

The Mnemonic Keyword Method : Theory and Practice in Second Language Vocabulary Acquisition

Taichi Nakamura

INTRODUCTION

Over the last few decades, a number of articles have been devoted to the study of the mnemonic keyword method as one of the effective ways of L2 vocabulary learning (e. g., Atkinson, 1975 ; Atkinson and Raugh, 1975 ; Bellezza, 1981 ; Cohen and Aphek, 1980, Cohen, 1987 ; Paivio and Desrochers, 1981 ; Pressley and Levin, 1981 ; Pressley et al., 1980, among many others). It has been pointed out that "Atkinson's studies set the stage for all subsequent keyword investigations" (Pressley, Levin and Delaney, 1982 : 64), which suggests that his studies formed the firm basis on which researchers have attempted to throw new light on this subject so far.

The purpose of this paper is threefold. First, a theoretical overview of the mnemonic keyword method is provided in line with the five fundamental questions postulated by Atkinson (1975). Secondly, the keyword method will be discussed in the context of vocabulary learning strategies used by Japanese learners of English. And, finally, pedagogical implications of the keyword method for L2 vocabulary learning are considered.

THE KEYWORD METHOD : THEORETICAL CONSIDERATIONS

The keyword method as a mnemonic aid for L2 vocabulary learning comprises two stages. The first stage requires L2 learners to form a link between a spoken foreign word and the keyword by a similarity in sound (acoustic link), and, in turn, in the second stage, the keyword is connected to an L1 equivalent which interacts one way or another with the keyword by a mental image (imagery link) (Atkinson, 1975). Regarding the case where Japanese learners of English use the keyword method, for example, it is reported that Japanese university students selected 'mocken' (a nickname for the Japanese actor, Motoki Masahiro) as a keyword to form an acoustic link with the English word 'mock', and then they created a mental image like *mocken ga mogishiken wo uketa* (Mocken took a mock exam) as an imagery link (Hayashi, 1999).

In one of Atkinson's experiments using Russian vocabulary, subjects of a keyword group were compared with those of a control group who used their own strategies. A series of comprehensive tests to check their performance on each vocabulary item demonstrated the effectiveness of the keyword method. Concerning the results obtained from other related experiments, Atkinson (1975) poses the following five questions about the keyword method :

1. Should the experimenter supply the keyword or can the subject generate his own more effectively?
2. Does supplying the imagery link for the subject facilitate learning?
3. When a foreign word is presented, does the time to retrieve its

English translation depend on the method of learning?

4. Are the imagery instructions critical in the keyword method, or can the subject do equally well when told to associate the keyword and English translation by generating a meaningful sentence connecting the two words?
5. How useful is the keyword method if the subject is asked to retrieve the foreign word when given its English translation?

(Atkinson, 1975: 824-26)

Let us now look more closely at Atkinson's studies and subsequent investigations by other researchers which have been conducted as attempts to answer these five questions and to explore the nature of the keyword method.

Experimenter-provided Keyword vs. Subject-generated Keyword

As for the first question mentioned above, a series of Atkinson's studies conducted over two years have shown that the case appears to be more effective when the experimenter provides the keyword for the subjects, rather than when subjects must generate their own keywords (Atkinson, 1975). In an experiment using Russian vocabulary, subjects who had no prior knowledge about Russian were instructed to use the keyword method for both keyword-provided and no keyword-supplied items. This indicated that subjects were to generate their own keywords when no keyword-supplied items were presented. According to the result of the test to check how well they could remember Russian vocabulary, subjects were significantly better on the keyword-provided items than on items whose keywords were generated by subjects themselves (Atkinson,

1975). Atkinson attributed their poor performance on the subject-generated key-word method to their unfamiliarity with the target language, but it was not obvious why this might be the case. The keywords, which subjects are required to generate of their own, are their native language words and therefore, in general, they should be able to invent their own keywords, irrespective of their proficiency of the target language. It seems possible, however, to say at least that subjects, particularly at beginner's level, initially need to be instructed to be able to distinguish the phonemes of the target language to match the keyword of their native language (Raugh and Atkinson, 1975). Thus, it is important to take into account the extent to which subjects have the knowledge of the phonological system of the target language, whether an experimenter-provided keyword or a subject-generated keyword is used.

In Atkinson's experimental approach, subjects were required to input a native language translation into a computer which corresponded to a Russian word presented on a cathode-ray-tube (CRT) display. When a keyword was provided, it appeared on a CRT display in brackets, and, if not, only a Russian word was presented. Subjects had 15 seconds to type the translation and no feedback was given. The purpose of his experiment was simply to count the number of correct inputs by subjects for both keyword-provided and no keyword-supplied vocabulary items. In other words, this experiment did not tell anything about whether there was any difference found in subjects' mental process of gaining access to the correct translation for keyword-provided and no keyword-supplied items. This also suggests the importance of monitoring subjects' mental process of learning vocabulary items in order to obtain a clearer picture of how they approach keyword-provided and no keyword-supplied vocabulary items

respectively. Although the aim of the experiment was to explore which keyword method was more effective and thus it may not have been necessary to monitor subjects' process of learning, it is crucial to know their whole process of L2 vocabulary learning if we are to understand which keyword method is truly effective.

It is of particular interest here to refer to self-reports by keyword-generated subjects that even if they are required to generate their own keywords, they often give up when they find it difficult to generate an appropriate keyword and also when they think of some other effective ways of memorizing L2 words (Hall, Wilson and Patterson, 1981). Which keyword method to choose, experimenter-provided or subject-generated, depends primarily on the subjects' current proficiency levels of the target language and individual differences in the ability to generate their own keywords and mental images which are appropriate for given L2 items.

The Effect of the Imagery Link on the Facilitation of Learning

In respect of the second question, supplying the imagery link for the subject does not seem to have any facilitative effect on learning (Atkinson, 1975). Taking into consideration the case where the imagery link per se is created arbitrarily by the experimenter, it does not always work for every subject. It is quite natural that a certain imagery link appeals to some learners, whereas it does not for others. As far as the imagery link is concerned, it seems better to have learners generate their own because they are more likely to create a link between the keyword and the native language equivalent which is meaningful for them. Related to this, another issue arises as to the use of an imagery link. If the generation of an imagery link is left to the initiative of each learner, which is more

effective, creating 'new' imagery links while learning or continuing to use the same 'original' imagery link? In fact, there has been no consensus on this point in that Cohen and Apehek (1980) suggest that creating 'new' imagery links may be helpful in promoting correct recall, while Cohen and Hosenfeld (1981) imply that continuing to use the same 'original' imagery link may produce better results than replacing it with a new one. It seems yet unclear how helpful it is to create 'new' imagery links in the process of learning L2 vocabulary, and it is difficult to say how feasible it is, taking into account the individual difference in the ability to create an imagery link for L2 vocabulary items.

The nature of the keyword is also a crucial element in creating an imagery link. Subjects presented with an imageable, concrete noun keyword succeeded in forming an effective imagery link compared with those with a verb keyword (Ellis and Beaton, 1993). On the other hand, there is a somewhat different finding that the keyword method worked better with nouns and verbs than with adjectives, though it was not made clear whether the poorer performance on adjectives came from the inherent nature of adjectives (Raugh, Schupbach and Atkinson, 1977). The previous result shows that nouns were the most effective as a keyword, which was in line with the general finding in L2 learning that nouns were the easiest to learn, adjectives next, and verbs and adverbs were the most difficult to learn (Rodgers, 1969). The use of noun as a keyword can thus be said to be most effective in the keyword method.

Forward Recall in the Keyword Method

With regard to the third question, Atkinson (1975) reported on his study to determine whether subjects with different study procedures (keyword

method vs. rote rehearsal) showed any significant difference in forward recall (L2 word → L1 word). His result revealed that the items were learned faster with the keyword method than were those using rote rehearsal, though performance was perfect for both groups of subjects. However, it is difficult to generalize only from this finding that the keyword method works effectively in forward recall because there is room for argument on this point. Some claim that the keyword method does not reduce the speed with which subjects can retrieve L1 translations (Atkinson, 1975; Pressley et al., 1982), while others consider it necessary to take into account two features (acoustic link and imagery link) which are characteristic of the keyword method in determining the effectiveness of forward recall (Craik and Lockhart, 1972; Raugh, Schupbach and Atkinson, 1977). As far as the two characteristic features of the keyword method are concerned, selection of the most similar sounding and imageable keyword which serves for acoustic and imagery links is an important matter. It has often been suggested that, as an acoustic link, keywords emphasizing the first syllable of an L2 word should be selected (Raugh and Atkinson, 1975). For instance, the keyword for the Spanish word *coballo*, which is pronounced like 'cob-eye-yo' should be 'cob' instead of 'eye' (Raugh and Atkinson, 1975). Willerman and Melvin (1979), however, have a different view that "concentration on the second or accented syllable seems intuitively preferable. The second syllable of *coballo* does not begin with a vowel sound, but with the consonant /b/. A keyword closer to the real linguistic situation, though much less imageable, could be 'baa' or 'buy'" (Willerman and Melvin, 1979: 444). Concerning the way in which a particular L2 word is recalled, it seems plausible to assume that, in general, the initial sound or syllable serves as a cue to retrieve the subsequent sounds or syllables

because no one generally attempts to pronounce the second or accented syllable first, and then initial or third syllable when one is required to retrieve the complete word form from memory.

The second feature of the keyword method concerns an imagery link. As mentioned earlier, nouns are superior to other parts of speech as a keyword in creating a concrete image between an L2 word and its L1 equivalent. In other words, it is of vital importance that keywords be highly imageable, which means that they should be nouns. It is also important to add here that highly imageable items play a more effective role as retrieval cues (Ellis and Beaton, 1993). However, this does not necessarily lead to any noun being an effective retrieval cue. Of more importance is the extent to which a particular noun as a retrieval cue is compatible with the particular item's initial encoding. To put it another way, it matters not so much what sort of retrieval cue is selected as how deeply and effectively it is processed that enables retrieval situation to reinstate the learning context (Craik and Lockhart, 1972).

The time taken in forward recall has been one of the controversial issues in the keyword method, but it seems to be no longer a problem once learners master L2 vocabulary items thoroughly. Raugh, Schupbach and Atkinson (1977) assert, on the basis of their experience with the keyword method and subjects' introspective reports, that learners will be able to recall an L2 vocabulary item immediately without being aware of the existence of the keyword which they have used as a mnemonic aid to master it. That learners can recall an L2 word correctly in vocabulary elicitation tests, it should be warned, does not necessarily suggest that learners can use it appropriately in real communicative situations. The effectiveness of the keyword method in laboratory situations has been proved by several

studies (e. g. Atkinson, 1975 ; Paivio and Desrochers, 1981 ; Pressley et al., 1980), but the use of L2 vocabulary items acquired by the keyword method in communicative situations has rather been neglected.

Elaboration or Imagery Instructions

Turning to the fourth question, Atkinson (1975) shows his finding that imagery instructions produced a significantly better performance than sentence-generation instructions when using the keyword method. This does not indicate that sentence-generation instructions are ineffective, but rather they are as equally effective as the imagery instructions unless the more difficult task requires learners to create a more difficult and complex sentence (Atkinson, 1975). However, in the case of imagery creation where there supposed to be no sentence involved, would it be possible to picture an imaginary interaction between the keyword and an L1 translation without creating a sentence to connect them? Or would it be reasonable to assume that a sentence should be included in the more difficult task when required to retrieve the imagery link? It appears that Atkinson's experiment did not refer to the extent to which imagery instructions worked effectively in accordance with the difficulty of the task. If imagery instructions work effectively unlike sentence-generation instructions, regardless of the difficulty of the task, some evidence might be required to confirm it.

Another experiment whose subjects were divided into four groups, I (interactive-picture given) ; II (create own interactive image) ; III (use own strategy) ; IV (do repetition), produced a similar effect that groups I and II scored significantly higher than groups III and IV in the learning of German words (Ott et al., 1973). The results of the self-report analysis showed that

some elaboration techniques had been widely used across all four groups for the vocabulary items which were correctly remembered on both the learning test and the delayed retention test (Ott et al., 1973). Two conclusions drawn from their experiment were that (1) instructions to elaborate or imagery instructions were more successful than having subjects generate their own mnemonics; (2) a large number of words correctly remembered by subjects were learned by some elaboration strategies. Furthermore, additional findings to support these conclusions were that the use of elaboration increased with age, and that "at all age levels higher memory performance was observed among elaboration users than among rehearsers or mixed-strategy users" (Pressley, 1982: 303). Imagery instructions or elaboration instructions may be critical in the keyword method, even though learners develop their own elaboration techniques without being specifically taught about them.

Backward Recall in the Keyword Method

The last question concerns the usefulness of backward recall (L1 word → L2 word) in the keyword method. Atkinson's (1975) data that the keyword subjects scored 19% above that of the rote-rehearsal ones in backward recall of Spanish vocabulary items formed a basis on which he claimed the usefulness of the keyword method in backward recall. However, whether the keyword method is useful in backward recall has still remained a point of issue to the effect that counter-evidence is reported by subsequent investigations (Pressley et al., 1980; Pressley, Levin and Delaney, 1982). According to one of the experiments to check subjects' performance on backward recall from English to Spanish, Pressley et al. (1980) found it difficult to retrieve the whole Spanish word even though they succeeded in

regenerating verbally the interacting image with the keyword. The reason why they had difficulties in recalling the complete word form by means of the keyword may be attributed to the absence of "direct mnemonic route from the English word back to the foreign word" (Pressley et al., 1980 : 165). Furthermore, Pressley, Levin and Delaney (1982) confirmed their previous findings that subjects had been very good at recalling the keyword, but had been unsuccessful in retrieving the whole vocabulary item. Viewed in this light, the keyword method has some limitations in backward recall. It may safely be said, therefore, that the keyword method is useful in facilitating acquisition of the keyword portion of an L2 word, but is not so helpful in facilitating acquisition of the entire form of an L2 word (Pressley et al., 1980).

It is true that the keyword method is ineffective in backward recall, which is a mental process of retrieving a particular L2 word by means of the keyword, but this process also involves the retrieval of its spelling and pronunciation simultaneously. This presupposes that learners have already had at their disposal orthographical and phonological rules of correspondence between the target language and their native language. In other words, learners may not be able to connect the keyword with the correct spelling and pronunciation of an L2 word if they have not acquired those rules. The keyword method is more effective in a receptive aspect of L2 vocabulary learning such as forward recall than in a productive aspect such as backward recall. It should be noted, for this reason, that the form of the keyword must have a close connection with the form of the foreign word (Ellis and Beaton, 1993), though it is not always easy to find the most appropriate keyword that sounds like a foreign word.

The effect of a similar sound of the keyword on the foreign word has

been argued as an issue of native language interference with the pronunciation of the foreign word (Raugh and Atkinson, 1975; Raugh, Schupbach and Atkinson, 1977; Willerman and Melvin, 1979; Ellis and Beaton, 1993). The value of the keyword method for stressing sound similarity between two languages with different phonological systems would lead to native language pronunciation patterns in the foreign language (Willerman and Melvin, 1979). Thus, it is of much importance to reduce native language interference with the pronunciation of a foreign word when applied to learners who have not yet mastered the phonological system of the target language.

Mode of Presenting L2 Vocabulary Items

There are two ways of presenting L2 vocabulary items in the keyword method. One is experimenter- or teacher-paced presentation in which students are given item by item at regular intervals, and, therefore, they are controlled by the experimenter or teacher in respect of time to allocate for each vocabulary item. Another is simultaneous presentation of all vocabulary items to students in which they are allowed to employ self-initiated strategies in terms of time allocation and item selection for their L2 vocabulary learning. In one of the experiments to investigate which mode of presentation is more effective for L2 vocabulary learning, Hall, Wilson and Patterson (1981) demonstrated that subjects presented with all items simultaneously produced a better result than those controlled by experimenter-paced presentation. It is suggested that simultaneous presentation of L2 vocabulary items is effective in that it provides "the opportunity to allocate study time however the student wishes with all materials present" (Hall, Wilson and Patterson, 1981: 352). It seems

necessary to add, however, that Hall, Wilson and Patterson did not refer to subjects' strategy use under experimenter-paced condition, and for this reason, it is not obvious whether experimenter-paced presentation per se was ineffective or subjects' reaction to this mode of presentation caused rather ineffective learning of L2 vocabulary items.

Summary

The use of a keyword depends on learners' current proficiency levels of the second language in general, and their ability to distinguish the phonemes of the second language in particular. It is helpful for novice learners to be provided with keywords, whereas advanced learners are likely to generate their own keywords. The imagery link arbitrarily created by an experimenter or a teacher may not be viable across whole range of L2 learners. It would often be better to let beginners generate their own imagery link which is meaningful for them, and nouns should be selected as keywords because they are considered to be the most effective in creating an imagery link. The retrieval time taken in forward recall has been a matter of central concern, and it has much to do with the nature of the keyword. Regarding which syllable should be keyworded for multi-syllable L2 vocabulary items in forming an effective acoustic link, it has been accepted that the first syllable of a similar sounding L1 word should be chosen. The use of elaboration involved in the keyword method makes it clear that imagery instructions work better than sentence-generation instructions. It is also clear that learners develop their own elaboration techniques in the process of L2 vocabulary learning even if they are not taught specifically about them. The backward recall is found to be ineffective in the keyword method, as it has no direct link between the keyword

and a particular L2 word. Thus, the keyword method may be useful in receptive vocabulary learning, rather than productive vocabulary learning. Concerning modes of presenting L2 vocabulary items, simultaneous presentation of all vocabulary items is proved to yield more effective learning of L2 vocabulary than experimenter-, or teacher-paced presentation.

THE KEYWORD METHOD IN L2 VOCABULARY LEARNING

The keyword method is, in theory, considered to be an effective strategy for L2 vocabulary learning in that it encourages on the part of learners deeper processing of L2 items through their acoustic and imagery associations than, say, learning L2 words by rote (Craik and Lockhart, 1972; Craik and Tulving, 1975). Ironically, however, strategies involving mental manipulations or elaborations are found to be less often used by L2 learners (O'Malley et al., 1985; O'Malley and Chamot, 1990). In fact, Erten (1998), in an attempt to find out about what vocabulary learning strategies were used by Swiss and Japanese students, discovered that there was no use of the keyword method among Japanese students. Also, the survey administered to Japanese learners of English unveiled their perception that the keyword method was one of the least helpful strategies (Schmitt, 1997).

Previous research on strategies learners used to acquire L2 vocabulary demonstrated that a variety of vocabulary learning strategies were employed at different learning stages (e. g., Ahmed, 1989; Gu and Johnson, 1996; Lawson and Hogben, 1996). Schmitt (1997), for example, usefully labels strategies used to uncover the meaning of an unfamiliar word as

'discovery' strategies and central vocabulary learning strategies including repetition and memorization strategies as 'consolidation' strategies. In what follows, the recent investigation into use of consolidation strategies by Japanese learners of English will be reported, as the keyword method is included in consolidation strategies. It should be warned here that use of discovery strategies is not examined in this paper [see Nakamura (2002) for details of use of discovery strategies].

The Study

The overall research question addressed in the study was:

What consolidation strategies are more frequently used by Japanese learners of English?

Participants

The total number of 178 Japanese senior high school students participated in the study. Students' proficiency of English varied somewhat, but almost all the students were college-bound, with six or seven hours of English instruction per week.

Instruments

Questionnaire of vocabulary learning strategies was administered to all participants (see appendix for a sample of questionnaire). Observations and oral interviews were also conducted to selected participants.

Data Analysis

Simple statistical measures were employed to obtain the mean frequency rating of each strategy use and standard deviations. More detailed analysis of the strategies using ANOVA (Analysis of Variance) can be found elsewhere (Nakamura, 2002). The observation data were analyzed to count observable behaviours and motor activities while participants were

involved in L2 vocabulary learning. The interview data were transcribed from the recorded tapes and were used as supplementary or supportive evidence for interpretations of the results of the questionnaire survey.

Results and Discussion

Cognitively less demanding strategies such as visualizing the written form of an L2 item in mind and repeating it with its Japanese equivalent are found to be more often used than strategies requiring deeper mental processing of an L2 item such as the keyword method (see Table below). The reason for the relatively more frequent use of the visualization strategy may be ascribed to the fact that a lot of time and effort need to be devoted to memorizing visual images of written forms of *kanji* (Chinese characters) in Japanese. In other words, this suggests a transfer of an L1-based strategy to L2 vocabulary learning. The observation data also made it clear, in this respect, that a third-year student, when reading, looked at the item in a word list and copied the item on a piece of paper repeatedly, but never looked down at the item on paper while writing it. She stressed in the follow-up interview that she just concentrated on seeing the item to commit to memory a clear visual image of the shape (written form) of the item. Another third year student was observed looking at the item in a very careful manner without ever saying or writing it down, which, according to him, was effective in establishing a visual form of the item in mind. In addition, it is likely that Japanese high school students prefer simple forms of repetition such as 'say or write the item with its Japanese translation repeatedly' or 'look at the written form of the item repeatedly', which are ranked fourth and fifth respectively.

The least-used strategy is found to be the keyword method. Research

Table
Summary of the Use of Consolidation Strategies by Japanese Learners of English

Consolidation Strategies	Mean	Std Dev	Valid N	Rank Order
Visualize the written form of the item in mind	3.99	1.58	175	1
Associate the item with the situation in which it appeared	3.74	1.56	178	2
Place the item in context	3.47	1.56	176	3
Say or write the item with its Japanese translations repeatedly	3.44	1.65	177	4
Look at the written form of the item repeatedly	3.25	1.58	177	5
Say or write the sentence or phrase in which the item is used repeatedly	3.19	1.59	177	6
Associate the item with my personal experience	2.97	1.63	176	7
Say the item repeatedly	2.89	1.66	177	8
Write and say the item repeatedly	2.76	1.71	178	9
Place the item in a group with other items based on topic, theme or function	2.21	1.39	178	10
Place the item in a group with other items based on grammatical category	2.14	1.35	176	11
Use the keyword method	2.12	1.50	177	12

Notes: 1. Rank Order: 1 = most frequently used; 12 = least used. 2. The total number of respondents was 178. However, Valid N varies because certain items were not answered by respondents.

has shown, as previously mentioned, that no use of the keyword method is identified in Japanese students (Erten, 1998) and that the keyword method is perceived by Japanese learners of English as one of the least helpful strategies (Schmitt, 1997). Hayashi (1999) also states that only advanced Japanese college students learn to use mnemonic strategies, which indicates that students with lower proficiency are not found to use them even after they receive instruction about the strategies.

The possible reason for the least use of the keyword method by

Japanese students, according to the interview data, would be that 'it is simply a waste of time to create a mental image by looking for an appropriate keyword to connect the item with and to remember its L1 equivalent' (third year student). It is suggested in this regard that some learners do not have time to use the keyword technique simply because there are so many words to learn (Cohen, 1991). Another student also maintains in the interview: 'I do not use the keyword method because it is difficult to create a meaningful connection between an English item and its Japanese equivalent through a keyword, which I think I am not good at' (third year student). This seems to suggest that learners vary as to their ability to create a meaningful image between L2 and L1 words through a particular keyword, which implies, in other words, that the keyword method is effective for some learners, but ineffective for others (Thompson, 1987; Gruneberg and Sykes, 1991). Also, it is possible that 'by the third year it may be that students have developed their own strategies to the point where an additional intervention does not help and might possibly interfere' (Moore and Surber, 1992: 292).

Furthermore, grouping strategies such as 'placing the item in a group with other items based on topic, theme or function' and 'placing the item in a group with other items based on grammatical category' are revealed to be relatively less often used. This, in fact, concurs with the finding that grouping of the items is one of the least often used strategies (O'Malley et al., 1985). Also, grouping items under a certain scheme is found to be difficult for learners who are more at home in rote repetitive strategies, especially Asian students, even if they are trained to use the strategy (O'Malley, 1987).

Japanese students in the study are found to use such strategies that do

not need mental elaboration or manipulation on the part of learners more frequently than strategies requiring deeper cognitive processing of L2 items. This may partly be because Japanese learners of English are so accustomed to word-list learning which, more often than not, encourages learners to mechanically memorize L2 words paired with L1 equivalents (Oxford and Scarcella, 1994 ; Hatch and Brown, 1995). But it is also plausible that students are just ignorant of other potential strategies at their disposal. It is how well teachers are aware of the possible range of strategies to teach to students that is a crucial issue. In other words, teachers' lack of awareness of strategies their students currently use in acquiring L2 vocabulary might have a detrimental effect on students' approaches to L2 vocabulary learning.

In what follows, pedagogical implications of the keyword method for L2 vocabulary learning are to be considered.

THE KEYWORD METHOD : PEDAGOGICAL IMPLICATIONS

It should be admitted that two characteristic features of the keyword method (acoustic and imagery links) need to be taken into account in order to introduce the keyword method effectively to the language classroom. Teachers are initially required to provide learners, particularly beginners, with basic knowledge about orthographical and phonological rules of the target language to help them find an appropriate keyword for an acoustic link with an L2 word. Also, it is important that students are allowed ample time to reinforce the acoustic link by doing repetition, as some form of spontaneous articulation of a keyword and an L2 word needs to be

practiced repeatedly to establish a firm correspondence between the two words.

It is likely that students can often spot a similar sounding L1 keyword easily, but it is not always easy to create an imagery link between the keyword and a particular L2 word. As stated earlier, individual differences exist as to students' ability to generate a meaningful image between the two words. Teachers may possibly be placed in classroom situations where some learners enjoy creating their own imagery link, whereas others do not. It is proposed as a way of overcoming this problem that students should jointly select their own keyword and elaborate or develop their own imagery link through group discussion sharing their ideas or experience (Singer, 1977). It is expected then that the keyword method will work effectively for students who are poor at image creation when they cooperate with those who are good at it. Also, Singer (1977) reports that students enhance their retention of foreign words if the process of elaborating the imagery link with peers is an enjoyable activity.

Furthermore, it should be noted that, although the keyword method is effective in that it involves deeper cognitive processing of L2 words on the part of learners and thus it helps them retain L2 items in their mind, teachers need to take into consideration students' habit of learning L2 vocabulary. This means, as far as Japanese learners of English are concerned, that they have had a long-standing habit of learning L2 words paired with L1 equivalents in a word list. This type of L2 vocabulary learning is regarded as imposing less cognitive burden upon learners and thus less effective than cognitively demanding method such as the keyword method. But it should be warned that 'the human ability to incorporate forms of thought or ideas that are radically different from present experi-

ence seems to be severely limited' (Bialystok, 1985 : 259). Research shows, in addition to the remark above, that Asian students who are so accustomed to word list learning of L2 vocabulary are reluctant to abandon the habit of rote-memorization strategies (O'Malley, 1987). Language teachers are thus required to be aware that some strategies which are deeply ingrained in L2 learners' belief in language learning are not to be discounted but to be supplemented by other strategies which may help learners facilitate their own L2 learning.

CONCLUSION

The keyword method as one of the effective ways of L2 vocabulary learning is not a perfect method in that it has some limitations. It works, on one hand, in terms of better performance of keyword users in forward recall in receptive vocabulary learning, but, on the other hand, it does not work in respect of poor performance of keyword users in backward recall in productive vocabulary learning. Also, it is one thing that, in theory, vocabulary learning strategies imposing cognitive burden upon L2 learners are effective, but it is quite another that, in practice, students are reluctant to use cognitively demanding strategies like the keyword method.

It is reasonable to suggest here that language teachers should respect the learning habit their students have cultivated over time and introduce other strategies hitherto unknown to the students and let them experiment with different types of strategies. This will provide students with a good opportunity to judge by themselves whether a particular strategy or a combination of strategies will be effective for their L2 vocabulary learning. It must be kept in mind, however, that the role of teachers is not to impose

so-called effective strategies upon learners but to assist individual learners in identifying strategies which are conducive to their own L2 vocabulary learning.

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Appendix

QUESTIONNAIRE ON VOCABULARY LEARNING

(Abridged English version from Nakamura, 2002)

This questionnaire is designed to gather information about how you learn English vocabulary in and out of the classroom. This is also a survey to investigate vocabulary learning strategies you normally use when you learn English. Please note that *the contents of this form are absolutely anonymous and have no bearing on the assessment of your English proficiency*. You are only required to write down your year and circle your sex below. Therefore, please be as straightforward as possible in rating the questionnaire statements on scales as well as writing down your own comments.

*Note: In this questionnaire the term 'vocabulary item' includes not only single words but also a group of words called idioms or phrases.

() year sex Male, Female

Instructions :

Read the statement, choose a response (1 through 6 as below), and circle the appropriate number on the scale after the statement in terms of what you ACTUALLY DO when learning English vocabulary.

1. Never or almost never true of me
2. Rarely or seldom true of me
3. Sometimes not true of me
4. Sometimes true of me
5. Generally true of me
6. Always or nearly always true of me

When I commit to memory a new vocabulary item :

	Never true of me			Always true of me		
(1) I say the item repeatedly.	1	2	3	4	5	6
(2) I write and say the item repeatedly.	1	2	3	4	5	6
(3) I look at the written form of the item repeatedly.	1	2	3	4	5	6
(4) I say or write the item with its Japanese translations repeatedly.	1	2	3	4	5	6
(5) I say or write the sentence or phrase in which the item is used repeatedly.	1	2	3	4	5	6
(6) I associate the item with the situation in which it appeared (e. g. which lesson of the text, who said the item).	1	2	3	4	5	6
(7) I associate the item with my personal experience.	1	2	3	4	5	6
(8) I visualize the written form of the item in mind.	1	2	3	4	5	6
(9) I place the item in a group with other items based on grammatical category or pattern (e. g. nouns, verbs, verbs that require two objects).	1	2	3	4	5	6

- | | | | | | | | |
|------|---|---|---|---|---|---|---|
| (10) | I place the item in a group with other items based on topic, theme or function (e. g. items about food, history, request). | 1 | 2 | 3 | 4 | 5 | 6 |
| (11) | I place the item in a meaningful sentence/ context. | 1 | 2 | 3 | 4 | 5 | 6 |
| (12) | I use the keyword method (e. g. to select <i>hosu</i> as a keyword to form an acoustic link with the first syllable of the English word 'hospital' and then create a mental image like <i>byoin de sentakumono wo hosu</i> as an imagery link). | 1 | 2 | 3 | 4 | 5 | 6 |