# Using the Keyword Mnemonic to Enhance Vocabulary Recall in the Foreign Language Classroom

Alan Bossaer

## Abstract

The keyword method, a mnemonic (associative) technique that combines acoustic sounds and imagery has been used in foreign and second-language classrooms as a method to enhance vocabulary recall, particularly in instrumental settings, where students are required to remember a large amount of vocabulary items in a relatively short period of time. Research studies have provided inconclusive evidence as to the effectiveness of the keyword method although some researchers have shown the keyword method can be an effective method in certain cases for recalling vocabulary (Taguchi, 2006; Campos and Amor, 2005; Hell and Mahn, 1997). Other studies have indicated that the keyword method is at least as good as, if not superior, to the rote rehearsal method of memorization (Maximo and Sadowski, 2000), the favorite method of memorization for Japanese students.

The purpose of this paper is to look at the learning of vocabulary lists comparing the rote repetition strategy with three different mnemonic strategies, that is, keyword mnemonic devices that are: a) self-generated, b) teacher-generated, and c) group-generated. It also seeks to determine if by

putting students into groups to "co-produce" a mnemonic device, they can turn a memorization technique into a fun, communicative task where they are actively participating in discussion or "negotiation" in English (Allwright, 1983, p. 160), and the by-product is retention of the vocabulary items. Finally, the paper seeks to examine the feasibility of training students to adopt or at least think about alternative learning strategies by exposing them to one specific cognitive learning strategy - the keyword mnemonic.

## Introduction

The memorizing of word lists as a method of acquiring English vocabulary has been and is still common practice in many foreign language classrooms in Japanese high schools. As Idoine-Shirai points out, "The Grammar Translation style of teaching English common in high schools in Japan and other Asian countries requires students to learn a large vocabulary for regular class tests and in preparation for university entrance exams" (2006, p. 1). Furthermore, many Japanese and foreign language teachers find themselves dealing with large classes, and with students who have limited contact hours with contextualized English. As a result, students are forced to remember words they may not encounter again once the class tests and/or entrance tests are completed.

For Japanese students, the most common memorization strategy is rote rehearsal. Though rote learning techniques can be useful in acquiring vocabulary quickly and efficiently (Carter and McCarthy, 1988, p. 12), they don't provide students with a deeper meaning of the words being taught. Rotely learned materials fail to "interact with cognitive structure in a substantive fashion" and are thus subject to being forgotten quickly (Brown,

1987, p. 68). Research studies have shown that techniques which allow words to be analyzed or enriched by some association of the target language, particularly those which use mental images, provide a more effective means of vocabulary learning than simple rote memory techniques (Carter and McCarthy, p. 12; Cohen and Aphek, 1980, p. 222). One such associative technique or strategy found to link form, meaning, structure, and shown to enhance vocabulary acquisition is the mnemonic device, in particular, the keyword technique (Carter and McCarthy, p. 12).

Research in second language acquisition has focused on the idea that students should adopt different cognitive learning strategies in their efforts to acquire a second language (Wendon and Rubin, 1987, p. 17). It has been proposed that students could benefit greatly if they were provided with alternative strategies for organizing and storing information and encouraged to consider which strategies work best for them (Wendon and Rubin, p. 16; Schmitt and Schmitt, 1995, p. 13). In addition, it has been theorized that learning is most successful when students play an active role in the process (Wendon and Rubin, p. 17).

### *Vocabulary Acquisition, Memorization, and Mnemonics*

One of the goals of second language teaching is to help students acquire a sufficiently large vocabulary so they can communicate effectively. Even those students studying English for "instrumental" purposes (Larsen-Freeman and Long, 1991, p. 173), that is to say, as a means to enter a company or to pass a test, are keen to learn lots of words. As Fuller states in his book on learning a foreign language, "You just can't learn a language without learning words - lots of them" (Fuller, 1987, p. 5). Proponents of natural acquisition methods in the area of lexical studies advocate learning vocabulary in context whenever possible since lexical competence implies

more than knowing what a word means (Ooi and Kim-Seoh, 1996, p. 56). While learning vocabulary "naturally", in context, is the most desirable method, it is not always practical or possible. It has been noted that many lower-level students lack the necessary structures that would allow learning vocabulary through context and so vocabulary must often be assimilated as single (or paired) items (Carter, 1987, p. 153). Acknowledging these facts, some teachers have been inclined to use memorization strategies, especially in the early stages of learning a second language, where they have been shown to benefit learners, providing a means of acquiring large quantities of vocabulary efficiently and quickly (Carter, p. 153). Once students have a sufficient "working" vocabulary, it is thought they can learn words in more contextualized forms.

In Asian countries the most common practice of memorizing vocabulary for beginners is rote rehearsal (Wendon and Rubin, 1987, p. 141). Although this technique has been found to work (Carter and McCarthy citing Nation, 1983, ch. 9; Kellogg and Howe, 1971), numerous studies have shown that the keyword method, a mnemonic memorization technique, is superior to rote learning in enhancing the retention of foreign vocabulary (Pressley et al., 1982; Cohen, 1987, p. 46; McDaniel et al., 1987; Kasper and Glass, 1982). It has also proven to be more effective than certain semantic strategies such as a) providing sentences containing the words, b) giving students pictures representing the meanings of words, or c) providing synonyms (Pressley, Levin and Bryant, 1983, p. 40).

Mnemonic means "aiding the memory" (Higbee, 1979) and by its very nature, decreases the chance of forgetting due to its lengthening and strengthening of "memory traces" (Craik and Lockhart, 1972). The keyword mnemonic enhances learning by allowing a "deep or extensive cognitive analysis of [a] word through association" (Cohen, 1987, p. 45) and involves

a transfer of items to long-term memory (Stevick, 1996, p. 55). Rote learning, on the other hand, involves short-term memory processes, learning items arbitrarily, in isolation, with few if any associations, thus items are often quickly lost (Brown, 1987, p. 67).

*The Keyword Method*

Basically, the keyword method involves associating a word in the second or foreign language with a word in the native language. This "involves using interactive imagery to link the sound of a word in one's native language (the keyword) to the sound of some foreign word which has to be learned" (Beaton, Gruneberg and Ellis, 1995, p. 112). For example, in Japanese, the word *musubu* means tie (as in tie your shoes or tie with a rope). The student learning Japanese notes the first part of the word *musu* sounds like moose, a large deer-like animal found in North America. *Moose*, then becomes the keyword. *Bu* approximates the word *boo* in English (this is another keyword). The second step would be to form a mental image of the keyword interacting with the English translation (so the student creates an image of a moose saying boo with a tie around its neck. Even though in this case, the image of tie is used as a noun and not a verb as the translation requires, the student has no problem remembering the true meaning of the word in the required form. It should be noted that the keyword need not have the same sound as the foreign word being learned. As Beaton, Gruneberg and Ellis point out, "a near approximation may be enough to stimulate recall of the foreign word" (p. 113). It has also been suggested that the more bizarre, or ludicrous the images, the better the recall of the item (Cohen, 1987, p. 46).

The time and effort needed to generate the devices, as well as the difficulty students experience generating them on their own, are drawbacks

often associated with this technique (Cohen, 1987, p. 50).

*Vocabulary Learning Strategies—Background*

Learning strategies in second language acquisition refer to "techniques, approaches, or deliberate actions that students take in order to facilitate the learning and [recall] of both linguistic and content area information" (Wendon and Rubin, p. 71). Included in the content area is vocabulary acquisition. Recent endeavors in learning strategy research have focused on various second language learning situations, vocabulary being one of them. Learning strategies are generally classified within three categories: metacognitive, cognitive, and social-affective (Wendon and Rubin, p. 72). Metacognitive strategies involve such things as thinking about the learning process and self-evaluation of learning while cognitive strategies are those strategies that allow the participants to interact directly with the material to be learned (p. 72). Some examples of cognitive learning strategies include repetition, translation, note-taking and the keyword mnemonic (O' Malley et al. 1985, pp. 582-584). The third type of learning strategy, the social-affective, deals with cooperation among the second language learners, working together to perform some "communicative" task. In order for students to make more efficient use of their time when studying a second language it has been proposed that language teachers provide students with knowledge about the different styles available (Cohen, p. 101, 1983). Students could then decide for themselves which learning strategies and techniques they prefer.

## Description of the Study

*Subjects*: The subjects for the study included four classes of second-year

high school students in Japan, thus, an EFL environment. All the students (83 in total) were classified as low-intermediate learners (as defined by the school assessment levels). Students at the low-intermediate level were defined as having proficiency in rudimentary reading and writing skills and limited proficiency in basic conversational skills. The students, all Japanese females, were 16 to 17 years of age, and took conversational classes (between twenty and twenty-two students per class) twice a week for 50 minutes each time. All the students were English majors by choice which presupposes some level of intrinsic motivation, although to what degree is unknown.

*Procedure*: The experiment focused on one discrete language task, vocabulary learning, and was conducted over a period of two days, a Monday and the following Friday. Four different approaches to vocabulary learning were compared among the four classes. Group A (n=22) were required to use a rote repetition strategy to learn ten new vocabulary items while Group B (n=20) were required to use the keyword method to learn the same ten words. The subjects had to generate their own keyword mnemonics for each word. Group C (n=21) were supplied with a mnemonic device from the teacher to learn all ten vocabulary items and Group D (n=20) were required to generate keyword mnemonic devices in groups of four. All four groups were tested for immediate (same day) and delayed (4 days later) recall of the items.

Regarding the ten vocabulary items to be learned; four were nouns, three were verbs, and three were adjectives. Some of the words didn't lend themselves well to association, meaning they were of low imagery. The author chose these words because it has been noted that most experiments are conducted using vocabulary items for which keywords can be readily generated (Cohen, 1987, p. 50).

A week prior to the experiment a self-report questionnaire was given asking students to describe in English or Japanese, the strategy or strategies they used to learn vocabulary for the weekly quizzes (see appendix 1). Table 1 lists the strategies used by students in each of the four classes.

To determine if the ten used in the study were new, a five-minute pre-test was given to all four groups the week before the experiment. The tests were collected and it was determined that none of the students could supply translations for any of the ten words.

*Procedure for Group A (Rote memory)*: On the first day of the test (Monday), I gave the Group A students the same list of ten new words, this time with the English translations. A verbal presentation of each word was given to familiarize the students with the correct pronunciation. Each verbal presentation lasted approximately 5 seconds. The students were then given a practice sheet and instructed to write out each word five times. They were also instructed to say the words to themselves out loud after each written repetition. I used this procedure since it was the one cited most frequently by students on the self-report questionnaires. The students were given five minutes to do this and then the list of words and practice sheets were collected. Immediately following this the original list

**Table 1.** Strategies used when learning vocabulary lists in preparation for vocabulary quizzes prior to being introduced to mnemonics.

| Strategies | **Group A N=22** | **Group B N=20** | **Group C N=21** | **Group D N=20** |
|---|---|---|---|---|
| Rote repetition only | 16.0 | 16.0 | 18.0 | 18.0 |
| Semantic strategies only (more specific definitions/sentences containing the words/making mini dialogs/thinking of synonyms) | 2.0 | 3.0 | 0.0 | 2.0 |
| Combination of rote repetition and semantic strategies | 4.0 | 1.0 | 3.0 | 0.0 |

of ten words in Japanese (though now in mixed order) was handed out and the students were asked to provide English equivalents. The sheets were collected after 5 minutes and the class then carried on with the day's unrelated lesson. Four days later (Friday) I gave the group a five-minute surprise quiz on the same ten vocabulary items.

*Procedure for Group B (Self-generated keywords)*: As with Group A, a five-minute pre-test was given the week before the experiment. On the first day of the experiment Group B students were instructed in the use of the keyword technique. The instruction was 15 minutes and focused on English words with Japanese keywords plus images. After the instruction, the students received the list of ten new words with their English equivalents and were familiarized with the correct pronunciation. Each verbal presentation lasted 5 seconds. The subjects were then asked to practice generating individually, the keywords and images for the ten vocabulary items and to record the associations on a sheet. They were given 15 minutes to do this. The sheets were collected and the students were given a list of the ten new vocabulary items (in mixed order) and asked to supply English equivalents. To ensure in fact that the students were using the keyword method and not some other technique to recall the words, I asked students to supply keywords and images for each word on the test sheets. The test period was 15 minutes. Four days later I gave a 5-minute surprise quiz testing the same ten vocabulary items. Immediately following the test the students were given a questionnaire asking for the technique/techniques they used to recall the ten words (see appendix 2).

*Procedure for Group C (Teacher-generated keywords)*: Group C students followed the same procedure as Group B students (including training,

surprise quiz and follow-up questionnaire) except instead of having to generate their own associations during the 15-minute practice time, they were all supplied with Japanese keywords and images for all ten vocabulary items. This was done on the blackboard. The students were also required to record the keywords and images on the list sheet to ensure they could record them again during the immediate recall test (Test 1) and on the follow-up questionnaire (see appendix 2).

*Procedure for Group D (Group-generated keywords)*: Group D students followed exactly the same procedure as Group B students, up until the point of developing the mnemonic associations. Unlike Group B subjects who were asked to practice generating keywords and images individually, Group D subjects were placed into groups of four (5 groups in total) and then asked to generate the associations, collectively. Each group discussed and agreed on one keyword mnemonic and one visual image (note: the image could consist of more than one drawing) which were then recorded on one group sheet. The students were instructed to use English in their discussions. This was monitored by the teacher who walked around the classroom. After 20 minutes each group's sheet was collected and the students were tested following the same testing guidelines set out for Groups B and C, including the 5-minute surprise quiz four days later (Friday) and the questionnaire (see appendix 2).

## Results

Results of the tests for each of the four groups are shown in Table 2. The tests were marked by one marker (the classroom teacher). Answers were marked correct even if misspelled, as long as the English equivalents

Table 2. Test results of vocabulary recall using rote repetition and keyword mnemonics

**Average number of items recalled per group (10 words tested)**

| **Group Descriptions (Strategies employed)** | **Group A** (Rote Repetition) | **Group B** (Mnemonic) Self-generated | **Group C** (Mnemonic) Teacher-Generated | **Group D** (Mnemonic) Group-generated |
|---|---|---|---|---|
| **Test Subjects** | **N=22** | **N=20** | **N=21** | **N=20** |
| **1st Test** (Monday) | **5.8** | **5.2** | **7.7** | **5.0** |
| **2nd Test** (Friday) | **3.0** | **3.7** | **6.8** | **4.0** |

were recognizable. For example, a word was accepted if it had the correct number of syllables and it matched up phonetically. An example of this would be colidoor for corridor. Synonyms were not accepted.

Scores from the 1st test (Monday−immediate recall) comparing the four groups show that Group C (the teacher-generated mnemonic group), were able to recall a significantly higher number of vocabulary items (77%) than the other three groups. However, Group A, the rote group, recalled more items than either Group B, the self-generated mnemonic group (52%) or Group D, the group-generated mnemonic group (50%). It must be noted here that the time given students to write Test 1 was not constant. The rote repetition group had 5 minutes to write the test while groups B, C, and D were given 15 minutes. This was due to the fact that students in these three groups had to write down the keywords and draw the images in addition to giving the English equivalents. It is not known if the additional 10 minutes could have been used for the sole purpose of recalling the items, though it must be considered. The testing time for Test 2 (Friday) was constant for all four groups.

Results from the second test (delayed recall) show that the rote repetition group (Group A), were not able to recall as many items on Friday as the other three groups and that the rote repetition students forgot at a faster

rate than students who used the mnemonic keyword method (Groups B, C, and D). The results from the teacher-generated mnemonic group (Group C) showed a delayed recall rate of 68%, which meant the number of items forgotten was less than 1 for this group (7.7 items remembered on Monday and 6.8 items recalled on Friday). The number of items students were unable to recall for the other three groups were: 1.3 items for group B (5.0 on the first test versus 3.7 recalled on the second test); 1.2 items for Group D (5.2 recalled on Monday versus 4.0 recalled on Friday); 2.8 items forgotten for Group A (5.8 recalled on Monday versus 3.0 recalled on Friday).

Regarding the follow-up questionnaire given after the delayed recall test, only 30 of the 61 mnemonic subjects (from Groups B, C, and D) reported the actual keywords and images they used to help recall the vocabulary items (appendix 2).

## Discussion

The results of this study seem to support research that claim higher levels of recall over time for the keyword method compared to the rote rehearsal method in cases where there is no further instruction or review of the items (Kasper, 1993, p. 245). However, claims that the keyword method is superior to rote repetition methods could not be substantiated; at least where students were required to recall vocabulary immediately after generating the mnemonics themselves or in groups. The teacher-supplied mnemonic group was more successful than the other three groups in both the immediate and delayed recall tests but their delayed recall scores (68%) were far below results other studies have cited where the keyword method was used. Cohen and Aphek (1980, p. 227) reported an 86% delayed recall rate (1 week delay) using the keyword method while Kasper (1993, p. 245)

reported close to 90% (1 to 7 days later).

The fact that the average number of recalled items in Test 1 (immediate recall) for the two student-generated mnemonics groups was around 50% may reflect a high level of difficulty of the ten vocabulary items rather than saying something about the ineffectiveness of the keyword method. Studies have shown that some words lend themselves more readily to association than others (Cohen and Aphek, p. 226) and that some learners "conjure up visual images more easily than others" (Bellezza, 1983, p. 49). Students required to produce their own keyword mnemonic devices and those required to produce keyword mnemonic devices in groups were observed to have difficulty implementing these strategies. This seems to contradict some claims that students can develop their own keyword mnemonic devices successfully, and supports other claims that some students may have difficulty generating the devices. It is interesting to note that of the 40 students comprising the individual and group-generated mnemonic groups (Groups B and D), only 24 recorded their keywords and images during Test 1. Perhaps if they had been given words they were more accustomed to seeing the results would have been better. As was mentioned earlier, the purpose of having the mnemonic subjects report their associations during Test 1 (immediate recall) was to keep students from violating the experimental constraints - for example, using a method other than the keyword mnemonic to learn the vocabulary item, and not to provide accurate descriptions of the association for analysis. However, a study concerning the nature of the associations the students make and how they recall different classes of words might prove useful, especially if it's found that students can achieve high levels of recall with certain types of words.

There are other possible reasons for the overall, low number of items

recalled for the individual and group-generated mnemonic groups. First, the students and the teacher were not familiar with each other (it was only their second lesson together). This may have given the students a feeling of discomfort or uneasiness (a common phenomenon in Japan) which was transferred to the training phase of the experiment. Second, the fact that this technique, often requiring bizarre or ludicrous keywords and images, was tested on Japanese female high school students who, at the best of times, tend to be extremely reticent, may have contributed to the low scores. The low recall rates of the group-generated mnemonic group (Group C), may reflect an uneasiness students felt while in groups, in an attempt to produce silly or ridiculous mnemonic devices (at the risk of appearing foolish in front of classmates they didn't know well, which was the case here). This is especially true in Japan where individuals are highly conscious of sticking out in a group. Third, it's possible that insufficient training and/or clear instructions in the use of the keyword mnemonic led to poor results. This seems to have been the case with three students in Group C (the teacher-supplied mnemonic group), who included a keyword as part of an English definition. When supplying Group C students with a mnemonic for the word corridor, the Japanese keyword given for corri was koori which in Japanese means ice. The image then, was of a long sheet of ice like that found in a curling rink, with a door at the end (the teacher used door as a second keyword even though it's an English keyword because most students know the word). On the test, instead of writing corridor (kooridooor) the three students write icedoor. It should be pointed out here that there seems to be mixed views in the literature on the amount of training time necessary to learn the keyword method. Kasper (1993, p. 248), suggests intensive instruction is needed for some individuals to achieve best results using the keyword mnemonic while Levin, as cited by Cohen

(1987, p. 55), claims as little as 10 minutes training time is needed. In research conducted by Kasper, students were said to have mastered the keyword technique "in as little as one week" (1993, p. 250). The fact that most of the students in this experiment who generated the keyword mnemonic on their own or in groups scored poorly and didn't or couldn't report their associations points to the need for a longer training period.

Part of this study's purpose was to determine if students could work in pairs and co-produce mnemonic devices all the while using English as they discussed the keywords and images. During this phase of the experiment with the Group D subjects (5 groups of four students) the teacher walked around the class and monitored the activity. It was observed that three of the groups were very quiet, with little interaction of any kind. Two of the groups however, did try to use English, although it was interspersed with Japanese. Interestingly, 6 out of the 8 students comprising these two groups scored highest on the delayed recall test for the entire group-generated mnemonic class (Group D). It is not known if or how much of the English these students used contributed to their recall scores since the keywords and images could have been arrived at using Japanese but the fact that the six students were speaking English clearly shows that's it's possible to make the task a "communicative" activity. Perhaps if students could become more proficient using the keyword mnemonic, they would feel more comfortable in groups leading to more contributions. Also, it's quite possible that the students may generate the mnemonics more easily if they know each other well, thus, plenty of group work prior to mnemonic training may prove beneficial.

The study also sought to examine the feasibility of training students to adopt or think of alternative learning styles through contact with mnemonics. The author purposely avoided giving the students a questionnaire

asking about their feelings regarding other strategies because it was felt the students would answer positively just to please the teacher. Instead, the author was hoping the students would freely ask the teacher about other strategies during a free question period provided at the end of the class. Of the 61 students who took part in the controlled mnemonic study, two indicated an interest in finding out about other vocabulary learning strategies. One very interesting and significant question came from a student in the self-generating group who asked if the keywords had to be in Japanese. She said she would prefer to generate keywords in English. It must be noted that this particular student had lived in the United States for 5 years when she was an elementary school student. Nevertheless, her desire to generate the keywords in English opens the door to further questions of inquiry such as: 1) Would Japanese high school students possessing higher levels of English ability readily adopt the keyword mnemonic as a learning strategy? 2) Do students possessing higher English abilities generate keywords easier in English than students generating keywords in Japanese?

## Conclusion

This study's aim was to find answers to the following three questions: 1) Is the keyword mnemonic method of memorizing vocabulary superior to the rote rehearsal method? 2) If put into groups and asked to co-produce a mnemonic device, can it be done in English as a "communicative" task? 3) Can Japanese high school students be encouraged to adopt other vocabulary learning strategies other than rote rehearsal, their method of choice? The results of the study proved inconclusive for all three, though these conclusions were reached: as a technique, the keyword method is time-consuming, at least initially, and not all students can generate the keywords

and images. This coincides with sources of contention some researchers have concerning the use of the keyword mnemonic (Carter, 1987, p. 155); Carter and McCarthy, 1988, p. 12). However, with longer training it is conceivable the keyword mnemonic method of memorization would be more successful than the rote method for recalling vocabulary, particularly for long term retention. It would favor the rote memorization method technique as a prelude to more contextualized methods of vocabulary acquisition due to its associative nature, which lends itself to better delayed recall (as the results showed). Secondly, though some of the students in the study conversed in English when designing their keywords in groups, many of the students sat quietly with little interaction. It is hypothesized that if the students knew each other better and were more proficient with the keyword method they may have contributed more in English, making the task more "communicative". Thirdly, it's more than likely that without extended training in the use of the keyword method, the students in this study will continue to use the rote rehearsal method. It's fast, doesn't take much mental processing, and the students are already accustomed to using it.

## Notes

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**Appendix 1.** Pre-test questionnaire used to determine learner strategy/ strategies for memorizing vocabulary lists.

Note: The following question was written in both English and Japanese. Students could respond in either language.

Question: What method do you use to remember vocabulary?

Question:(どうやって言葉を覚えましたか)

**Appendix 2.** Post-test questionnaire used to determine the strategy/strategies used to remember the ten items on the list for the test.

Note: The following question was written in both English and Japanese. Students could respond in either language.

Question: What method did you use to remember each word?
Question:(どうやって各単語を覚えましたか)

廊下(corridor) _____
空いている(vacant) _____
聖火(torch) _____
直す(mend) _____
豊富な(abundant) _____
泥棒(burglar) _____
(手足)を切断する(amputate) _____
熟した(ripe) _____
宣誓(oath) _____
謙遜した(humble) _____