A Study on Vocabulary Learning Strategies Instruction of English by Japanese Junior High School Students

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Abstract

In the last few decades, second language vocabulary acquisition has been an interesting topic of discussion for researchers and teachers. Vocabulary learning, rather than being a peripheral area in second language learning, is one of its core aspects. Thus we should pay more attention to vocabulary learning itself and vocabulary learning strategies (VLS). The purpose of this article is, therefore, to investigate the effects of strategy training in the learning of English vocabulary. Firstly we review earlier research findings concerning VLS. Secondly we examine, experimentally, the effects of strategy instruction on the learning of English vocabulary by Japanese junior high school students as beginners. Following this we discuss the issue of how strategy instruction affects the acquisition of English vocabulary. Finally, based on the results of the experiment of strategy instruction on them, we conclude this article by stating that vocabulary strategy instruction is highly effective for Japanese junior high school students as beginners learning English vocabulary.

1. Background

1.1 Problems of Vocabulary Learning Strategies

In the last few decades, second language vocabulary acquisition has been a topic of much discussion amongst researchers and teachers.

Although vocabulary and vocabulary learning have been an object of study, it is often said that vocabulary is not as important as grammar or other areas of learning another language. Folse (2004) points out that this is a "myth". In this case, the word "myth" refers to an idea or story that many people tend to believe is true but which, in fact, is not. He emphasizes the importance of vocabulary learning in second language learning.

For this reason, vocabulary learning is not peripheral in second language learning but one of the central areas.

Several researchers have pointed out some key features of vocabulary learning strategies (VLS). Gu (2003), for example, states that VLS are a series of actions a learner takes to facilitate the completion of a learning task. Thus VLS play an important role in the learning of vocabulary.
Furthermore, Nation (2001) stresses the importance of VLS which are used in the learning of high-frequency words. According to him, high-frequency words should probably be taught explicitly, since to learn these words mainly requires strategies for the review or consolidation of them.

There have been some attempts to classify VLS. Here we will introduce a taxonomy of VLS proposed by Schmitt (1997). Figure 1 illustrates Schmitt’s (1997) taxonomy of VLS.

![Figure 1 Taxonomy of vocabulary learning strategies](Based on Schmitt, 1997)

According to Schmitt’s taxonomy, Discovery Strategies are divided into two categories. They are Determination Strategies (DET) and Social Strategies (SOC). Determination Strategies facilitate gaining knowledge of a new word. Social Strategies entail interaction with other people to improve language learning. Interaction, in this case, means to know the meaning of a new word in the framework of Social Strategies as one of the components of Discovery Strategies. Thus this is the way to discover a new meaning using the Social Strategy of asking someone who knows the meaning.

Similarly Consolidation Strategies fall into four categories. Social Strategies (SOC) include group work which can be used to learn or practice vocabulary items. Memory Strategies (MEM) are traditionally known as mnemonic techniques and involve relating the word to be retained with some previous knowledge. Cognitive Strategies (COG) exhibit the common function of manipulation of the target languages by learners. Finally Metacognitive Strategies (MET) involve conscious overview of the learning process and making decisions about planning, monitoring, or evaluating the best way to study. Metacognitive Strategies are used by students to control and evaluate their own learning by having an overview of the learning process in general.

VLS can be also classified into two main categories in terms of intentionality. One is incidental VLS. The other is intentional VLS. Much has been written by researchers about the importance of intentional VLS for beginners. Schmitt (2000), for example, states that explicit vocabulary teaching is probably essential for the most frequent words of any second language because they are prerequisite for language use. Moreover he claims that it is probably necessary to explicitly teach all words until beginners have an enough vocabulary to start making use of the contexts for learning unknown words.

Furthermore Nation (1995) points out that teachers should teach frequent words of a second language explicitly to beginners who do not know them. Additionally he proposes that intentional vocabulary learning is very valuable in terms of cost and benefit. Anezaki and Hirano (2000) point out that there should be a significant emphasis in decontextualized and intentional learning at an early stage of acquisition and that more context-based learning should be introduced in later stages.
Judging from the discussion above, intentional vocabulary learning may offer the key to the understanding of vocabulary acquisition of beginners whose vocabulary is insufficient.

Although some studies have been made on strategy instruction of vocabulary learning, little is known about the effects of strategy training, especially for beginners who do not have enough vocabulary or VLS available for use. We will begin by considering the effects of strategy training.

With regard to learning strategies, attempts have been made by researchers to show the effects of strategy training. Oxford (1993), for example, claims that it is clear that strategy training is a complex activity and specialists in this area are just beginning to understand how to enhance the learning strategies of particular groups of students in the most effective way.

Furthermore, Gu (2005) points out that the very essence of VLS training is, hopefully, to bring about long-term results with learner autonomy as the ultimate goal. McDonough (1995) also concludes that although improvement caused by strategy training is relatively weak and only shows up on certain measures, it may be better for beginners.

However, surprisingly few studies have so far been made on vocabulary acquisition and VLS, especially for beginners in the classroom context. We, therefore, need to examine the effects of strategy instruction in the classroom context for beginners.

1.2 Three Types of Strategy Instruction

We chose three types of strategy instruction of VLS for this study. The first two are cognitive VLS, such as “verbal and written repetition,” and metacognitive VLS, such as “testing oneself with word tests”. Lastly we consider memory VLS such as “studying new words with already known words” as available strategies for beginners. We will use the term “semantic and collocational elaboration” to refer to the vocabulary learning strategy of “studying new words with already known words”.

We have to explain the reason why we conducted three different types of strategy instruction. There were several reasons for this.

We begin with the cognitive strategy of “verbal and written repetition”. Takeuchi (2003) states that extra attention has been paid to pronunciation in the vocabulary build-up of good language learners, first checking the pronunciation of a new word and then memorizing the word by both reading it aloud and writing it down many times. According to his claim, students have to pay more attention to the orthographic and phonetic form of a new word. Moreover Schmitt (1997) states that this strategy is useful and helpful for Japanese junior high school students. Thus we chose this strategy for Group 1 as a control group.

Next we explain the reason for the metacognitive strategy, “testing oneself with word tests”. Schmitt (1997) regards this strategy as a remarkable metacognitive one. Furthermore, Raskh and Ranjbar (2003) point out that explicit metacognitive strategy training has a significant positive effect on the vocabulary learning of EFL students. They confirm the effects of metacognitive strategy training
in the EFL environment. I think of this strategy as a useful and helpful one for beginners. Therefore, we chose this strategy for Group 2.

Finally, we examine the reason for the selection of the memory strategy “semantic and collocational elaboration”, in other words, “studying new words with already known words”. Barcroft (2002, 2004) states that elaborating on word meanings facilitates their memorization because the memory for second language words depends on the memory of word meanings whereas the memory of word forms of second language words depends more on the memory of word forms. He emphasizes the connection of meanings in learning a new word. In addition, Nation (2001) argues that collocation is processed as one unit, not as two or three words. Furthermore, Sökméen (1997) points out that students connect a new word with already known words, and the link between a new word and an already known word is created when learning takes places.

In this type of strategy instruction, for example, students read the words “make progress” aloud and write them down when they learn the unknown word “progress”. In this case, “progress” is a new word for learners and “make” is an already known word. This strategy will be referred to as “semantic and collocational strategy” as mentioned previously. This type of strategy instruction was given to Group 3.

From the perspective above, we examine experimentally the effects of strategy instruction on the learning of English vocabulary learning. We discuss the issue of how strategy instruction affects the acquisition of English vocabulary by Japanese junior high school students as beginners.

2. Method

2.1 Subjects

One hundred and eighty-three second-year students from six classes in a public junior high school in Nara participated in the study. They were divided into three groups, Group 1, Group 2 and Group 3. Each group had two classes for strategy instruction. Although each class within a group was given strategy instruction separately, we analyze the data as one group.

2.2 Procedure

We will now examine the effects of instruction of the three types of VLS. We divided the subjects into three groups according to the type of instruction: Group 1 (only verbal and written repetition), Group 2 (verbal and written repetition + testing oneself with word tests) and Group 3 (verbal and written repetition + semantic and collocational elaboration).

Strategy training was given to each group three times in class. In the first treatment, the same strategy training was given to the three groups, and then the same ten new words were introduced to every group and their pronunciation and meanings were taught for five minutes. The strategy was a cognitive strategy “verbal and written repetition”. After that, the students in each group studied these
ten unknown words for 25 minutes. Immediately after the first treatment, the subjects took a test of the ten unknown words. The data from the tests were analyzed as the Pre-test set, because the data from it was to act as a control set, from which the scores resulting from the same kind of strategy instruction could be measured and analyzed across the three groups.

This procedure was repeated in the second and third treatments with ten new words each time. Importantly it should be noted that in the second and third treatments, each group was instructed with a different respective strategy.

In the second and third treatment, only Group 1 was given the same strategy training (verbal and written repetition). Group 2 was given metacognitive strategy training (testing oneself with word tests). They were required to learn ten unknown words using a combination of the cognitive strategy (verbal and written repetition) and the metacognitive strategy they were taught in the second treatment. Group 3 was given memory strategy training (semantic and collocational elaboration). They were required to learn ten unknown words using a combination of the cognitive strategy (verbal and written repetition) and the memory strategy (semantic and collocational elaboration).

In both the second and third treatment Post-tests were administered immediately after the learning and these were labeled as Post-test 1 for the second treatment and Post-test 2 for the third treatment.

Ten unknown words were learned in one treatment by the subjects. We selected thirty unknown words for three treatments in a pilot survey. We paid attention to the amount of memorizing of the ten words in each treatment. We also paid detailed attention to the total number of syllables of these ten words. The total number of syllables of these ten word sets was nearly equal in each treatment.

In the study, the data from the three tests for each group was collected and analyzed in terms of the effects of strategy instruction. The tests were of three types: Pre-test, Post-tests and Delayed test. Each test had ten questions. Each question had a value of one point. Therefore the maximum total for each test was ten points. The delayed test was conducted about four weeks after the treatments. Just as Pre-test and Post tests 1 and 2, each Delayed test had a maximum total score of ten marks.

2.3 Hypotheses

Based on the perspective above and the relevant literature reviewed in the former section, let us posit three hypotheses for the study as follows:

1. Group 2 will show more effects of strategy instruction than Group 1, and the words that subjects in Group 2 learn will be retained longer than Group 1.
2. Group 3 will show more effects of strategy instruction than Group 1, and the words that subjects in Group 3 learn will be retained longer than Group 1.
3. Group 3 will show more effects of strategy instruction than Group 2, and the words that subjects in Group 3 learn will be retained longer than Group 2.
3. Results

Descriptive statistics for Pre-test, Post-test 1, Post-test 2 and Delayed tests appear in Table 2. The results are also graphically presented in Figure 2.

Table 2 Means and Standard Deviations of Tests

<table>
<thead>
<tr>
<th>Group 1 (N=60)</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>6.9800</td>
<td>2.7500</td>
</tr>
<tr>
<td>Post 1</td>
<td>7.3600</td>
<td>2.7950</td>
</tr>
<tr>
<td>Post 2</td>
<td>7.1200</td>
<td>3.3720</td>
</tr>
<tr>
<td>Delayed 1</td>
<td>0.9500</td>
<td>1.0420</td>
</tr>
<tr>
<td>Delayed 2</td>
<td>0.2300</td>
<td>0.4230</td>
</tr>
<tr>
<td>Delayed 3</td>
<td>0.4700</td>
<td>0.7400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2 (N=63)</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>7.1000</td>
<td>2.5890</td>
</tr>
<tr>
<td>Post 1</td>
<td>8.8200</td>
<td>2.4980</td>
</tr>
<tr>
<td>Post 2</td>
<td>8.2300</td>
<td>2.7020</td>
</tr>
<tr>
<td>Delayed 1</td>
<td>1.4200</td>
<td>0.9440</td>
</tr>
<tr>
<td>Delayed 2</td>
<td>0.5000</td>
<td>0.6510</td>
</tr>
<tr>
<td>Delayed 3</td>
<td>0.5800</td>
<td>0.7870</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 3 (N=60)</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>6.6100</td>
<td>2.6760</td>
</tr>
<tr>
<td>Post 1</td>
<td>6.6900</td>
<td>2.8840</td>
</tr>
<tr>
<td>Post 2</td>
<td>8.1000</td>
<td>7.8200</td>
</tr>
<tr>
<td>Delayed 1</td>
<td>1.7400</td>
<td>1.3570</td>
</tr>
<tr>
<td>Delayed 2</td>
<td>0.4600</td>
<td>0.7580</td>
</tr>
<tr>
<td>Delayed 3</td>
<td>0.5300</td>
<td>0.8260</td>
</tr>
</tbody>
</table>

Figure 2 Means of tests

Special attention must be paid to the mean scores of the Delayed tests. The mean scores of Delayed tests were extremely low. We, therefore, excluded the data of Delayed tests from analysis. The reason for this is taken up in the following section.

Before the data analysis of the study, we compared the three groups by one-way ANOVA on the scores of the Pre-test as we need to examine the quality of the three groups. Note that the Pre-test was administered within the same strategy instruction with the same materials across all groups. We can find relatively similar scores across the three groups with the Pre-test. The results of one-way ANOVA on the scores of Pre-test indicate no significant differences (F (2, 182)=2.381, p>.05). Consequently the three groups can be regarded as being statistically the same in terms of ability.

We must now return to the data analysis of Post-tests. Table 3 shows the results of 3 (Group) and 3 (Test) mixed designed ANOVAs. 3x3 factorial ANOVAs were performed with Groups (Group 1, Group 2 and Group 3) as a between subject factor, and Tests (Pre-test, Post test 1 and Post test 2) as a within subject factor. The results showed significant differences for Test, (F (2, 360)=18.009, p<0.05) and significant interaction effects between Test and Groups (F (4, 360)=6.088, p<0.05). Thus the
simple main effect for the groups was qualified.

Table 3

ANOVA on Pre-test, Post test 1 and Post test 2

<table>
<thead>
<tr>
<th>SV</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>58.96</td>
<td>2</td>
<td>29.48</td>
<td>1.657</td>
</tr>
<tr>
<td>Test</td>
<td>91.422</td>
<td>2</td>
<td>45.711</td>
<td>18.009*</td>
</tr>
<tr>
<td>Interaction</td>
<td>61.806</td>
<td>4</td>
<td>15.452</td>
<td>6.088*</td>
</tr>
<tr>
<td>Residual</td>
<td>913.746</td>
<td>360</td>
<td>2.538</td>
<td></td>
</tr>
</tbody>
</table>

* p ≤ .05

As for the result of the one-way ANOVA for Group 1, there was no significant difference in Group 1 (F(2, 119)=1.162, p>.05).

Table 4 shows the result of one-way ANOVA for Group 2. It revealed a significant difference (F(2, 124)=13.298, p<.05). Furthermore a multiple comparison by Scheffe was conducted. Statistically significant differences appeared, as is shown in Table 5 between Pre-test and Post test 1, and between the Pre-test and Post test 2.

Table 4

ANOVA on Group 2

<table>
<thead>
<tr>
<th>SV</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>66.169</td>
<td>2</td>
<td>33.085</td>
<td>13.298*</td>
</tr>
<tr>
<td>Residual</td>
<td>308.497</td>
<td>124</td>
<td>2.488</td>
<td></td>
</tr>
</tbody>
</table>

* p ≤ .05

Table 5

Multiple Comparison by Scheffe in Group 2

<table>
<thead>
<tr>
<th>Test</th>
<th>Test</th>
<th>Difference of Mean</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>Post 1</td>
<td>-1.29*</td>
<td>.281</td>
</tr>
<tr>
<td>Pre-test</td>
<td>Post 2</td>
<td>-1.22*</td>
<td>.281</td>
</tr>
<tr>
<td>Post 1</td>
<td>Post 2</td>
<td>.60</td>
<td>.281 ns</td>
</tr>
</tbody>
</table>

* p ≤ .05

Table 6 shows the result of the one-way ANOVA for Group 3. It revealed a significant difference (F(2, 118)=16.274, p<.05). A multiple comparison by Scheffe was also conducted. Statistically significant differences appeared, as is shown in Table 7 between Pre-test and Post test 2, and Post test 1 and Post test 2.

Table 6

ANOVA on Group 3

<table>
<thead>
<tr>
<th>SV</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>81.433</td>
<td>2</td>
<td>40.717</td>
<td>16.274*</td>
</tr>
<tr>
<td>Residual</td>
<td>295.233</td>
<td>118</td>
<td>2.502</td>
<td></td>
</tr>
</tbody>
</table>

* p ≤ .05

Table 7

Multiple Comparison by Scheffe in Group 3

<table>
<thead>
<tr>
<th>Test</th>
<th>Test</th>
<th>Difference of Mean</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>Post 1</td>
<td>-.08</td>
<td>.289 ns</td>
</tr>
<tr>
<td>Pre-test</td>
<td>Post 2</td>
<td>-1.47*</td>
<td>.289</td>
</tr>
<tr>
<td>Post 1</td>
<td>Post 2</td>
<td>-1.38*</td>
<td>.289</td>
</tr>
</tbody>
</table>

* p ≤ .05

4. Discussion

Before starting our discussion on the results of the study, we need to consider the problem that appeared in Delayed test. The scores of Delayed test were surprisingly low. This is the reason why we excluded the data of the Delayed tests from analysis. However, we have to address why the scores were low. There are several potential reasons for this. One principal reason may be that in each treatment there was only a very short time for learning the ten new words. To learn them in twenty-five minutes was too short a time period to allow for long-term retention. Moreover, we did
not encourage the subjects to learn them outside the classroom. With these factors in mind, we may say that Japanese junior high school students need to study new words continuously for their long-term retention.

Now let us turn to the discussion on the study. We will discuss it in detail according to the three hypotheses we have set.

Hypothesis 1 has been partially supported. Group 2 (the metacognitive vocabulary learning strategy group) showed more effects of strategy instruction than Group 1 (the cognitive vocabulary learning strategies). However, the words learned by the subjects in both groups were not retained longer because the scores of Delayed test were extremely low. The metacognitive vocabulary learning strategy instruction was effective for the subjects in Group 2. This result is consistent with that of Rasekh and Ranjbary (2003), which report that metacognitive vocabulary learning strategy instruction is effective.

The subjects in Group 2 used the combination of cognitive and metacognitive VLS. A metacognitive strategy “testing oneself with word tests” may promote vocabulary acquisition by incorporating cognitive VLS such as “verbal and written repetition”. In other words, the repertoire of the cognitive VLS may be broadened by metacognitive VLS.

Stahl and Fairbanks (1986) also state that metacognitive learning strategies instigate cognitive learning strategies. Moreover, Anderson (2002) claims that developing metacognitive awareness may lead to the development of stronger cognitive skills. They point out that cognitive learning strategies use is based on the use or knowledge of metacognitive strategies. The results of the study might provide support for the combined use of cognitive VLS and metacognitive VLS.

Hypothesis 2 has been partially supported. Group 3 (the memory vocabulary learning group) showed more effects of strategy instruction than Group 1. However, the words learned by the subjects in both Group 1 and Group 3 were not retained longer.

Group 3 showed the effects of word association by “semantic and collocational elaboration”. Word association involves making associations between a new word and any words already in the subjects’ memory.

Thus, in Group 3, we need to consider vocabulary acquisition in greater detail in relation to word association made by using the memory vocabulary learning strategy “semantic and collocational elaboration”. Gu (2005) proposes that vocabulary acquisition in a target language involves both knowledge and skill aspects. The skill aspect involves the components of automatic retrieval and production in vocabulary acquisition. With respect to this skill aspect, vocabulary acquisition may be promoted by “verbal and written repetition” in Group 3.

On the other hand, the knowledge aspect involves the acquisition of semantic and conceptual structures in vocabulary acquisition. Semantic and conceptual structures require a deep processing or a complex analysis of new words (Brown and Perry, 1991). The subjects in Group 3 did process the new words deeply because word association such as semantic and collocational elaboration involves
words that the subjects have already known conceptually and semantically. The subjects, therefore, paid more attention to the new words in their conceptual and semantic processing. This attention is extremely important for learners. Schmidt (2001) states the importance of attention as “mental processes that are conscious”. Moreover, especially for vocabulary acquisition, Lewis (1997) claims the importance of attention as “awareness-raising”.

Vocabulary acquisition may be promoted by the interaction between these skill and knowledge aspects (Gu, 2005). Indeed this may explain the case of vocabulary acquisition by Group 3 to which strategy training combining “verbal and written repetition” and “semantic and collocational elaboration” was conducted.

Hypothesis 3 has been rejected. Although the mean scores of each group were different in the second treatment, the mean scores of each group were almost equal to the third treatment. These results represent the characteristics of each vocabulary learning strategy instruction conducted with Group 2 and Group 3 respectively. In this way one could say that the instruction of metacognitive VLS, such as “testing oneself with word tests,” works immediately. Thus, the subjects in Group 2 indicated more effects of strategy instruction immediately after their strategy training. On the other hand, the instruction of memory VLS such as “semantic and collocational elaboration” requires some time to work. Thus, the subjects in Group 3 showed the effects of strategy instruction only at the third treatment.

5. Conclusions

The purpose of this article was to investigate the effects of strategy instruction in the learning of English by beginners. In the study, we confirmed the effects of strategy instruction in the learning of English vocabulary, especially strategy instruction of the metacognitive VLS (testing oneself with word tests) and memory VLS (semantic and collocational elaboration) as we described above.

However, with respect to the study, more longitudinal research is needed. Learning strategy research requires a long term investigation of VLS to examine the effects of strategy training for vocabulary acquisition by Japanese junior high school students as beginners who learn English as a foreign language.

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References


