

# Unlocking the Keyword Method: An exploration of EFL learners' perceptions

Scott SUSTENANCE

## キーワード法の探検

スコット サステナンス

**Abstract:** The current mixed-methods study is a follow up to a quantitative pilot study into the efficacy of using a mnemonic technique known as the Keyword Method in an English Communication class at a university in Japan conducted two years earlier. The original study using pre- and post-tests found that instruction in the Keyword Method resulted in a statistically significant improvement in vocabulary that was not likely to have occurred by chance,  $t(68) = 17.88, p < .00001$ . The current study used a questionnaire which included ten Likert-scale statements, and an open-ended comments section that was analysed using open coding. The research was designed to explore student perceptions of using the Keyword Method in a foreign-language classroom environment with the hope of informing pedagogical decisions and improving learner outcomes. Responses were overwhelmingly positive and seem to support the use of the mnemonic strategy in a classroom environment.

**Key words:** vocabulary acquisition, mnemonics, Keyword Method

## 1. Introduction

### 1.1. The Keyword Method

The Keyword Method (KWM) as originally described for foreign-language (L2) learning involves using an intermediary first-language (L1) word (or words), known as the keyword, to connect a novel L2 word with its L1 translation (Atkinson, 1975). There are two stages, known as the acoustic link, and the imagery link respectively (see Figure 1). To create the acoustic link, an L1 keyword (the functional stimulus) that sounds like the to-be-learned (TBL) L2 word (the nominal stimulus) is chosen. The imagery link involves using the imagination to combine an image of the keyword and an image of the L1 translation of the TBL word into a single interactive image.

### 1.2. The Acoustic Link

The sound of the keyword does not have to be an exact match, but should be close enough to the sound of the TBL word to facilitate retrieval at a later point in time (Beaton, Gruneberg & Ellis, 1995). For a native English speaker trying to remember 考える (*kangaeru*), the Japanese word for *think*, the English word *kangaroo*, while not a perfect match,

would be close enough. The connection between the two words is purely based on pronunciation and there does not need to be any semantic link between the two words, although Van Hell and Mahn (1997) argue that including a semantic link makes the keyword more effective.

Many writers (Atkinson, 1975; Brown & Perry, 1991; Cohen, 1987; Levin, 1981; Pressley, Levin & Miller, 1982; Raugh, Schupbach & Atkinson, 1977; Shapiro & Waters, 2005) believe that the keyword need only include part of the sound of the TBL word, and as such can be just a one-syllable word. Brown and Perry (1991) believe that either the first syllable or the stressed syllable of the TBL word should be used. However, Beaton, Gruneberg, Hyde, Shufflebottom and Sykes (2005) argue that if there is not a complete overlap of sounds, confusion can occur when trying to recall the L2 word. In addition to the complete overlap of the sounds of the TBL word, there should be no extra sounds in between the salient sounds of the keyword, as this can also be a source of confusion during the recall process (Sustenance, 2023b). *Kangaroo* completely overlaps the TBL word, and has no extra sounds.

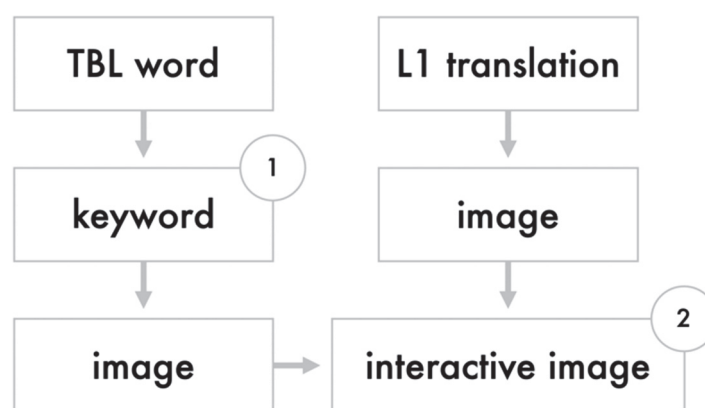


Figure 1. Visualizing the Keyword Method: the acoustic link (1) and the imagery link (2).

### 1.3. The Imagery Link

The Imagery link, stage two, involves creating an image of the keyword somehow interacting with the L1 meaning. The more vividly this image can be visualized, the more effective it will be (Levin, 1981). The example keyword, *kangaroo*, is a concrete noun, and so should be easy to visualize, making it a good keyword (Raugh, Schupbach & Atkinson, 1977), but the verb *think* is an abstract concept. When creating an image for an abstract concept, it helps to use a concrete symbol for the concept (Cohen, 1987; Campos, Amor & González, 2004). The first image that popped into my head for this verb was Rodin's famous sculpture, *The Thinker*. To make an interactive image between a kangaroo and the sculpture, all that needs to be done is to imagine the subject of the sculpture being a kangaroo rather than the original male figure (see Figure 2). This example is a static image, but the interactive images can be even more effective if they are in motion, like a short video clip (Shapiro & Waters, 2005). For the *think* image, this might be achieved by imagining the kangaroo walking up to Rodin's thinking man, pushing him out of the way and taking his place on the thinking rock.

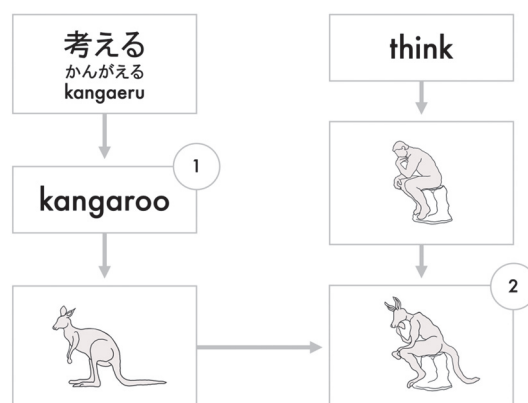


Figure 2. The Thinking Kangaroo

#### 1.4. The KWM in the Classroom

Despite there being more than 60 studies that have shown the effectiveness of using the KWM to remember L2 vocabulary when compared to rote repetition (Sommer & Gruneberg, 2002), the KWM is not often used in foreign-language classrooms (Oxford & Crookall, 1990). Rote repetition, which simply involves repeating information over and over again either orally or visually, is a strategy that involves shallow cognitive processing (Sagarra & Alba, 2006). It is the educational paradigm in Japan (Fewell, 2010), and has been found to be the most commonly used vocabulary strategy among Australian university students (Lawson & Hogben, 1998), so it is not unreasonable to expect that Japanese university students would also favour rote repetition as a vocabulary-learning strategy. It would appear that the KWM, which requires deeper cognitive processing, is unlikely to be used by students unless they are explicitly shown how to use the technique (Sagarra & Alba, 2006)

While teaching in a digital-classroom environment at a university in Japan between 2014 and 2019, I developed and implemented the Digital Keyword Method to help students learn low-frequency English words. This iteration of the KWM involved students collaboratively creating keyword sentences with Google Docs, using image-manipulation software to create images for their ideas, and sharing them in an online learning community using Instagram (Sustenance, 2018; Sustenance, 2019).

#### 1.5. The Current Study

When I moved to the north of Japan and back into a traditional classroom environment, I adapted the Digital Keyword Method into an analog version (Sustenance, 2022). The results of a pilot study that used a one-group pretest-posttest design with 69 Japanese second-year university students showed a significant increase in vocabulary scores at the end of the semester. This suggested that an adapted version of the Digital Keyword Method may be an effective way of teaching vocabulary in an analog classroom environment, but there were a lot of questions, primarily concerned with student perceptions of the method, that were left unanswered.

Seven years after the publication of Atkinson's seminal 1975 paper on the KWM, Pressley et al. (1982). commented that the majority of the KWM research had followed Atkinson's lead and focused on quantitative pre- and post-test analysis. More than forty years later, it seems little has changed, with Zhang and Reynolds (2023) lamenting that

“qualitative research findings on the effectiveness of the KWM scarce” (p. 2). An extensive, yet not exhaustive, literature review, unearthed only five studies that had any qualitative aspect.

Of these five studies, four used questionnaires, and one used post-hoc interviews. Wyra and Lawson (2018) was the only study that did not also include quantitative analysis of pre- and post-tests, and was also the only one to not explore learners’ perceptions of using the method. The researchers used an open-ended questionnaire to explore participants’ strategy and meta-strategy knowledge after training in the KWM. Zhang and Schumm (2000) asked their Spanish L1 participants to complete a post-intervention survey designed to explore their reactions to the KWM after they had used the technique to study English in an ESL context. Sommer and Gruneberg (2002) used five Likert-scale statements and an open-ended free response section to assess the perceptions of English L1 high school students who had used the KWM to study French, while Taguchi (2006), who used the KWM to teach Japanese vocabulary to students with English as their L1, included a questionnaire with an open-ended question to probe students’ perceptions. Finally, Zhang and Reynolds (2023) conducted post-hoc interviews after a delayed post-test with Mandarin L1 students learning English.

No studies related to the perceptions of Japanese EFL learners using the KWM were found. The mixed-methods questionnaire that will be discussed below was designed to explore Japanese university EFL learners’ perceptions of using the KWM in a language classroom. In addition to filling a gap in the literature, it is hoped that the results will help inform pedagogical choices that can lead to improved learning outcomes for students.

## **2. Method**

### **2.1. Participants**

Four intact English Communication classes from the Department of Creative Engineering at a national university in the north of Japan participated in this research. Of the 80 students (male = 73, female = 7) enrolled in the required second-year course, 73 students completed the questionnaire.

### **2.2. Instructional Process**

The instructional process used was almost the same as that used in the pilot study (Sustenance, 2022). Students in the one-semester course were introduced to the KWM in week 3, and practiced making their own keyword sentences in week 4. At the end of that class, they were given Vocabulary List 1 (see Appendix A) and asked to think of ways to remember the words for homework. In the next class, they had time to share their ideas; first by speaking with a partner, and then with the class by writing them on the blackboard. After that, they were shown Digital Keyword Images for each word using PowerPoint and a projector. They were also given access to a PDF of the keyword images using Moodle, the learning management system used at the university. At the beginning of the next week, there was a receptive vocabulary quiz (students had to write Japanese translations for 8 English words), and then the students were given Vocabulary List 2 and the process began again. Over the course of the semester, students studied 40 words (see Appendix B). They were also given some spaced repetition review sessions during weeks 8, 11 and 13 (but none of the pre- and post-test words were reviewed in week 13).

There were some differences to the pilot study that are worth noting. Unlike the pilot study, all classes were held in the classroom in a Face-to-Face (F2F) environment, which enabled the final vocabulary quiz and the post-test to occur during different classes. One of the words on the post-test, *partial*, was moved from Vocabulary List 5 to Vocabulary List 3 to ensure that all pre- and post-test words were presented before the midway point of the semester. Also, the vocabulary quizzes were cumulative, meaning that each quiz consisted of 8 words chosen from the words that had been studied up until that point in the semester (i.e. the first test included all of the words from list 1, whereas the final quiz had 8 words taken from a total pool of 40 words).

### 2.3. Questionnaire

The questionnaire was completely anonymous, meaning that students did not write their names or student numbers on the form. Participation was voluntary and non-participation had no effect on their final grade. This was written on the questionnaire in Japanese and also explained verbally in English. The questionnaire, which was administered at the end of the last class of the semester (week 15), took between 5 - 10 minutes to complete, and students were asked to place their questionnaires in a box near the door on their way out. To encourage participation and ensure that the questions were understood, the questionnaire was administered in Japanese (see Appendix C). The two-page questionnaire consisted of three parts.

Part 1 dealt with demographic data. As this was an anonymous questionnaire, the only demographic data that was collected was a self-reported TOEIC score. Participants were able to opt out of this question if they so desired by choosing either *I don't know*, or *I'd prefer not to say*.

Part 2 and Part 3 were concerned with students' perceptions of the KWM. Part 2 consisted of ten statements, and students were asked to respond by circling a number on a six-point Likert scale. Response options ranged from *Strongly Disagree* (SD) through to *Strongly Agree* (SA). In between these two extremes, students could also choose *Disagree* (D), *Somewhat Disagree* (SWD), *Somewhat Agree* (SWA), or *Agree* (A). The even number of response options was chosen to prevent respondents using a neutral option to "avoid making a real choice" (Dörnyei, 2003, p.37), and force a directional choice, either in agreement or disagreement (Heiberger & Robbins, 2014). The last section of the questionnaire, Part 3, gave students an open-ended chance to express their opinions about the KWM. They were free to write in Japanese.

## 3. Results and Discussion

### 3.1. Part 1 - Self-reported TOEIC Scores

The only demographic data collected was a self-reported TOEIC score. Table 1 shows a summary of the scores. In order to be able to graduate from the university, students must achieve a TOEIC score of at least 300 by the end of their third year.

In April of their first year, all students take a TOEIC IP test. Even though this took place only a little over a year (16 months) before the participants completed the questionnaire, eight students reported that they did not know their TOEIC score. Despite the questionnaire being completely anonymous, three students stated that they didn't want to disclose

their score. Of the remaining 62 students, an overwhelming majority of the students (80.6%, n=51) fell in between the 251 and 600 score levels. Six students (9.7%) reported scores below 250, and five students (8%) had scores between 601 and 900. No students reported a TOEIC score above 900.

Table 1. Self-reported TOEIC scores of the participants.

TOEIC score	Number	%	TOEIC score	Number	%
0 - 250	6	9.7%	601 - 780	3	8%
251 - 400	31	82.3%	781 - 900	2	
401 - 600	20		901 - 990	0	-

### 3.2. Part 2 - Likert-Scale Statements

Figure 3 shows the responses to the ten Likert-scale statements (translated into English) in a diverging stacked bar chart. This type of chart is ideal for presenting a summary of Likert-scale data (Heiberger & Robbins, 2014), and allows a quick overall impression to be made. The x-axis has positive numbers on both sides of the vertical zero reference line. This line (0%) is between SWD and SWA, meaning that all of the responses to right of 0% are positive responses (SWA, A or SA) and those to the left are negative (SWD, D or SD). Moving outwards from the reference line, the darker the colour, the stronger the disagreement, and conversely the lighter the colour, the stronger the agreement. In the following sections, the results and pedagogical implications for each of the ten statements will be looked at in more detail.

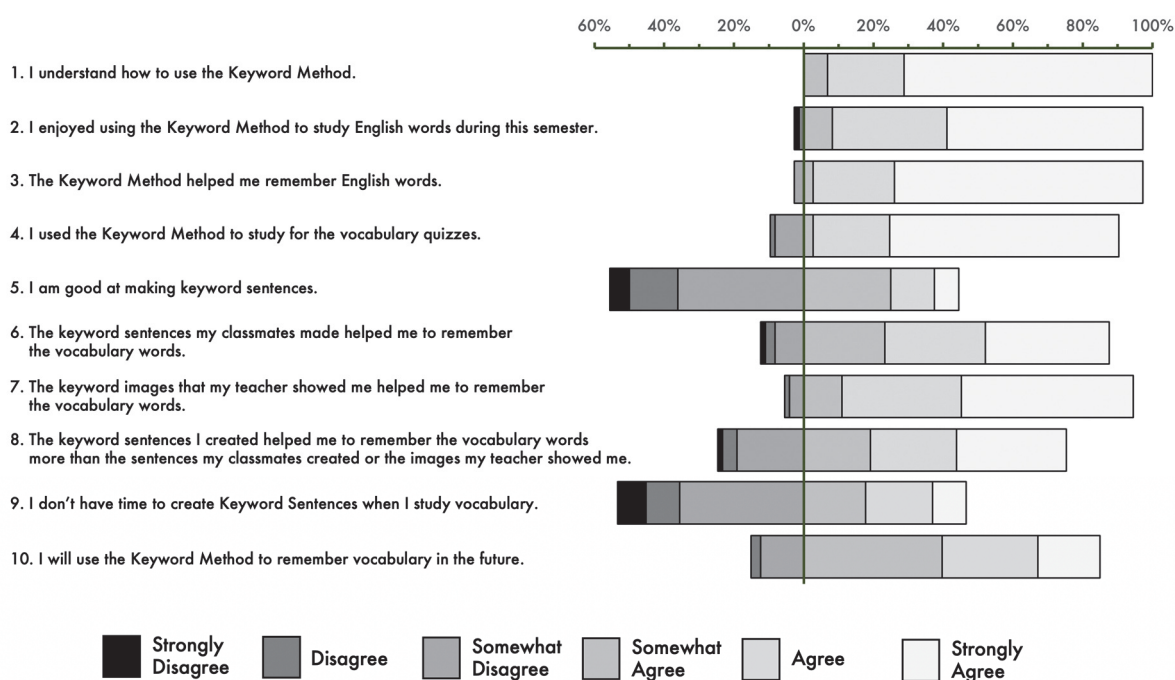


Figure 3. Responses to the ten Likert-Scale Statements.

### 3.2.1. I understand how to use the Keyword Method.

Language learning strategies have been shown to improve the outcomes of learners (Wyra & Lawson, 2018). However, merely attempting to use a learning strategy does not, in itself, guarantee successful use of the strategy (Pressley, Levin, Kuiper, Bryant & Michener, 1982). One of the goals of the 15-class, one-semester course, was to teach students how to use the KWM. Students learn not only from instruction by the teacher, but also by using the strategy (Wyra & Lawson, 2018). It was assumed that many of the students would not have used the KWM before (in fact, five of the participants said exactly that in their comments in Part 3) so the course was designed to incorporate both instruction, and also ample time for students to experiment with creating keyword sentences and using the KWM. Over 93% of respondents (n=68) either agreed or strongly agreed that they understood how to use the KWM, so the pedagogical choices seem to have been successful.

### 3.2.2. I enjoyed using the Keyword Method to study English words during this semester.

A large majority of students (97.2%, n=71) responded positively to the statement “I enjoyed using the Keyword Method to study English words during this semester”. These results, are similar to those found by Zhang & Schumm (2000) and may be related to the elements of play inherent in the technique (Cohen, 1987). In the comments in Part 3, eight participants mentioned that using the KWM was fun, and one student went into more detail, stating that being able to talk about and share their ideas with their classmates was the most enjoyable part.

Only two students (2.8%) did not enjoy using the KWM to study English words during the semester. Cohen (1987) states that some students believe language learning should be a serious undertaking, and mnemonics were, for a long time, simply thought of a gimmick. It is possible that these two students felt the same way.

### 3.2.3. The Keyword Method helped me remember English words.

Table 2. Perceived effectiveness of the KWM based on TOEIC scores

Likert Scale Responses	TOEIC scores				
	0-250	251-400	401-600	601-780	781-900
Strongly Disagree					
Disagree					
Somewhat Disagree	1			1	
Somewhat Agree		1			
Agree	1	7	2	1	2
Strongly Agree	4	23	18	1	

There were two students who disagreed that the KWM helped them to remember English words. The shaded areas of Table 2 show that one of those students had a TOEIC score of less than 250 (relatively low) and the other one was in the TOEIC 601 – 780 range (relatively high). If the literature, which suggests that the KWM is more suited to lower-

level learners (Brown & Perry, 1991; Hall, Wilson & Patterson, 1981; Van Hell & Mahn, 1997), is to be believed, we would expect no disagreement in the lower levels, and more disagreement in the higher levels. Although the number of people not in the 251 – 600 range was a small sample size (n=11), based on these results, it would appear that the KWM can be an effective strategy for learners at any level.

Themes related to how much the KWM had helped students study vocabulary made up the majority of the comments in Part 3 of the questionnaire. Students remarked that the KWM was effective (n=37), made the words easy to remember (n=23), worked better than rote repetition (n=8), helped words stay in their memory for longer (n=6), and was better than expected (n=4). Some of the students (n=3) who felt that the KWM had helped them, also mentioned that they had doubted whether the technique would be effective when first introduced to it. Three students also took the opportunity to thank me for teaching them the KWM.

#### **3.2.4. I used the Keyword Method to study for the vocabulary quizzes.**

Over the course of the semester, there are five receptive vocabulary quizzes. Students are required to write a Japanese translation for eight English words. These quizzes are cumulative in nature, and therefore become progressively more difficult as the semester progresses. For Vocabulary Quiz 1, students only need to know translations for eight words, something that could easily be achieved by rote repetition. However, by Vocabulary Quiz 5, there are 40 words that could potentially be on the quiz. Mnemonic techniques tend to become more effective as the material to remember becomes more difficult (Levin, 1981), which may account for the high number of students (n=66) who responded *Somewhat Agree* (n=2), *Agree* (n=16) or *Strongly Agree* (n=48) when asked if they used the KWM to study for the vocabulary quizzes. The fact that so many students decided to use the KWM might suggest a dissatisfaction with rote repetition as a vocabulary-learning strategy.

Of the 73 participants who answered the questionnaire, only seven students (9.6%) didn't use the KWM to study for the bi-weekly vocabulary quizzes. If rote repetition is the dominant paradigm in the Japanese educational system (Fewell, 2010), it would be reasonable to assume that most of the participants in the study, students at a national university, have successfully used rote repetition to achieve considerable success in their educational careers to date. The fact that 87.7% of students appear to have changed their preferred style of studying surely speaks volumes for the perceived effectiveness of the method.

The comments in Part 3 were not as overwhelmingly in support of the KWM. Although three students mentioned that they had used it either while studying for or during the quizzes, four students said that they only used the KWM as a last resort, when their usual strategies didn't work. This is actually in line with how the KWM was originally intended to be used. It was not designed to be a panacea for all vocabulary-learning ills (Pressley et al., 1982), but rather, it was intended to be used in a complementary role (Sommer & Gruneberg, 2002).

#### **3.2.5. I am good at making keyword sentences.**

In a classroom environment, there are three ways in which keyword sentences can be created. They can be made by the individual student, by their classmates, or they can be provided by the teacher. In the literature, these three methods are referred to as self-generated, peer-generated and experimenter-provided respectively (Campos et al., 2004). There



is a lack of consensus as to which method is the best (Sagarra & Alba, 2006). Experimenter-provided keyword sentences have the advantage of expediency (Cohen & Aphek, 1980) and quality (Levin, 1981), whereas keyword sentences created by the students themselves, will have a personal meaning, and so may be more memorable (Campos et al., 2004).

As Figure 4 shows, the distribution of responses to statement 5 approximates a normal distribution, with 61.1% (n=44) of students either choosing *Somewhat Disagree* (36.1%, n=26) or *Somewhat Agree* (25%, n=18). The number of students who disagreed with the statement (13.9%, n=10) and those who agreed that they were good at making Keyword Method sentences (12.5%, n=9) almost mirrored each other, as did the respondents who chose either *Strongly Disagree* (5.6%, n=4) or *Strongly Agree* (6.9%, n=5).

According to Cohen (1987), some students are better able to “conjure up visual images” (p.49), and so would be more likely to want to use the KWM. The fact that so many students enjoyed using the KWM and found it helpful (Statements 2 and 3 respectively), but more than half (n=40) of them did not think that they were good at making keyword sentences (five students explicitly stated that the sentences were hard to make in their Part 3 comments) seems to underline the need for including both peer-generated and experimenter-provided examples when attempting to use the KWM in the classroom.

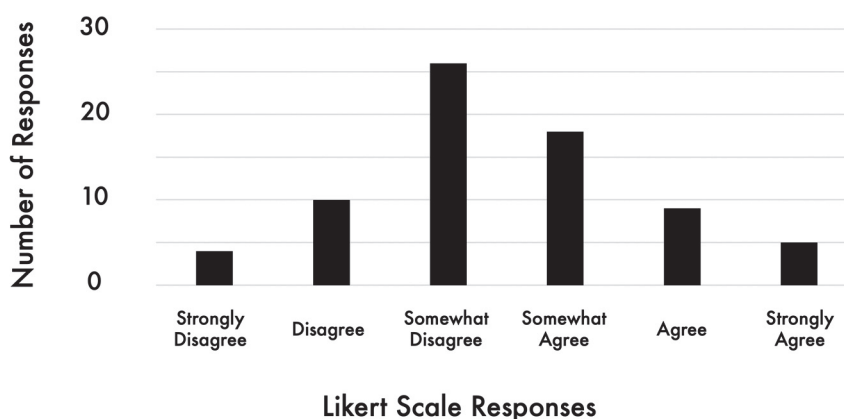


Figure 4. I am good at making keyword sentences.

### 3.2.6. The keyword sentences my classmates made helped me to remember the vocabulary words.

Theoretically, peer-generated sentences, which are created by students with “similar demographic characteristics” (Campos et al., 2004, p.125), have the potential to encompass the best elements of self-generated and experimenter-provided sentences. This is because peers are more likely to have similar interests, knowledge and life experiences, and it is unlikely that a student will want to share a sentence with the class unless they believe it will be well-received.

64 students (87.7%) responded affirmatively to the statement that keyword sentences made by their classmates helped them to remember the vocabulary words (see Table 3). There were two ways that students could be exposed to keyword sentences made by their classmates. At the start of the class after they were given a vocabulary list, students had two minutes to discuss their ideas in pairs with the person seated next to them. They were then given the chance to share their ideas (and earn participation points) by writing their ideas on the blackboard. Presumably, the 33 students

who self-reported being good at making keyword sentences were creating sentences that resonated with the 40 students who believed they were not good at making keyword sentences.

### 3.2.7. The keyword images that my teacher showed me helped me to remember the vocabulary words.

As shown in Table 3, of the three methods for generating keyword sentences, the experimenter-provided keyword sentences had the most *Strongly Agree* responses ( $n=36$ ), and the least negative responses ( $n=4$ ). These keyword sentences, which also contain images to help explain the sentences and make the inherent multimodality of the KWM more apparent for the learners, were curated from a collection of 675 images that make up a free online archive of Digital Keyword Method images (Sustenance, 2023b). They were shown to students during class using a PowerPoint presentation and a projector and made available as a PDF on the Moodle page of each class. Although the images provided by the experimenter were created by students at a university in Japan, it can be argued that the creators do not share similar demographic characteristics with the students in the current study, because the current students are up to seven years younger, have a science rather than a humanities educational background, and the gender split of the cohorts is almost the opposite.

### 3.2.8. The keyword sentences I created helped me to remember the vocabulary words more than the sentences my classmates created or the images my teacher showed me.

The responses to Statement 8 (see Table 3), regarding whether self-generated sentences were the most effective, showed the most variety out of the three keyword-sentence generation techniques. 38.4% of students ( $n=28$ ) were in the *Somewhat* category, with equal numbers ( $n=14$ ) on both sides of the *Agree* and *Disagree* divide.

Table 3. Peer-Generated, Experimenter-Provided and Self-Generated KWM sentences.

Likert Scale Responses	Statement 6		Statement 7		Statement 8	
	No.	%	No.	%	No.	%
Strongly Disagree	1	1.4	4	0	1	1.4
Disagree	2	2.7		1.4	3	4.1
Somewhat Disagree	6	8.2	4.1	14	14	38.4
Somewhat Agree	17	87.7	8	11		
Agree	21		25	34.2	18	24.7
Strongly Agree	26	36	49.3	23	31.5	

Spearman's rank correlation was calculated to determine any relationship between these responses and those for Statement 5 (*I am good at making keyword sentences*). The results indicated a statistically significant positive correlation between the two sets of responses, ( $\rho = .439$ ;  $df = 70$ ;  $p < .001$ ), suggesting that students who are able to make good sentences will be more likely to think that self-generated sentences are effective, whereas students who are not good at

making keyword sentences will feel the opposite. In Part 3, four students mentioned that self-generated keyword sentences were easier to remember, and one student went so far as to say that non-self-generated keyword sentences (i.e. peer-generated and experimenter-provided) were actually detrimental to their vocabulary learning. Regardless of the method chosen, both links (acoustic and imagery) must be meaningful to the learner for the KWM to be successful (Oxford & Crookall, 1990).

### **3.2.9. I don't have time to create Keyword Sentences when I study vocabulary.**

Opinions about whether students had enough time to create keyword sentences when they studied were split relatively evenly across five of the six possible responses, with *Somewhat Disagree* being the only outlier (n=26). Compared to rote repetition, a strategy which has very low time barriers to entry (students merely have to repeat the word over and over again), the KWM can, at first, seem like a time-consuming process (Van Hell & Mahn, 1997), a point that was mentioned by four students in their Part 3 comments. A counter argument to this is that, while the creation of the keyword sentence may take time, if done well, creating the keyword and interactive image only needs to be done once, whereas rote repetition must be an ongoing process if the word is to remain in the memory. Therefore, in the long-term, using the KWM may actually take less time than rote repetition.

Despite this, a lot of students do seem to perceive that they don't have time to use the KWM, and these perceptions become their reality. The creation of a free online archive of Digital Keyword Method images (Sustenance, 2023b), was partly inspired by a desire to assist the time-poor student. The archive consists of 675 images for 350 English words, 215 of which appear on the TOEIC Service List (Browne & Culligan, 2016). This website ([www.kwmjpn.weebly.com](http://www.kwmjpn.weebly.com)) was introduced to the students at the end of the last class of the semester, just before distributing the questionnaire.

### **3.2.10. I will use the Keyword Method to remember vocabulary in the future.**

It is possible that the responses to this statement may have been influenced by students finding out about the online archive only minutes earlier, but the fact that 62 students (84.9%) showed positive attitudes towards using the KWM in the future is encouraging as an educator. Eight students also took the time to express that they wanted to continue using the KWM in their Part 3 comments. These positive results echo those of Zhang and Schumm (2000), who also found that a majority of students stated they would use the KWM in the future. However, Thomas and Yang (1996) claim that people rarely continue to use mnemonic techniques in their day-to-day lives when left to their own devices.

Over the semester, students were shown a new technique and given ample time to become accustomed to using it with no penalties for continuing to use rote repetition. The main goal of introducing the KWM into the English Communication course was to show students that rote repetition is not the only possible strategy when it comes to studying L2 vocabulary. It might be interesting to check back with the students in one- or two-years' time to see how many students are actually still using the KWM and how often they are using it.

## **3.3. Part 3 - Open-ended opinions**

A total of 66 out of the 73 participants (90%) availed themselves of the opportunity to write about their experiences using the KWM. All but two of these responses were written in Japanese. The comments were analysed using an

open coding technique (Creswell, 2012). First, I read through all of the comments once to enable me to get close to the source data. I then read through them again and looked for common themes. In total, I identified 20 individual themes. 16 of those themes (see Table 4) were related to the ten Likert-scale statements in Part 2, and have already been discussed in the relevant sections. The remaining four themes will be discussed in the following sections.

Table 4. Themes related to the ten statements.

Statement Number	Themes related to the statements	Number of comments	Statement Number	Themes related to the statements	Number of comments
1	1 <sup>st</sup> experience	5	3	Had doubts at first	3
2	Fun	8		Thank you	3
	Pair work	1	4	Last resort	4
3	Effective	37		Quizzes	3
	Easy to remember	23	5	Hard to make	5
	Better than rote repetition	8	6	Self-generated are best	4
	Long-lasting	6	9	Takes time	4
	Better than expected	4	10	Use it in the future	8

### 3.3.1. Some words work better than others.

Lawson and Hogben (1998) noted that students might have difficulty using the KWM for some words. Three students echoed this statement when they made the observation that some words seem to work better than others. One possible reason for this might be related to the acoustic link. It is not easy to think of a keyword for every L2 word that is encountered (Beaton et al., 2005). This might be due to the phonetics of the TBL word, but it might also be related to the creativity of the student (Levin, 1981). The imagery link might also be a source of problems.

Table 5. Word types used in the current study

Word Type	No.
Nouns (concrete)	6
Nouns (abstract)	7
Verbs	17
Adjectives	10
Adverbs	1

Although Beaton et al. (2005) believe that “effective keywords images can be found for very many words of any given language” (p. 467), Cohen and Apeh (1980) argue that not all words are created equally when it comes to ease of association. The more easily a word can be visualized, the easier it should be to create an interactive image in the imagery link (Van Hell & Mahn, 1997). This relates to both the keyword and the L1 translation. Words that have a

more direct link to sensory experience (concreteness) and can “arouse nonverbal images” (imageability) are thought to be the most beneficial (Sagarra & Alba, 2006, p. 230). This has led to the suggestion of a hierarchy of word types that work best with the KWM; nouns at the top, followed by verbs, and then adjectives (Cohen, 1987). However, Table 5 shows a breakdown of the types of words that were used in the current study (see Appendix B for a more detailed list). Rather than the word type, the main prerequisite for selection of the words was that they have at least one, preferably more, example keyword image that could be shown to students in the case that they, or their classmates, were unable to think of a keyword sentence themselves.

### 3.3.2. Words become images.

Visual imagery is the key to the KWM (Shapiro & Waters, 2005), and the Digital Keyword Method was developed as a way to explicitly teach this point. Students using the analog version of the Digital Keyword Method, such as those in this study, do not create images for their sentences, but a good keyword sentence is inherently multimodal, and should create an interactive image in the mind’s eye of the reader (Beaton et al., 1995). Three students mentioned that the words were becoming images in their minds, which indicates that they were able to grasp the essence of the technique, and seems to vindicate the pedagogical process, at least for those three students. Further research, via semi-structured interviews for example, might shed even more light on how to further improve the teaching process so that all students are able to *see* the keyword sentences.

### 3.3.3. I wish I’d known earlier.

Two students wrote that they wish they had known about the KWM earlier in their academic careers. One student only mentioned high school, but the other student said that even in junior high school or elementary school it would have been beneficial because they would have enjoyed studying vocabulary and probably would have done better in their English classes. The ability to “profit from a self-generated visual strategy” is developed by the 5th grade of elementary school (Pressley & Levin, 1978, p. 360), meaning that it would be possible to add the KWM into the curriculum of Japanese schools from the late elementary level. All that is needed is enough motivation from those in charge of policy to decide to offer an alternative to rote repetition.

### 3.3.4. Spelling.

One student mentioned that the Keyword Method helped them with spelling. Traditionally, keyword sentences contain no direct link to spelling (Pressley et al., 1982), but I was able to draw on the work of memory athletes (Foer, 2011) and my own experience studying *kanji* (Sustenance, 2023a) to create a method of using famous people to incorporate “the critical aspect of a word’s spelling” (Cook, 1989, p. 18) into a keyword sentence. I introduced this to students in week 10 of the semester with the word *Aisle*. As the *s* in *Aisle* is silent, it could potentially be an issue for students when they try to write the word. I suggested adding a famous person or famous character with a name beginning with *S* to the keyword sentence to help remember the spelling. Students came up with many possibilities (eg. Spiderman, Susan Boyle, Stitch, Steve Jobs) but we settled on Superman, because he has the added bonus of having an *S* emblazoned across his chest, which might serve as an additional visual cue.

As an example, I showed the following keyword sentence that was created by students using the Digital Keyword Method; 友達に会える通路 (*Tomodachi ni aeru tsuuro*). In this sentence, which can be translated as *An aisle where I can meet my friend*, **aeru** (*can meet*) is the keyword and tsuuro (*aisle*) is the Japanese translation. *Tomodachi*, which means friend, is the part that was replaced by Superman, so the sentence became; *An aisle where I can meet Superman*. This technique can also be expanded to include the spelling of the whole word *aisle* by adding two more celebrities to the sentence; Ai, a Japanese-American singer-songwriter, and NBA legend LeBron James; Ai と Superman と LeBron James に会える通路

## 5. Limitations

When interpreting the results of this exploration into EFL learners' perceptions of using the KWM in a Japanese university English Communication classroom, there are some limitations to the research that must be taken into account. Participants in this study had spent one semester being taught by the author, and as such should be aware of his positive feelings towards using the KWM to acquire vocabulary. It is possible that this influenced the responses that students gave. However, as the questionnaire was anonymous and had no effect on the final grade, it seems unlikely that students would avoid responses that reflected negatively on the KWM. The anonymous nature of the questionnaire also meant that there was no way to follow up on comments made in Part 3 of the questionnaire, or to assess whether students who reported using the KWM did better on the vocabulary quizzes. This is something that could be addressed in future studies.

One final consideration concerns the gender of the participants with regards to the wider population. The 73 students who completed the questionnaire came from a cohort 80 students, of which 73 were male. As the questionnaire was anonymous, it not possible to know the exact gender breakdown, but at most, there would be only 7 responses from female students.

## 6. Conclusion

The questionnaire used in this study was designed to explore student perceptions towards using an adapted version of the Digital Keyword Method in an analog classroom in a Japanese university context. Although it may take some time to teach this novel approach to vocabulary acquisition, showing many examples from the free online archive and giving students the opportunity to practice the technique, both in the classroom in pairs and outside of the classroom by themselves seems to be a successful and engaging way of teaching the strategy, as the majority of students reported both understanding and enjoying the activity. Despite the majority of students, regardless of language ability, stating that the KWM was an effective technique, the self-reported ability to create effective keyword sentences varied greatly among the participants. In contrast, peer-generated keyword sentences were reported to be helpful for 87.6% of the respondents, which suggests that finding ways to increase the pool of peer-generated keyword sentences could lead to better learning outcomes for those students who are not good at creating self-generated keyword sentences.

One potential problem with the method of eliciting peer-generated keyword sentences used in this study is the self-selection process of sharing ideas with the class. It might be that the more confident students, or those people who value participation points, are more likely to be the ones who are prepared to share their ideas, while the creative endeavours

of less confident students are resigned to the keyword-sentence scrapheap after being shared with only one other class member during the pair-work activity. One way to avoid this might be to allocate participation points to students who submit keyword-sentence ideas via a platform such as Google Forms prior to the class. The teacher could then anonymise and collate these ideas and distribute them during class or via Moodle as a PDF. This should increase the number of peer-generated keyword sentences that students have to choose from, thereby increasing the likelihood that they will find one that appeals to them.

Based on an analysis of the results of a mixed-methods questionnaire that was completed by 73 Japanese students, it can be concluded that attitudes towards the vocabulary-learning strategy were overwhelmingly positive. This seems to suggest that incorporating the KWM into a foreign-language classroom might be beneficial for students who are not majoring in English.

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**Author's Information:**

Name: Scott Sustenance

Faculty, Institute or Company: Muroran Institute of Technology

Email: [sustenance@muroran-it.ac.jp](mailto:sustenance@muroran-it.ac.jp)

Appendix A. Vocabulary List 1

English	Japanese	Katakana Sound
Apology	謝罪	アポロジ
Auditor	会計検査官	オーデター
Criteria	判断の基準	クライテリア・クライテリヤ
Economy	経済	イコノミ
Forbid	禁じる・禁止する	ファビド・フォビド
Partial	部分的な・一部の	パーシャル
Similar	同様の	シミラ
Transform	変形する	トランスフォーム

## Appendix B. List of 40 words studied during the semester.

List	English	Japanese	TOEIC Service List 1.1	Noun (Concrete)	Noun (Abstract)	Verb	Adjective	Adverb
5	Activate	活性化する・活動的にする	○			○		
4	Aisle	通路	○	○				
1	Apology	謝罪	○		○			
5	Attain	達成する・獲得する	○			○		
1	Auditor	会計検査官	○	○				
2	Authority	権限・権威	○		○			
4	Calculate	計算する				○		
4	Cargo	貨物・積荷	○	○				
3	Convey	運ぶ・伝える	○			○		
1	Criteria	判断の基準	○		○			
5	Deduct	差し引く・控除する	○			○		
2	Demolish	破壊する	○			○		
4	Detach	取り外す	○			○		
2	Durable	長持ちする・丈夫な・耐久力のある	○				○	
3	Eager	熱心な・熱望する	○				○	
1	Economy	経済			○			
4	Embed	埋める・埋め込む	○			○		
2	Enroll	名前を登録する・入会する	○			○		
3	Flaw	欠点	○	○				
1	Forbid	禁じる・禁止する	○			○		
4	Humid	むしむしする					○	
5	Hygiene	衛生	○		○			
3	Mandatory	強制的な	○				○	
2	Merge	合流する・合併する	○			○		
2	Obtain	手に入れる・得る	○			○		
3	Obvious	明らかな					○	
1	Partial	部分的な・一部の	○				○	
3	Permanent	永久的な・永久の					○	
4	Recipient	受取人	○	○				
5	Recruit	募集する・新入社員・雇う		○		○		
3	Repetition	繰り返し	○		○			
3	Resemble	似ている	○			○		
1	Similar	同様の					○	
5	Strategic	戦略の	○				○	
4	Sue	訴える	○			○		
2	Tactic	戦術	○		○			
5	Temporarily	一時的に	○					○
1	Transform	変形する				○		
2	Tremendous	ものすごい・巨大な	○				○	
5	Verify	検証する・確かめる				○		

Appendix C. Questionnaire - Japanese

キーワード法

後期に英単語を覚えるためにキーワード法 (The Keyword Method) の使い方を習いました。この調査用アンケートは、キーワード法をよりよく理解するためのものです。任意の物です。これはテストではありませんので、「正解」も「不正解」もなく、名前を記入する必要はありません。5分間ぐらいで終わると思います。正直にお答えいただくことが不可欠ですので、どうぞよろしくお願いたします。ご協力ありがとうございます。

調査用アンケートを記入しますか。  はい  いいえ

パート1

一番最近の TOEIC 試験 のスコアはどの程度ですか。

<input type="checkbox"/>	0 - 250	<input type="checkbox"/>	601 - 780	<input type="checkbox"/>	分からないです。
<input type="checkbox"/>	251 - 400	<input type="checkbox"/>	781 - 900	<input type="checkbox"/>	教えたくないです。
<input type="checkbox"/>	401 - 600	<input type="checkbox"/>	901 - 990		

パート2

あなたがどのぐらい下記の文章の内容に共感するか示してください。

例：もしあなたが文章の内容に非常に共感する場合、次のように記入します。

全く そう思わない	そう思わない	あまり そう思わない	やや そう思う	そう思う	非常に そう思う
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6

あなたがどのぐらい下記の文章の内容に共感するか示してください。

例：もしあなたの考えが次の内容に非常に共感できる場合、次のように記入します。

1. サークルが面白いです。  1  2  3  4  5  6

全く そう思わない	そう思わない	あまり そう思わない	やや そう思う	そう思う	非常に そう思う
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6

あなたがどのぐらい下記の文章の内容に共感するか示してください。

1. キーワード法の使い方が分かります。
2. 前期にキーワード法を使うのが楽しかったです。
3. キーワード法が英単語を覚えるのに役に立ちました。
4. 「Vocabulary Quiz」(小テスト)の勉強の時、キーワード法を使いました。
5. キーワード法の文章を作るのが上手です。
6. 先生が作ったキーワード法の文章が英単語を覚えるのに役に立ちました。
7. 先生が見せてくれたキーワード法のイメージが英単語を覚えるのに役に立ちました。
8. 自分で作ったキーワード法の文章は先生が作ったキーワード法の文章や先生が見せてくれたキーワード法のイメージより英単語を覚えるのに役に立ちました。
9. 単語を勉強する時、キーワード法の文章を作る時間がないです。
10. 今後はキーワード法を使います。

パート3

キーワード法についての感想を聞かせてください。(日本語で書いても構いません。)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_