



## Metacognitive Strategy Training and Vocabulary Learning of Chinese College Students

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### Abstract

This paper attempts to tap the relationship between metacognitive strategy training and vocabulary learning of college students through a five week training program. It aims to answer the following question: Can metacognitive strategy training facilitate vocabulary learning of Chinese college students? Both questionnaire and tests were used in the study. One hundred and thirty-four students participated in the study; one class of 68 which received both cognitive vocabulary training and metacognitive training comprised the experimental group; the other class of 66 students served as the control group and received only cognitive strategy training without metacognitive component. The metacognitive strategy training for vocabulary learning of these students proved to be effective. The experimental group outperformed the control group in the post-training vocabulary test and the questionnaire displayed in what aspects the students improved on these metacognitive strategies.

**Keywords:** Metacognitive strategies, Vocabulary learning, Strategy training

### 1. Introduction

Within the field of education over the last few decades, a gradual but marked shift has taken place, resulting in less emphasis on teachers and teaching but greater stress on learners and learning. In a word, language teaching has become more learner-focused and interactive. Thus, there has been more emphasis on helping students assume more responsibility in their language study. A consensus has been reached that learning will be facilitated and students will become more autonomous if students are explicitly trained to become more aware of and proficient in the use of language learning strategies. Metacognitive strategies, which have an executive function by means of planning, monitoring and evaluating the whole learning process, are essentially important.

Abundant studies have demonstrated the great effect exerted by metacognitive strategies both in reading (Baker & Brown, 1984; Carrel et al, 1989; Talbot, 1995) and listening (O' Malley & Chamot, 1985; Schwartz, 1992; Yang, 2004). However, there is little research available to scrutinize the relationship between metacognitive strategies and vocabulary learning though conspicuously, vocabulary is central to language learning. The mastery of vocabulary plays a key role in the whole process of the second language learning and is of critical importance to the learners. Without a solid mastery of vocabulary, listening, reading, translation and writing are all attics in the air. Contradictory to the great importance of vocabulary, nevertheless, in the present English classroom in China, problems pile up in vocabulary teaching and learning. The popular model for college teachers to teach vocabulary is asking their students to read after them the whole word list in the text followed by the teacher's translation of each word or the teacher chooses some basic words and just gives the Chinese equivalents. Students are really passive in this process and they just commit the new words into memory by rote. Though the past decade saw a host of studies on vocabulary strategies (Gu, 1996; Schmitt, 2002; Fan, 2003), most of them emphasized either on the cognitive aspect or focused on the identification and classification of vocabulary strategies.

This paper attempts to tap the relationship between metacognitive strategy training and vocabulary learning of college students through a five-week training program. Practically, the present study is significant in three ways: first, it attempts to explore to what extent the college students employ metacognitive strategies for their vocabulary learning. Second, it bridges the gap between metacognitive strategy training and vocabulary learning of college students. Research conducted on exploring the effect exerted by metacognitive strategies on vocabulary learning is scarce. Third, it is useful to cultivate the field of research on metacognitive strategy training by college students. In China, most of researches on metacognitive strategies are mostly descriptive. There was little experimental research on metacognitive strategy training for college students.

## 2. The current research

### 2.1 The research question

The research question to be addressed in the current study is:

Can metacognitive strategy training promote the vocabulary learning of Chinese college students?

### 2.2 Subjects

The subject sample consisted of 134 freshmen who were from two natural classes and were under the instruction of the same teacher. One class of 68 students comprised the experimental group and received both cognitive vocabulary strategy training and metacognitive strategy training. The other class of 66 students served as a control group and received only cognitive strategy training.

### 2.3 Instrument

#### 2.3.1 Questionnaire

The questionnaire was designed by the present writer based on the literature about metacognitive strategy employment (Oxford, 1990; Wen Qiufang, 1996). The questionnaire included 28 metacognitive strategies and was designed to measure the students' employment of metacognitive strategies of planning (1-10 items), monitoring (11-20 items) and evaluating (21-28 items). The questions were of the five-scale Likert-type, consisting of a statement to which subjects would indicate one of the five responses: 1=never or almost never true of me; 2=usually not true of me; 3=somewhat true of me; 4=usually true of me; 5=always or almost always true of me.

In order to avoid language barrier or possible misapprehensions and to achieve validity of questionnaire administration, all items were written in Chinese. In addition, the questionnaire items were identified by the present writer on the basis of authoritative works (Oxford, 1990; Wen Qiufang, 1996) on testing metacognitive strategies which assure the face validity and the construct validity of the questionnaire. The reliability of the questionnaire was also assured. It underwent a split-half reliability test and the correlation of the two parts was significant ( $r=0.817$ ) and this proved that the reliability in terms of inherent consistency was fairly good.

The questionnaire was administered to the experimental group pre-training with the purpose of examining their current employment of metacognitive strategies. In addition, it also has the function of raising the students' awareness of metacognitive strategies. After the metacognitive strategy training, the same questionnaire was distributed to the experimental group again. We could elicit from the questionnaire whether the metacognitive strategy training is effective and in what aspect the students improve their metacognitive strategy employment.

#### 2.3.2 Tests

Pretest and posttest are used in this study.

In order to check the homogeneity of the two groups in terms of vocabulary learning, a pretest was used. The pretest comprised of 50 multiple-choice items. The words contained in the pretest were already taught by the teacher before the metacognitive training. The posttest was also a 50 item multiple-choice test of vocabulary and it was used as the measurement of the training outcome. It was given immediately after the metacognitive strategy training. The words tested were all selected from new words taught and exposed to during the training process. The reliability and validity of the tests were checked. Two internal consistency estimates of reliability which included coefficient alpha and a split-half coefficient expressed as Spearman-Brown corrected correlation were computed for the vocabulary test. For the split-half coefficient, the test items were split into two halves based on an odd and even numbers to nullify the effects of unwanted factors. The value for coefficient alpha was .73 and the value of the split-half coefficient was .80, each indicating satisfactory reliability. The validity of the tests was also assured. Most of the vocabulary items in both the pretest and the posttest were selected from the new vocabulary items of the book and were used in the glossary and the accompanying book.

#### 2.3.3 The procedure of the training

The training lasted for about five weeks.

First, the vocabulary strategy training was given to both experimental and control groups. This session lasted for about seven days, one strategy for each class. The seven vocabulary strategies are consulting dictionary; repetition; guessing from context; word card; association; using word part strategy; consolidating the word by applying the word to conversation and writing. After the training, the teacher asked the students to brainstorm other vocabulary strategies they employed and then the experimental group and the control group shared their ideas.

The second part of the training concerned with metacognitive strategy training. For this part, only the experimental group participated and the control group only received normal instruction. The detailed procedure for metacognitive strategy training would be illustrated, based on the three components of metacognitive strategies (planning, monitoring,

evaluating) as follows:

**Planning:** in the first class, the teacher told the students what metacognitive strategies are. Then she emphasized the facilitating role of metacognitive strategies on vocabulary learning. After that, the teacher distributed the metacognitive strategy questionnaire to all the students to enhance the students' awareness of the metacognitive strategies. In the second class, the teacher delivered a lecture on how to make appropriate plan for vocabulary learning. The items in the plan included how many words to remember during a specific time frame, how to accomplish the plan and the detailed time allocation of the vocabulary learning. Then, homework of a detailed plan of vocabulary learning was assigned to the students and the teacher collected them and gives feedback.

**Monitoring:** the teacher divided the students into several groups according to students' will. Four students formed a study group to monitor each other's vocabulary learning and the plan enforcement process. The teacher asked the students to write working diaries for recording how the words were remembered and what vocabulary strategies were employed. In addition, the working diary also included the following items: what difficulties students encountered during the vocabulary learning process, how the students overcame the difficulties, what remained unsolved and whether the vocabulary strategies were useful in every case. Each study group had a discussion every three days to talk about each others' working diaries and they attempted to solve the problems left by each other. During this step, the teacher continuously reminded the students of whether their plans had been accomplished.

**Evaluation:** four weeks later, the teacher guided the students to evaluate their vocabulary learning process by handing out a checklist. The checklist was written in English.

The checklist includes 12 questions:

Have I achieved my goal?

What vocabulary strategies have I employed during the training?

Which vocabulary strategy have I found the most useful?

Which vocabulary strategy have I found the most difficult to deal with?

Have I known clearly when and how to use specific vocabulary strategies?

What problems have I met during the vocabulary learning process?

Why do these problems occur?

How can I solve the problems or how can my group members help me solve these problems?

Have I altered my vocabulary strategy when I find it is not useful?

How can I modify my plan according to the real situation?

What can I learn from my group members about their vocabulary learning?

How can I draw lessons from this process and try to do a better job next time?

The teacher then asked students to write a summarizing report with aids of these hints and next morning the class discussion was carried on. Students were given opportunities to share their own experience with their peers.

### **3. Data analysis and discussion**

#### *3.1 Analysis and discussion of the two questionnaires*

The first questionnaire demonstrated that the experimental group did use some metacognitive strategies in their vocabulary learning, but their overall level of metacognitive strategy employment was relatively low.

Insert Table 1, Table 2 Here

From the tables above, we could see that the students rarely use the metacognitive strategies in their vocabulary learning because the mean scores of planning, monitoring and evaluating are all below the average 3. From the above statistical analysis, several tentative conclusions could be drawn.

First, students did not frequently use metacognitive strategies in their vocabulary learning and among the three categories of metacognitive strategies, planning was the least used. Second, most of the students had the awareness of the importance of vocabulary learning and they attempted to do a better job in vocabulary learning (MO3 mean=3.84; MO 9 mean=3.03; EV 5 mean=3.00; EV 8 mean=3.54). However, they failed to learn vocabulary in an effective way and they did not know how to appropriately use vocabulary learning strategies. Third, most students could not study cooperatively. They were reluctant to share their learning experience with their peers (MO 7 mean=2.04), nor were they willing to ask for the teacher's help (MO 6 mean=2.03). What is awful is that so few of them liked to ask teachers, parents and their peers to scout their implementation of their plan. (PL10 mean=1.92).

The reason why students did not frequently use metacognitive strategies could be various. One interpretation was that

the students were not aware of the importance of metacognitive strategies and were not trained in this area before. In addition, they had little free time which could be managed by themselves. For most students, their time was managed by their teachers and parents.

After the metacognitive strategy training in vocabulary learning, the same questionnaire was distributed to the experimental group again with the purpose of digging out in what aspect the metacognitive strategy training changed the students' employment of metacognitive strategies.

Insert Table 3, Table 4 Here

It is evident that the strategy training exerted a significant effect on students' use of metacognitive strategies in terms of vocabulary learning. The mean score of the second questionnaire greatly improved on all the 28 strategy items except MO3 (in the first questionnaire, mean=3.84; in the second questionnaire, mean=3.52). Moreover, only 4 strategies did not attain the average mean score 3 (PL4 mean=2.87; MO7 mean=2.90; MO6 mean=2.95; PL8 mean=2.96). Note that the last three strategies (PL8, MO7 and MO6) were also among the most rarely used strategies in the first investigation, i.e. their original scores were very low and far below the score of the average. Though they did not attain 3, their score improved compared to the first questionnaire. The 5 strategies whose improvements are more significant than those of the first questionnaire are: PL6, PL10, EV3, MO6 and EV1. All of the five items achieve a margin of at least 0.90. In accordance with the result of the first questionnaire among the three categories of planning, monitoring and evaluating strategies, evaluating strategies still hold the first place while planning strategies hold the last. However, the mean score of planning strategies improved from 2.5620 to 3.211, with a margin of 0.649, far surpassed 0.590 of monitoring strategies and 0.490 of evaluating strategies.

### 3.2 Analysis and discussion of the two tests

Statistical analysis of t test was used to test possible differences between the two groups at the beginning and the end of the study.

In order to establish the homogeneity of the two groups in terms of vocabulary knowledge, an independent sample t-test was carried out to examine the differences between the performance of the two groups on the vocabulary test before the metacognitive strategy training. The result indicated that there is not any significant difference ( $t(134) = 0.889, p > .05$ ) between the mean scores of the subjects in the control group and the subjects in the experimental group. In simple words, the two groups were homogenous in terms of vocabulary knowledge at the beginning of the training. The t-value was analyzed by independent sample t-test and displayed in Table 5:

Insert Table 5 Here

Both groups took part in a posttest after completing the training in which only experimental group received metacognitive strategy training. The results of the vocabulary test in the two groups were compared by using independent samples t-test statistical procedure. The result showed that the mean scores of the experimental group (Mean=47.4688) were significantly ( $t(134) = -2.05, p < .05$ ) different from the control group (Mean=43.9412).

Insert Table 6 Here

As it is shown, the experimental group outperformed the control group in the vocabulary test. Thus, the explicit metacognitive strategy training seemed to have contributed to the improvement of students' vocabulary learning.

## 4. Conclusion

### 4.1 Major findings of the study

The present study has adopted a descriptive design with quantitative data gathering and analyzing methods to investigate the use of metacognitive strategies and to explore the influences of metacognitive strategies on vocabulary learning. The major findings of this study are summarized as follows:

(1) These college students do not frequently use metacognitive strategies in learning vocabulary. The questionnaire pre-training shows that the students' overall use of metacognitive strategies is very low. They rely much on teacher's interpretation of vocabularies rather than manage their vocabulary learning by themselves. They are very weak in all the planning, monitoring and evaluating strategies.

(2) Metacognitive strategy training could facilitate students' vocabulary learning. The quantitative data show that experimental group has made big and significant progress after they receive metacognitive training. The students enhance their metacognitive strategy use on the planning, monitoring, evaluating without exception. Moreover, explicitly describing and discussing metacognitive strategies in the classroom can have a direct payoff on students' outcomes. The use of learning strategies is more enduring when students are informed of the significance of the strategies and given reasons for their potential effectiveness.

### 4.2 Limitations of the study

The present study is merely a tentative one. Owing to the limitations of the present writer's academic knowledge and

objective conditions, there is much room to improve. Firstly, the metacognitive strategy training on vocabulary learning should be a long-term educational process, with constant attention and support over long period of time. However, the training program in the present study lasts for only five weeks, which may be too short to report the results of training. Second, the analysis of the questionnaire suffered some inherent methodological defects of the design itself. The analysis of the two questionnaires just emphasized the influence exerted by the metacognitive strategies, while ignoring the effect brought by cognitive vocabulary strategies. And the cognitive vocabulary strategies are just chosen from the authoritative books and academic papers by the present writer and they are not comprehensive. Third, questionnaire was the only instrument used in the study to investigate the learning process. If it had been used with interviews or verbal reports, a clearer picture of students' thinking process in terms of metacognitive strategy training would have been obtained.

In short, this metacognitive strategy training program is only a trial study. Further research is needed to make improvement, to develop a more appropriate training program in Chinese colleges.

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Table 1. Mean and standard deviation of metacognitive strategy use in vocabulary learning (the first questionnaire)

Name	Strategies	Mean	SD
PL1	I have a clear goal in vocabulary learning.	3.00	0.893
PL2	I have the awareness of drawing a vocabulary learning plan.	3.12	0.796
PL3	I have a short term plan and a long term plan.	3.04	0.833
PL4	I would spend some time memorizing vocabulary every day.	2.69	0.934
PL5	I would consider how to better accomplish my plan.	2.62	0.740
PL6	My plan is detailed, including the deadline of accomplishing all the tasks.	2.00	0.748
PL7	I would predict the difficulties encountered and the ways of solving it.	2.65	0.853
PL8	I would check whether the plan is implemented in time.	2.12	0.908
PL9	I would continuously adjust the plan according to the present situation.	2.46	1.102
PL10	I will ask teachers, parents and peers to scout the implementation of my plan.	1.92	0.976
MO1	Before carrying through a vocabulary activity, I would think of the purpose and requirement of the activities, including what strategies to use.	2.61	0.982
MO2	I know when to use certain vocabulary strategies and how to use them.	2.62	0.674
MO3	I attempt to find out the best way of learning vocabulary.	3.84	0.899
MO 4	When starting to learn a new word, I would consider to what extent I can master the word.	2.65	0.897
MO5	After class, I immediately review the vocabulary learned during the class.	3.03	0.992
MO6	I frequently discuss the learning experience with teachers.	2.03	0.982
MO7	I would share vocabulary learning strategies with peers.	2.04	0.988
MO8	I always check the disparity between the present situation and the goals set in the plan.	2.38	0.877
MO9	I will listen to the vocabulary learning experience of my peers.	3.03	0.858
MO10	When finding my vocabulary strategies no longer effective, I would adjust them in time.	2.88	0.991
EV1	I would check my improvement on vocabulary learning at certain time intervals.	2.54	1.030
EV2	I will fix a date to check whether my vocabulary strategies are used smoothly and effectively.	2.68	0.766
EV3	I always summarize the ways of learning vocabulary.	2.54	0.844
EV4	I always summarize my vocabulary learning in order to find out the achievement made and deficiency existed.	3.03	0.941
EV 5	After accomplishing a certain task, I will consider how to do it better the next time.	3.00	0.903
EV6	I often evaluate my vocabulary learning strategies to find out the problems existed and the ways of solving them.	2.96	0.962
EV7	I usually think why I make a mistake in vocabulary learning.	3.32	0.900
EV8	I could draw a lesson from the previous mistakes in vocabulary learning.	3.54	0.797

Note: PL stands for planning strategy; MO stands for monitoring strategy; EV stands for evaluating strategy.

Table 2. Mean and standard deviation of planning, monitoring and evaluating (the first questionnaire)

	Mean	S D
Planning strategies	2.562	.4337
Monitoring strategies	2.711	.4385
Evaluating strategies	2.951	.3592

Table 3. Mean and standard deviation of metacognitive strategy use in vocabulary learning (the second questionnaire)

Name	Strategies	Mean	SD
PL1	I have a clear goal in vocabulary learning.	3.56	0.992
PL2	I have the awareness of drawing a vocabulary learning plan.	3.65	1.112
PL3	I have a short term plan and a long term plan.	3.34	0.982
PL4	I would spend some time memorizing vocabulary every day.	2.87	1.058
PL5	I would consider how to better accomplish my plan.	3.22	0.994
PL6	My plan is detailed, including the deadline of accomplishing all the tasks.	3.08	0.883
PL7	I would predict the difficulties encountered and the ways of solving it.	3.21	0.902
PL8	I would check whether the plan is implemented in time.	2.96	1.053
PL9	I would continuously adjust the plan according to the present situation.	3.13	0.919
PL10	I will ask teachers, parents and peers to scout the implementation of my plan.	3.09	1.212
MO1	Before carrying through a vocabulary activity, I would think of the purpose and requirement of the activities, including what strategies to use.	3.30	0.875
MO2	I know when to use certain vocabulary strategies and how to use them.	3.09	0.900
MO3	I attempt to find out the best way of learning vocabulary.	3.52	1.023
MO 4	When starting to learn a new word, I would consider to what extent I can master the word.	3.47	0.842
MO5	After class, I immediately review the vocabulary learned during the class.	3.43	0.844
MO6	I frequently discuss the learning experience with teachers.	2.95	1.099
MO7	I would share vocabulary learning strategies with peers.	2.90	1.163
MO8	I always check the disparity between the present situation and the goals set in the plan.	3.17	0.982
MO9	I will listen to the vocabulary learning experience of my peers.	3.35	0.714
MO10	When finding my vocabulary strategies no longer effective, I would adjust them in time.	3.53	0.937
EV1	I would check my improvement on vocabulary learning at certain time intervals.	3.44	1.053
EV2	I will fix a date to check whether my vocabulary strategies are used smoothly and effectively.	3.34	0.884
EV3	I always summarize the ways of learning vocabulary.	3.30	0.988
EV4	I always summarize my vocabulary learning in order to find out the achievement made and deficiency existed.	3.39	0.891
EV5	After accomplishing a certain task, I will consider how to do it better the next time.	3.36	1.033
EV6	I often evaluate my vocabulary learning strategies to find out the problems existed and the ways of solving them.	3.45	0.822
EV7	I usually think why I make a mistake in vocabulary learning.	3.47	0.730
EV8	I could draw a lesson from the previous mistakes in vocabulary learning.	3.78	0.902

Table 4. Mean and standard deviation of planning, monitoring and evaluating (the second questionnaire)

	Mean	S D
Planning strategies	3.211	.2470
Monitoring strategies	3.301	.2254
Evaluating strategies	3.441	.1488

Table 5. Result of the independent sample t-test in vocabulary pretest

Group	N	Mean	SD	Standard Error Mean	Sig. (2-tailed)
Experimental	68	47.0000	11.2582	.5676	.376
Control	66	47.2121	12.0189	.5292	

Table 6. Result of the independent sample t-test in vocabulary posttest

Group	N	Mean	SD	Standard Error Mean	Sig. (2-tailed)
Experimental	68	47.4688	9.3806	.6756	.042
Control	66	43.9412	10.3294	.7442	