

vocabulary in their actual English learning. Some students think the current vocabulary teaching method is tedious and do not know much about mind maps, but they are willing to try new vocabulary learning methods.

### 6.2. Pedagogical Implications

Based on the major findings of this research, the author put forwards some implications to provide a reference for English teachers' ability in vocabulary teaching.

Firstly, junior high school English teachers should improve their drawing efficiency of mind maps and enrich the design of mind maps in terms of colors, pictures and

words. Besides, teachers should also master some effective mind map drawing methods.

Secondly, teachers should enrich the practical application of mind maps in vocabulary teaching. Teachers should design various types of mind maps to teach English vocabulary in junior high school, and English teachers should encourage students to use mind maps in English vocabulary learning widely.

Finally, junior high school English teachers should strengthen their learning of mind map knowledge and strive to find various ways to learn. The relevant departments should regularly provide training on mind maps for junior high school English teachers. In addition, researchers and teachers should make continuous research efforts in this area.

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