

## Group-cooperative Vocabulary Processing in Depth and College English Vocabulary Teaching and Learning

Hong Shao<sup>1, a</sup>

<sup>1</sup>College of Foreign Studies, Guilin University of Electronic Technology, Guilin 541004, China.

<sup>a</sup>sh0321@guet.edu.cn

### Abstract

**It is imperative for College English vocabulary teaching not only to explore the scope of vocabulary learning, but also to strengthen the depth of it; and the latter is more beneficial to the improvement of vocabulary acquisition and English ability, and even to the sustainable development of English learning. "Group-cooperative Vocabulary Processing in Depth" is a learning process in which Group-cooperation is made full use of to process the deep knowledge of English vocabulary. And its aim is to promote the quality of College English vocabulary learning. The teaching action research of group-cooperative vocabulary processing in depth has been conducted in two parallel non-English major Grade 2 classes for two rounds. The empirical results of this research show that this processing practice which consists of vocabulary classification and story writing has prompted the effects of college students' English vocabulary acquisition. The four reasons why this processing practice contributes to College English Vocabulary Teaching and Learning respectively are group cooperation; direct learning; intensive processing load and output processing in context.**

### Keywords

**Vocabulary processing in depth, Group cooperation, English vocabulary teaching, English vocabulary learning.**

### 1. Introduction

In college English teaching practice, the author found many non-English major college students' spoken and written problems in word use, such as the lack of vocabulary and incorrect use of word meaning, misuse of parts of speech of words (mixture of nouns and verbs, mixture of adjectives and adverbs and the wrong collocation of adjectives and verbs, etc.), and the improper word meaning expression in specific context. In the interview with some students, they reported some difficulties in vocabulary learning, such as the difficulties in memorizing words, different meanings of words, parts of speech of words, and those in organizing English writing and speaking. By comparing students' problems in vocabulary application and their process of vocabulary learning, the author explores some inevitable connections between them: having not enough vocabulary and the lack of vocabulary learning depth make non-English major college students have no words to use, so as to use rigid expressions in English practice; Not remembering parts of speech and only remembering the Chinese meanings of words leads to the fact that words can only be used by students in writing and speaking according to their Chinese thinking.

Under the circumstance that college students are trying their best to expand their vocabulary to cope with the College English Test Band 4 (CET-4) and College English Test Band 4 (CET-6), how non-English major college English teachers guide college students to strengthen the deep learning of vocabulary has become an important research topic. The author believes that college English vocabulary teaching should not only expand the breadth of vocabulary learning,

but also strengthen the depth of vocabulary learning, which is more conducive to the effect of vocabulary acquisition, the improvement of English ability and the sustainable development of English learning.

## 2. Literature Review

Vocabulary acquisition knowledge can be divided into two types: comprehension knowledge and output knowledge, including oral form, written form, grammatical form, collocation relation, conceptual meaning, meaning connection, frequency of vocabulary use and appropriateness (Nation, 2004:30-33). Vocabulary acquisition knowledge can be classified into the breadth and depth of vocabulary knowledge; vocabulary breadth refers to the amount of vocabulary, vocabulary depth refers to 12 kinds of vocabulary knowledge, including phoneme, spelling, morphological and semantic knowledge, native language knowledge, word frequency, collocation, syntactic knowledge, style knowledge, pragmatic knowledge, variant knowledge, vocabulary strategy knowledge (Ma Guanghui, 2007). The author thinks that the deep knowledge of vocabulary is the summation of the form, meaning and application of vocabulary. Many front-line teachers and researchers in high schools, vocational colleges and universities have made beneficial research on the teaching of English vocabulary through group cooperative learning. First, their opinions mainly focus on the role of group cooperation in English vocabulary learning, and they pay more attention to the specific organizational forms of group cooperative vocabulary learning strategies and the development of group activities. Second, they mostly discussed the positive effects of cooperative learning strategies on the teaching of basic vocabulary knowledge, such as pronunciation, morphological derivation and basic semantics of English vocabulary, and they failed to teach or discuss in-depth knowledge of English vocabulary. (Zhang Xuehua, 2008; Wang Lu, 2012; Wang Yi, 2013; Yu Jie, 2013; Kong Ning, 2016) In addition, many English vocabulary researchers emphasize the importance of deep vocabulary knowledge for English vocabulary learning. They mainly focus on the correlation between deep vocabulary knowledge and some factors, such as the correlation of the former and vocabulary learning strategies (Zhong Qiao, 2007), the enlightenment of the former on the vocabulary teaching (Wang Na, Zhao Fangming, 2009), research on the former and students' comprehensive English application ability (Yang Xiaoxia, 2008; Yang Lei, 2011), and research on influencing factors of vocabulary depth knowledge acquisition (Li Jingjie, Zhou Bingjie, 2014). Their research either focuses on theoretical guidance or explores the correlation between deep vocabulary knowledge and certain factors, which do not involve exploring how to use certain teaching activities to promote students' deep vocabulary knowledge acquisition in regular English teaching.

Based on the above literatures, we can learn that group cooperative learning is conducive to English vocabulary learning, and in-depth vocabulary knowledge is of great benefit to students' vocabulary application ability and even their comprehensive English ability. Integrating the above two theoretical and practical bases, the author tries to introduce the practice mode of group cooperative vocabulary deep processing into college English vocabulary teaching. The so-called "Group-cooperative Vocabulary Processing in Depth" refers to the deep learning process of processing and practice deep knowledge of English vocabulary through group cooperative learning, the goal of which is to improve the quality of college students' English vocabulary learning. In group cooperative learning, college students can use their collective wisdom to solve the problem of deep knowledge of English vocabulary. This vocabulary learning mode can arouse the enthusiasm of team members, and the students in the group can help each other using their advantages and compete with other groups to form a positive and interactive learning atmosphere. Next, the author will make an empirical study in the conventional college English teaching practice to test whether the mode of "Group-cooperative

Vocabulary Processing in Depth" can improve the English vocabulary acquisition effect of college students.

### 3. Experiment

#### 3.1. Experimental Design

This study will adopt the quasi-experimental design form of teaching action research. This experiment needs to be completed under the conditions of classroom teaching and extracurricular learning, and it cannot affect the schedule of college English teaching, nor can it adjust the number of students in the experimental class at will. The goal of this experiment is to deal with Group-cooperative Vocabulary Processing in Depth. The effect of college English vocabulary acquisition is presented by the score of vocabulary knowledge test.

This study will first carry out the vocabulary test and select two classes with the same vocabulary foundation to carry out the experimental study. The experimental study will be carried out based on unit learning. In the first phase of experimental study, the choice of a class to practice Group-cooperative Vocabulary Processing in Depth, another class to carry out the individual routine vocabulary learning independently, and 2 weeks later vocabulary knowledge test about the learned unit and analysis of the score differences between the experimental class and the control class will be done, if test scores show significant differences between the two classes, and the experimental class's average score is higher than that in control class, then you can preliminary confirm the effectiveness of the proposed "Group-cooperative Vocabulary Processing in Depth"; If "Group-cooperative Vocabulary Processing in Depth" does have the good effects in vocabulary learning, the experiment will continue to launch the second phase of experimental study, "Group-cooperative Vocabulary Processing in Depth" is conducted in the above two classes, and then another unit of vocabulary will be learned; two weeks later, the vocabulary knowledge test about this second unit and analysis of the score differences will be done, if the two classes show no difference in average score in the second test, and the control class has achieved better average score in the second test than their score in their first test, then the test results can prove that "Group-cooperative Vocabulary Processing in Depth" is effective in the two classes and beneficial to non-English major college students' English vocabulary acquisition.

The author chose two parallel classes in the second year of the non-English major university students that he taught to carry out the teaching experiment, with 64 students in the control class and 54 students in the experimental class. Through new Oriental IELTS vocabulary test and vocabulary quantity data F test ( $F=1.100522$ ,  $P=0.3618$ ) and T test ( $P=0.315983$ ), the author found that there was no significant difference in vocabulary quantity between the two classes ( $P > 0.05$ ). Experimental data are shown in table 1. The teaching experiment treatment methods which are applied in the two classes are shown in table 2.

**Table 1.**

Group	Mean	Standard error	F	P	T	P
Control class (N=64)	3000.938	83.9860	1.100522	0.3618	-1.0071	0.315983
Experimental class (N=54)	3123.333	87.1567				

**Table 2.**

Group	Processing method
Control class (N=64)	To participate in two tests, the first test will apply routine treatment; The second test will apply the experimental target treatment
Experimental class (N=54)	To participate in two tests, both of which will apply the experimental target treatment

### 3.2. Experimental Materials

In the first phase of the experiment, the vocabulary to be learned by the two classes came from 45 new words in Unit 1 Text A of New Horizon College English (reading and writing course book 4) (third edition) (Zheng Shutang, 2015) published by Foreign Language Teaching and Research Press. In the first week of regular teaching of the unit, the author assigned the control class to learn the vocabulary in the unit's word list after class, and told them to take the unit's vocabulary test in the same classroom two weeks later. The same task was assigned to the experimental class, and they were required to finish the group cooperative vocabulary deep processing exercise after class, including vocabulary classification (based on pronunciation, morphology and meaning, etc.) and writing short stories about choosing new words. In the second stage of the experiment, the two classes need to learn 41 new words in Text A of the second unit of the same textbook. Both classes need to finish the same type of group cooperative vocabulary deep processing exercise done after class by the experimental class in the first stage of the experiment, and then take the vocabulary test of the unit in class 2 weeks later.

The two tests of this teaching experiment are in the form of single choice or multiple choice questions, with a total of 20 multiple choice questions, 5 points for each question, and a total of 100 points. The test is to be completed in 10 minutes. The two tests test the students' acquisition of new words in the two units. The aspects of examining vocabulary include the meaning in Chinese and English, morphology, part of speech, collocation, lexical meaning and semantic relation. In order to avoid more test-taking effect brought by the first test to the experimental class, multiple choice questions were added in the second test to improve the test difficulty, so as to reduce the test-taking advantage of the experimental class as far as possible. Examples of specific test questions are as follows:

Test 1:

1. The Chinese meaning and its part of speech of sarcasm is \_\_\_\_\_.  
 Fengci; Adjective  Waku; Verb  Fengci; Verb  Waku; Noun (correct answer)
2. The derivative adjective of muscle is \_\_\_\_\_.  
 muslar  muscul  muscular (correct answer)  musculer
3. Among the four words "premature, premise, proposition, petitioner", which one is different from the other three in part of speech?  
 Premature (correct answer)  premise  proposition  petitioner
4. What's a synonym for radiant?  
 Attractive  pearl  luminous (correct answer)  distort
5. Which of the following can be used as both a verb and a noun and is also related to cosmetic?  
 dye (correct answer)  makeup  lipstick  stump

Test 2:

1. The meaning of chronic does not include \_\_\_\_\_.  
 continuing for a long time  very difficult to solve  
 Difficult to be cured  inborn (correct answer)
2. The Chinese meanings of complexion include:  
 Mianrong (correct answer)  Mianse (correct answer)  
 Yibanxingzhi (correct answer)  fuza
3. The general term which can cover these words "refrigerator, air conditioner, washing machine" is \_\_\_\_\_.  
 Equipment  appliance (correct answer)  device  electricity
4. The words which are directly related to makeup are \_\_\_\_\_.  
 clay (correct answer)  plaster (correct answer)  cosmetic (correct answer)

Lipstick (correct answer)  perfume (correct answer)  obsession

5. Which word can be used to collate with appease?

Conformity  outrage (correct answer)  complement  subjective

6. Which words can be the synonyms of beautiful?

Gorgeous (correct answer)  pretty (correct answer)  ordinary  ugly

### 3.3. Experimental Process

In the first stage of the experiment, the two classes learned 45 new words in text A of the first unit of the experimental textbook. In the first week of regular teaching of this unit, the author assigned the control class to learn the vocabulary in the unit's word list after class, and took the vocabulary test of this unit in the same class two weeks later. The author assigned the same task to the experimental class, and asked them to finish the group cooperative vocabulary deep processing exercise after class. They also took the vocabulary test of this unit in the same class 2 weeks later. In the second stage of the experiment, the two classes learned 41 new words in the second unit's text A of the same textbook. Both classes completed the same type of group cooperative vocabulary deep processing exercise that the experimental class had done in the first stage, and then took the vocabulary test of the second unit in class 2 weeks later.

### 3.4. Experimental Results

The t-test results of paired samples calculated by Microsoft Excel 2010 (table 3) showed that: in the first vocabulary test of the first stage experiment, there was a significant difference in the vocabulary test scores of the two classes ( $P < 0.05$ ). The average vocabulary test score of the experimental class was 50.09259, better than that of the control class 44.0625. This indicates that the group cooperative vocabulary deep processing exercise can promote the students' vocabulary acquisition.

In the second stage of the experiment, 4 students in the control class who were absent from some classes participated in the test and their scores were below 30 points, which were statistical outliers and greatly affected the analysis results of t-test in the pre-analysis. Therefore, they were statistically processed. The t-test results of paired samples (table 3) showed that in the second vocabulary test, there was no significant difference in the vocabulary test scores of the two classes ( $P > 0.05$ ), but the single-tailed test  $P=0.041598$ , slightly less than 0.05, showed a slight difference in the scores of the two classes. The average test score of the experimental class was 67.77778 which is a little higher than that of the control class 62.58333. This indicates that the group cooperative vocabulary deep processing exercise can promote the vocabulary acquisition of students in both classes. However, the experimental class students have experience in this kind of vocabulary deep processing exercise, so their vocabulary acquisition has been further improved.

**Table 3.**

Group	First test				Second test			
	mean	variance	T	P	mean	variance	T	P
Control class (N=64)	44.0625	200.6944	-2.27982	0.024446**	62.58333(N=60)	282.6201	-1.74805	0.041598*(single tail)
Experimental class (N=54)	50.09259	209.8969			67.77778	215.7233	-1.74805	0.083196(double tail)

Other paired sample T test results also show significant difference ( $T = 6.6485$ ,  $P < 0.001$ ) between the test scores in Test 1 and Test 2 for the control class. The average score in the second test 62.58333 is much higher than that of 44.0625 in the first test, which can also show that Group-cooperative Vocabulary Processing in Depth can promote the effect of vocabulary acquisition.

Still other paired sample T test results also show significant difference ( $T = 6.2993$ ,  $P < 0.001$ ) between the test scores in Test 1 and Test 2 for the experimental class. The average score in the second test 67.77778 is much higher than that of 50.09259 in the first test, which can also show that Group-cooperative Vocabulary Processing in Depth can still promote the effect of vocabulary acquisition. The experiment demonstrates that the students in the experimental class are more familiar with Group-cooperative Vocabulary Processing in Depth and they can more effectively improve their vocabulary acquisition.

#### 4. Discussion

The horizontal comparison between groups (see table 3) shows that the group cooperative vocabulary deep processing exercise can promote the effect of vocabulary acquisition, and it is more effective for students who have such practice experience. The longitudinal comparison of the subjects in the group also shows that the group cooperative vocabulary deep processing exercise is effective for vocabulary acquisition, and the more practice the subjects experience, the more effects they can acquire. In the following part, the author analyzes the reasons why this method is conducive to vocabulary acquisition through the case study of group cooperative vocabulary deep processing exercise.

First, Group-cooperative Vocabulary Processing in Depth expands students' horizon of vocabulary acquisition and stimulates their enthusiasm and efficiency of cooperative learning. At the beginning of the semester, the author investigated the general pattern of vocabulary learning of two classes of students. Their routine practice is to memorize words according to the new word list following the text, mainly to memorize pronunciation, spelling and Chinese meaning. When the author suggested that they memorize the English meaning, some students objected that it was a waste of time. For the vocabulary test, the author did not adopt dictation, but adopted single choice and multiple choices to test deep vocabulary knowledge, although there are also students who want their teachers to read English words and they write them down because they can do so with the help of the pronunciation of the word without understanding it. The original vocabulary learning process indicates that the students' narrow vocabulary learning horizon hinders their vocabulary acquisition. Group-cooperative Vocabulary Processing in Depth can help to expand their vocabulary learning vision, making them understand that vocabulary learning is more than just memorizing words pronunciation, spelling and meaning in Chinese, and they also need to grasp the parts of speech of words, collocation, meaning relations (including the synonymy, antonymy, hyponymy, whole-part relationship and the same semantic field, etc.) and lexical pragmatic knowledge. With a comprehensive understanding of the goal of vocabulary acquisition, students can learn new words in a targeted way, form a good vocabulary semantic network, and enhance their memory level of new words, so it is possible to improve their vocabulary acquisition effect. The group cooperative vocabulary deep processing exercise enables the learning group members to cooperate sincerely to cope with the vocabulary learning task together. The collective wisdom of team learning is conducive to improving the quality of vocabulary practice, as well as the enthusiasm and effect of vocabulary learning for students with weak English ability.

Second, the group cooperative vocabulary deep processing practice belongs to the direct vocabulary learning, which can lead students' attention to the semantic relationship between words and the use of words, and improve the efficiency and effect of vocabulary acquisition. Nation (2004:2) divides vocabulary learning into two forms: direct learning and indirect learning. Direct vocabulary learning refers to the practice of focusing on the vocabulary itself, including word formation, vocabulary learning and vocabulary games. Indirect vocabulary learning refers to the process in which learners pay attention to the communicator's language information and unconsciously acquire vocabulary. Dong Yanping (2001) confirmed through

teaching experiments that direct learning on the basis of indirect learning of communicative teaching method is conducive to the vocabulary output ability of learners (especially learners at lower levels). Direct learning is an effective supplement to indirect learning. The vocabulary deep processing exercise used in this experiment was completed after class, and the students in the two classes participating in the experiment have a low English level. Therefore, this kind of direct vocabulary learning is needed to lay a solid foundation for them and provide necessary guarantee for their indirect learning process of classroom communicative teaching method.

Third, the group cooperative vocabulary deep processing practice increases the load of vocabulary learning, and brings the better effects of vocabulary acquisition. Two researchers (Dong Yanping and Zhou Caiqing, 2003; Cai Chen, 2017) proved from an empirical point of view the hypothesis of processing load in vocabulary acquisition, that is, the greater the processing load, the better the mastery of lexical knowledge (the new meaning of familiar words or the semantic rhyme of words). The group cooperative vocabulary deep processing exercise in this experiment has a higher processing load than the conventional vocabulary list learning in the control class. This exercise not only enables learners to pay attention to the pronunciation and morphology of new words, but also to the semantic meaning of the words, the semantic relationship between the words and the application of lexical knowledge.

Here are some examples of lexical semantic processing exercises completed by student groups:

Derivational relationship:

Magnify – magnificent - magnifier; deficient - deficiency;

Chronic – chronicle – chronicler – chronically; accessory – access – accessible - accession

Synonymy:

Adhere—conformity; plaster—eclipse; gorgeous—obsession

Antonymy:

Chronic – transient; deficient - perfect

Hyponymy:

Cosmetic: lipstick, perfume; color: violet, bronze;

Mood: arrogant, obsessed, outrage

Whole-part relationship:

Body --- thigh, arm, leg, head

The same semantic field:

Inborn --- gift, ability; obsession --- love, game; conformity --- rule, law;

Appearance --- bald, complexion

These vocabulary deep processing exercises require more efforts than reading and writing new words. Some semantic processing exercises cannot be completed alone, but they are easier to be completed with teamwork, which greatly stimulates students' enthusiasm in learning new words. From the data in table 3, it can be seen that the group cooperative vocabulary deep processing exercise has a better vocabulary acquisition effect than the routine reading and writing exercise of the individual new words list of the students in the control class.

Fourth, the group cooperative vocabulary deep processing practice improves the students' contextual awareness and helps improve the quality of vocabulary acquisition. Multiple researchers (Garza & Harris, 2017; Hong Wei et al., 2017; Lu Qiaoling, 2001; Wang Xinpeng et al., 2017; Ke Wei, Dong Yanping, 2001; Yu Cuihong and Zhang Yongzheng, 2012) believe that context plays an obvious role in promoting semantic acquisition of vocabulary. Through empirical studies, Wang Xinpeng et al. proves that individual writing output and cooperative writing output have significant learning promotion effects on second language vocabulary acquisition. Garza & Harris, Ke Wei, Dong Yanping, Hong Wei and other researchers believe that

well-controlled and understandable language context is more helpful for learners' vocabulary and semantic acquisition. Yu Cuihong and Zhang Yongzheng also proves through experiments that context construction is helpful for learners to effectively conduct lexical pragmatic reasoning, and plays a significant role in promoting the stable development of comprehensive vocabulary ability. The group cooperative vocabulary deep processing exercise in this experiment requires students to write short stories with the new words they have learned. This processing exercise not only requires students to pay attention to the knowledge of morphology, part of speech, and semantics, but also requires them to use the new words they have learned to create an appropriate context to express certain semantics. There is no doubt that this exercise requires students not only to understand new words, but also to use them actively, which will help improve students' comprehensive vocabulary ability.

Here are some examples of small stories written in groups (The underlined parts are new words and phrases):

Story 1:

A boy was obsessed with a gorgeous girl. He thought that she always smelt good because she used an expensive perfume. He loved her so much that he could stick to being a good man in order to win her love.

Story 2:

Long-long ago, a princess was born in an ancient royal family. She was a gorgeous girl with violet eyes and inborn perfume. But god was impartial, one of her thighs was deficient, so she wasn't as flexible as normal people. Although she is an exalted princess, she was never arrogant. Time flied, the princess's transient childhood had gone. Via simple grooming, she became an obsession.

Obviously, this vocabulary deep processing exercise can enable students to fully activate all kinds of vocabulary knowledge to create appropriate context and form a reasonable story. In turn, they will be in a better position to acquire the new words in the context created by their own subjective experience.

## 5. Conclusion

Group-cooperative Vocabulary Processing in Depth has a positive effect on non-English major college students' vocabulary acquisition, but in the cooperative process, concrete problems still remain, such as some students escaping cooperation for character reasons, some groups' poor output because of spending less time on the group cooperative tasks, and frequent language mistakes in their group output resulted from poor English language ability of the group members and so on. In the future college English vocabulary teaching practice, college English teachers still need to explore more efficient forms of cooperation and more reasonable cooperative processing content, which will determine the quality of college English vocabulary acquisition. In addition, this vocabulary deep processing practice model should be extended to more classes to verify its effectiveness, and the long-term research on the relationship between group cooperative vocabulary deep processing practice and the growth of college students' English vocabulary is also worth exploring.

## References

- [1] Cai Chen: Research on the Influence of Data-driven Teaching on Chinese learners' English Vocabulary Semantic and Rhyme acquisition, Shandong Foreign Language Teaching, Vol 38 (2017) No. 2, p.62-68.

- [2] Dong Yanping: Direct and Indirect Vocabulary Learning in Communicative Approach, Foreign language teaching and research, Vol 33 (2001) No. 3, p.186-192.
- [3] Dong Yanping, Zhou caiqing: Comprehension of Polysemy and Acquisition of Productive Vocabulary Knowledge, Journal of PLA Foreign Languages Institute, Vol 26 (2003) No.6, p. 49-52.
- [4] Garza, Bernardo de la & Richard Jackson Harris: Acquiring Foreign Language Vocabulary through Meaningful Linguistic Context: Where is the Limit to Vocabulary Learning, Journal of Psycholinguistic Research, vol. 46 (2017), p.395-413.
- [5] Hong Wei, Feng Cong, Zheng Zaiyou: Influence of Semantic Transparency, Context Intensity and Lexical Repetition Frequency on the Chinese Learners' Acquisition of Second Language Vocabulary, Modern Foreign Languages, Vol 40 (2017) No. 4, p.529-538.
- [6] Ke Wei, Dong Yanping: Research on the Effect of Context in the Direct Learning of Second Language Vocabulary, Modern Foreign Languages, Vol 24 (2001) No. 4, p.353-358.
- [7] Kong Ning: Application of STAD Cooperative Learning Model in Junior High School English Vocabulary Teaching -- a Case Study of Urumqi no.19 Middle School (MA., Xinjiang Normal University, China 2016), p.1-49.
- [8] Li Jinge, Zhou Bingjie: Research on Factors Influencing the Deep Acquisition of Vocabulary, Jiangsu Foreign Language Teaching Research, (2014) No. 1, p.8-11.
- [9] Lu Qiaoling: Context in Vocabulary Teaching, Foreign Language and Foreign Language Teaching, Vol 146 (2001) No. 6, p.32-34.
- [10] Ma Guanghui: Theoretical Framework of Second Language Vocabulary Knowledge, Foreign Language and Foreign Language Teaching, Vol 217 (2007) No. 4, p.22-24.
- [11] Nation, I. S. P.: Teaching and Learning Vocabulary (Foreign Language Teaching and Research Press, China 2004), p.2, 30-33.
- [12] New Oriental IELTS Vocabulary Test: <http://ielts.xdf.cn/201411/10172215.html>. 2014-11-20 11:43.
- [13] Wang Lu: The Role of Group Cooperation in High School English Vocabulary Learning (MA., Shandong Normal University, China 2012), p.1-57.
- [14] Wang Na, Zhao Fangming: Deep Vocabulary Acquisition and Vocabulary Teaching in English, Exam Weekly, (2009) No. 39, p.125-126.
- [15] Wang Xinpeng, Kong Wen, Wang Yongxiang: Research on the Influence of Output Drive on the Acquisition of Multidimensional Vocabulary Knowledge, Foreign Language and Foreign Language Teaching, Vol 292 (2017) No. 1, p.86-94.
- [16] Wang Yi: Application of Cooperative Learning Theory in College English Vocabulary Teaching, Journal of Liaoning University of Science and Technology, Vol 36 (2013) No. 5, p.520-523.
- [17] Yang Lei: Empirical Study on the Relationship between Vocabulary Knowledge and Vocabulary Application Ability (Ph.D., Shanghai International Studies University, China 2011), p.1-152.
- [18] Yang Xiaoxia: Research on the Relationship between Breadth and Depth of English Vocabulary and Comprehensive Ability, Journal of Chengdu University (Education Science Edition), Vol 22 (2008) No.7, p.73-76.
- [19] Yu Cuihong, Zhang Yongzheng: Second Language Vocabulary Acquisition from the Perspective of Relevance Context -- an Empirical Study Based on Lexical Semantic Cognition, Modern Foreign Languages, Vol. 35 (2012) No.3, p.270-276.
- [20] Yu Jie: Empirical Study on Cooperative Learning Strategy in College English Vocabulary Teaching, Journal of Hunan University of Science and Technology, Vol 34 (2013) No.6, p.165-167.

- [21] Zhang Shuai: Experimental Study on Cooperative English Vocabulary Learning Strategies for Middle School Students (ME., Nanjing Normal University, China 2008), pp.1-65.
- [22] Zheng Shutang: New Horizon College English 4 (Reading and Writing Course) (Foreign Language Teaching and Research Press, China 2015), p.6-9, 34-37.
- [23] Zhong Qiao: Research on Deep Vocabulary Knowledge and Vocabulary Learning Strategies of Non-English Majors of Inner Mongolia Normal University (ME., Inner Mongolia Normal University, China 2007), p.1-49.