

English Vocabulary Learning with Simplified Pictures

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Abstract

Learning the words of a language is crucial to successful language learning. The study reported in this article aimed to investigate the potential for simple images to be used in foreign language vocabulary learning. English words presented in either first language form or simple pictorial form were used as cues for recall in classroom and self-learning situations. The study was conducted in an existing course at a Japanese university with two classes of all female participants. Language performance was tested with pre-tests, post-tests and weekly tests. Attitudinal responses were received from a questionnaire and focus group discussions. The results of the study indicate that words presented pictorially had a higher rate of recall than words presented in Japanese, implying that simple pictorial forms were a positive influence upon learning. The concrete and the emotional quality of the target words were shown to be a major influence upon vocabulary recall. Attitudinal responses to learning with the pictures were generally positive, with the main criticism being that some images were difficult to understand. It is suggested that simple pictorial forms have potential as an alternative and/or supplemental method of learning and teaching English vocabulary.

Keywords: *English as a foreign language, vocabulary learning, abstract words, concrete words, images*

Can Pictorial Images Enhance Lexical Acquisition?

Teaching a second/foreign language (L2/FL) often includes the presentation and explanation of new vocabulary in written form and in spoken form, involving both the target L2/FL and the learner's first language (L1). Another means of presenting words (particularly which does not require the understanding of a linguistic code) is pictorially representing the concept of the words analogous to their referent. Textbooks and learning software are full of graphic representations (e.g., diagrams, drawings, photographs) helping the material to be interesting and understandable, and thereby assisting learners in the comprehension of L2/FL. While some words including concrete nouns (e.g., *tree*) are relatively easy to picture, representing words

with abstract and complex meanings (e.g., *irony*) can be pictorially far more difficult. The assertion that “not all words are picturable” (Nation, 2013, p. 449) appears to highlight the limitations of using pictures to teach vocabulary. However, research into the potential of using images to learn L2/FL vocabulary appears warranted, as, despite the inherent difficulties of expressing vocabulary items in pictorial form, it is still possible for pictures to convey meaning effectively. This study investigates the potential for using picturized words as a learning resource in instructional settings, and by doing so examine their capacity to express word meaning for the purpose of L2/FL learning and teaching.

An explicit (deliberate and intentional) approach continues to be acknowledged as an important and valuable component of L2/FL vocabulary learning (Folse, 2004; Hulstijn, 2001; Nation, 2013). The benefits of learning foreign vocabulary explicitly using mobile applications has been demonstrated in a variety of learning situations, as with students in Taiwan learning English (Hung, 2015) and students in Malaysia learning Mandarin (Chua et al, 2020). Explicit learning of English vocabulary in Japan is pervasive as language testing for purposes such as university entrance exams and proficiency tests requires the recall of long lists of target words. However, Japanese learners of English as a foreign language (EFL) identified the learning of vocabulary as having been one of their main concerns with regard to their studies (Gu & Johnson, 1996; Lawson & Hogden, 1996). Despite the benefits of learning English words explicitly, many Japanese EFL learners appear to hold a negative view of their English vocabulary study (Kikuchi, 2009).

This study explores the potential for pictures to be used in explicit EFL learning in classroom and self-learning settings. A program using a learning technique requiring multiple recalls from cues (pictographic images) was incorporated into an existing course in a Japanese university, with a subsequent evaluation made of the intervention based upon the resulting language performance and attitudinal outcomes of participants. The English vocabulary studied were mostly academic vocabulary with abstract and complex meanings, and therefore not restricted to more easily picturable concrete words. Unlike other studies that represent abstract words with pictures (e.g., Shen, 2010), the study did not test a theoretical model or a specific effect but focused more on a long-term instructional program. Language performance was evaluated by testing the participants’ ability to successfully recall words previously introduced and studied within the learning program. The main aim of language testing was to establish whether the program was beneficial, detrimental, or comparative with learning English vocabulary in L1 (Japanese) form. The participants’ responses to learning with the study’s pictorial cues included their thoughts, attitudes and opinions of materials and activities that utilized the images, and towards the images themselves referred to as Simplistic Pictorial Representations (SPRs). With motivation being a key factor in L2 acquisition (Ellis, 1994), establishing whether and to what degree the participants responded positively or negatively to the study’s vocabulary learning program was viewed as essential in assessing the program’s potential as an aid to learning.

Theoretical Models of Memory and Cognition

Theoretical models of memory and cognition suggest that presenting vocabulary as pictures may be beneficial to learning. For example, dual coding theory (Paivio, 1986) proposes that verbal and non-verbal information is encoded and processed in two separate ways, with different codes being modality-specific. The addition of pictorial representations may result in vocabulary being experienced in both linguistic and visual codes (as opposed to using language

forms only) so the chance of successful learning might be increased. Similarly, the working memory model (Baddeley & Hitch, 1974) theorizes that information is received in auditory and visual channels, with auditory information processed in the phonological loop and visual information processed (represented and manipulated) in the visuo-spatial sketchpad. Presenting an illustration of a word in addition to the spoken form may have learners create a mental sketch, thereby facilitating the inclusion of visual/spatial as well as phonological processing. Given that it is generally accepted that domain specific (i.e., visual and verbal) mechanisms within the working memory exist (Wen, 2016), the inclusion of pictorial expressions of target vocabulary would appear to be advantageous to learning.

Pictorial forms may also be beneficial to learning because they can increase the degree to which learners can experience target word meaning. Craik and Lockhart's (1972) levels of processing theory is often cited to explain how L2/FL vocabulary can be processed at different levels of semantic intensity, proposing that the extent to which words are considered, understood, and related to what is already known is the main determining factor as to how words might be retained in the long-term memory. Beyond the structural and phonetic levels, picturized words appear consistent with the semantic level, which is regarded as deep processing due to the actual meaning of the word being considered. L2/FL research often emphasizes the importance of the quality of encounters with vocabulary, such as Hulstijn (2001) stating, "Learners should elaborate on a new word's form and meaning in order to facilitate retention" (p. 215), and Schmitt (2008) expressing the belief that learners should engage with words by having a range of experiences through an assortment of activities. Words presented as pictures may provide learners with an additional means by which they can interact with the target vocabulary. Leow (2015) notes how the majority of studies into depth of processing have provided evidence that deeper semantic processing does result in better retention and learning of lexical forms, which further indicates the benefits of experiencing words in pictorial form.

Teaching L2/FL Vocabulary with Pictures

Studies into teaching L2/FL vocabulary with pictures have involved a variety of methods and have shown mixed results. L2 words presented with images have been demonstrated to be retained more efficiently than without images (Kellogg & Howe, 1971; Lado, Baldwin, & Lobo, 1967). The glossing of electronic text with a combination of pictorial and textual annotations has shown positive results (Chun & Plass, 1996; Yoshii & Flaitz, 2002), and with non-electronic text (Moradan & Vafaei, 2016). However, the addition of pictures to verbal glossing of text in paper form has also been shown to be less effective upon vocabulary recall than using verbal glossing only (Boers, Warren, He, & Deconinck, 2017). The picture superiority effect (PSE) theorizes that pictures are more easily remembered than words and has been validated from a long history of research involving recall (Hockley, 2008). However, the effect has not been demonstrated with the same level of certainty when applied to experiments in FL learning, which may be due to a disparity between the processes of encoding and retrieval.

Despite the difficulties of representing words in pictorial form, pictures (unlike written text) appear of value to teaching, for they can physically resemble the words they represent. Nation (2013) values the use of pictures in L2 vocabulary learning for their capacity to "clearly represent the underlying concept" (p. 121) of a word. Pictures can express meaning and are memorable, which would seem to make them suitable aids to learning, yet the use of pictorial forms in vocabulary teaching appears limited due to their inability to accurately express complicated word meanings.

It is commonly observed that pictures are limited to representing more concrete words, due to it being difficult to visually represent abstract words which represent more intangible concepts. Previous research has shown that words easier to visualize are easier to remember than words that are not (Stevick, 1996), and concrete words are more easily remembered than abstract ones (Nelson & Schreiber, 1992). Along with dual coding theory (Paivio, 1986), the embodied approach explains this difference, proposing that concrete words (representing actual things) are more involved with physical associations based on the sensory-motor system, while abstract words (representing concepts and ideas) are more involved with emotional associations based on affective experiences (Vigliocco et al., 2014). However, it may still be possible to represent abstract words pictorially for the purposes of vocabulary learning, as concrete items associated with a concept can provide the required meaning (Oxford & Crookall, 1990). For example, the abstract word *cooperation* could be pictured as a physical act (e.g., two people lifting a box). Even if the picture is not a strong visual representation of the referent word, pictures can help learners in the understanding of abstract words, as shown by Chapelle (2003).

Using pictures to teach L2/FL vocabulary also appears to be in line with current trends in student attitudes towards learning. Wasilewska (2017) describes how technological advancement has resulted in students living in a world dominated by images, with pictures (e.g., emoticons) even being used by students as a form of communication. She believes that teachers need to accept and adapt materials accordingly by providing images that “intrigue, move, and make students laugh” (p. 45). This amenable quality of pictures has been demonstrated with students learning EFL vocabulary. In a study by Al-Ja’afari and Region (2009), for example, primary age students responded positively to learning English vocabulary with pictures, with one participant saying they liked using pictures as opposed to just listening to the teacher. In the same study, a teacher commented how he preferred using images to teach new words as pictures were more eye-catching and attention getting than just giving first language translations. It can be said that students have always been receptive to and enjoy language learning with pictures, yet in recent times it could be argued that students have become increasingly receptive to using imagery.

The Study

Aims

The study aimed to investigate the potential for simple imagery to be used in EFL vocabulary learning. To achieve this aim, the following research questions were addressed:

1. What effect do simple images have upon EFL vocabulary recall when used in classroom and self-learning situations?
2. What are students’ attitudinal responses to using simple imagery when used in classroom and self-learning situations?

Participants

Participants were all first-year female university students, between 18 and 19 years of age, enrolled in a 15-week course in a Japanese university. Japanese was their first language, except for one native speaker of Korean who was proficient in Japanese. Based on their educational background and language learning experiences, no participants could have been described as proficient or fluent speakers of English. The study involved two pre-established classes, identified as Class A and Class B. The study had a total of 49 participants in Class A ($N = 25$)

and Class B ($N = 24$). The students were separated into two classes based upon scores from a placement test conducted upon enrollment at the university. Class A was at a generally higher level of English language proficiency than Class B. In line with ethical standards, all students received a participant information sheet and completed a consent form before they participated in the study.

Data Collection Instruments

Data collection instruments included pre-tests, post-tests, weekly tests, a questionnaire and focus group discussions. All 100 target words were pre-tested in Week 2 and post-tested in Week 15 of the study's 15-week vocabulary learning program (meeting once per week). Similar to Laufer and Nation's (1999) Productive Levels Test, the first 2 or 3 letters of the required word were provided, in order to reduce the number of possible answers (e.g., "I live in the countryside, not in the city. I live in a ru _____ area."). The average gain in scores (the post-test average minus the pre-test average) for words experienced in SPR form and in L1 form were compared using *t*-tests, so as to establish the statistical significance between the recall of words learned in the two different modes.

From Week 4 to Week 13, 10 target words from the previous week's lesson were tested using short, quiz style in-class tests. A total of 100 target words were tested over 10 lessons. Words presented in both SPR and L1 form were subjected to the same type of testing. Half of the tests (five tests) were in written form, using cloze type questions in which the required word needed to be filled in without the presentation of any beginning letters (e.g., "She is very quiet, says very little, and then suddenly explodes with anger! She is so _____."). The other five weekly in-class tests used a verbal cue, in which a sentence describing the words, usage examples or definitions were read out by the instructor (e.g., "The 'Sky-tree' is a (*something*) feature of the Tokyo landscape."), with the students required to respond by listing words (their answers) on a blank piece of paper. Statistical analyses were employed to establish the significance of differences between the number of successful recalls of target words presented as SPRs or as L1s.

Data concerning participant responses to the vocabulary program were collected using a questionnaire at the completion of the study in Week 15. Questions frequently required comparisons and expressions of preference between activities and materials experienced in SPR and L1 form. Fourteen questionnaire questions were in Likert-scale format and seven were multiple-choice. The questionnaire questions pertained to the SPRs, materials, activities, the vocabulary program as a whole, and the use of study materials in both classroom and self-study contexts. Question 21 required the students to write any three words presented in SPR form they may recall, without any cues. Data from the student questionnaire were analyzed by totaling the responses from Likert scale questions, and then calculating the percentages of the responses (Strongly Disagree to Strongly Agree) to the different questionnaire questions. The percentages were then compared to establish overall participant responses to the questions, including the most and least popular responses.

Focus group discussions involved six randomly determined groups of 3 to 4 students being given three questions in English, both in verbal form and in written form, in Week 13 and Week 14. The questions were: (1) What is your opinion of the materials used and the activities done in the classroom that used the pictures? (2) Do you think that the pictures helped you learn the English words? (3) How often and how did you study away from the classroom with the word

lists? Each question included two sub-questions designed to prompt further responses relating to the main question. The participants responded in Japanese by answering, commenting upon, and discussing the questions freely amongst themselves without any input (such as prompting or further questioning) from the classroom teacher. Comments and conversational exchanges resulting from the three discussion questions were recorded, transcribed, and translated into English.

Comments relevant to the study's two research questions were identified and then coded in a similar way to the coding of group interview data, which involves the noticing of "similar patterns in the respondent's answers" and then "identifying specific themes and assigning a short word or phrase for each of them" (Benati, 2015, p. 125). As a result of this procedure, several non-predetermined categories appeared, which represented the main topics of the comments and exchanges. Some transcriptions were then chosen to exemplify, illustrate, and emphasize certain features of the participant responses.

Materials

A total of 100 images used in the study were all drawn especially for the study, following a standard design format (see [Appendix A](#) for SPRs). The images were designed with a maximum of simplicity, with a minimum of detail with the following features: (1) line drawings using thick lines; (2) monochrome – black lines on white background, with the occasional use of grey; (3) arrows used to express meaning, such as movement, direction, transformation, cause and effect, and expressions of time; and (4) minimal use of symbols (e.g., letters, numbers, mathematical symbols).

Target words were mostly (77%) taken from the Academic Wordlist (Coxhead, 2000) and the University Wordlist (Nation & Xue, 1984). Other words were chosen for their suitability to tertiary level study and words usually unfamiliar to Japanese students (e.g., *fireworks*, *flattery*, *hangover*). The words were selected so that the lengths of words were kept approximately the same (within one or two letters) between words represented as SPRs and words represented in L1 form. Random selection was used to determine whether the words were to be represented in L1 or in SPR form. See [Appendix B](#) for a list of target words. Two words from each group of ten were chosen by three examiners for their high level of concreteness compared with other target words in the group.

Activities

The students participated in four types of activities: whole-class activities; small group activities; paired activities; and self-study activities. The activities and subsequent tests involved the recall of the English target words from pictorial cues (the SPRs), consisting of three stages:

- (1) Presentation – A list of ten English words was presented in written form and in verbal form, with meanings given in English and pronunciation practiced. The SPR form of the words were then presented, and the images were explained in terms of how the target words could be depicted;
- (2) Recall practice – Target words were verbally recalled using SPRs only as cues in various classroom activities using an assortment of materials. Recall was also practiced away from the classroom in self-study situations, using printed wordlists;

(3) Tests – Target words were recalled without the corresponding SPR from spoken (verbal cues) and written (cloze type questions) prompting using English only.

The whole-class activities presented the target words. With the students seated in groups of four, 10 target words for the session were written in random order on the chalkboard, and then read out by the instructor and repeated by the students to practice pronunciation. Large flashcards (A4 size) featuring target words in either SPR or L1 form were then placed at the base of the chalkboard. The students working in groups were then required to match the written words with the corresponding flash cards. After revealing which flashcard corresponded with which word, a brief explanation of the word (including word meaning, synonyms, and usage examples) was given by the instructor. Next, the English words were erased from the board, and the students were required to verbally recall the words with the instructor using the flashcards as prompts in random order.

The small group activities involved groups being given 1 set of 10 word cards (business-card sized) representing 10 target words. Each group spread their cards on their table, with the SPR or L1 face up. The students chose a card, and then said the corresponding target word. After turning the card over to check the answer, correct cards were taken by the students, and incorrect cards left. Whoever had the most cards (the most correct answers) was the winner. A similar activity was also done in which the cards were not chosen by the students; rather, the cards were taken from the top of a shuffled pile in the center of the table.

The paired activities involved students moving freely around the classroom, forming pairs at random. The students had one word card each, showing it to their partner whilst having a simple verbal exchange in which one student asked (in the case of an SPR) what word the picture represented, and (in the case of an L1) what the Japanese word was in English. After answering, the roles were then reversed. Partners were then changed, enabling exchanges with several different people using several different cards.

Wordlists featuring the target words practiced in that lesson were distributed to the students at the end of the vocabulary session for private study. The students were instructed to use the wordlists for private study for approximately 20 minutes on a regular (preferably daily) basis. However, the number of sessions and the time spent studying in private sessions was at the individual student's discretion. See [Appendix C](#) for example SPR and L1 wordlists. Wordlists were used by covering the English form of the target word, looking at the cue in random order (the SPR or the L1) and then saying the word, then uncovering the target word to check for correctness.

Results

Pre-Tests and Post-Tests

One hundred target words (50 presented in SPR form, 50 presented in L1 form) were pre-tested and post-tested before and after the study's vocabulary program. The average test scores (the total number of correct answers to pre-test and post-test questions) from Class A ($N = 25$) and Class B ($N = 23$) and the increase in test score averages (the difference between pre-test and post-test scoring) are shown in Table 1. One student from Class B was absent for the post-test, so the student was excluded from these results.

Table 1. Averages and Increased Averages for Participant Scores for Pre-Tests and Post-Tests.

		SPR			L1		
<i>N</i>		Pre-test	Post-test	Increase	Pre-test	Post-test	Increase
Class A	25	8	36.84	28.84	6.88	35.24	28.36
Class B	23	3.7	28.09	24.39	3.91	26.48	22.57
Total	48	5.94	32.65	26.71	5.46	31.04	25.58

Note. Increase = post-test score minus pre-test score.

The average pre-test score for words presented in the SPR mode was 5.94 ($SD = 3.37$), higher than the average pre-test score for words presented in L1 form at 5.46 ($SD = 3.58$). The average post-test score for words presented in the SPR mode was 32.65 ($SD = 11.40$), higher than the average post-test score for words presented in L1 form at 31.04 ($SD = 10.26$).

The total number of the two group's correct responses to questions requiring SPR words and questions requiring L1 words were compared using two-tailed, paired-samples *t*-tests. The significance of difference ($p < 0.05$) was checked between the SPR and L1 pre-test scores and between the SPR and L1 post-test scores, as shown in Table 2.

Table 2. Comparison of Participant Scores for SPR Target Words and L1 Target Words for Pre-Test and Post-Test Totals Using Paired Samples *t*-Tests.

	SPR				L1					
	Total	<i>M</i>	<i>SD</i>	<i>df</i>	Total	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i> -score	<i>p</i> -value*
Pre-test	285	5.94	3.53	47	262	5.46	3.58	47	1.022	0.312
Post-test	1567	32.65	11.40	47	1490	31.04	10.26	47	2.370	0.022

Note. $N = 48$ for both SPR and L1 results. * $p < 0.05$, two-tailed.

In pre-testing (conducted before the treatment – the vocabulary program), there was no significant difference between the number of correct responses to questions requiring SPR words ($M = 5.94$, $SD = 3.53$) and questions requiring L1 words ($M = 5.46$, $SD = 3.58$): $t(47) = 1.022$, $p = 0.312$. In post-testing (conducted after the treatment), the number of correct responses for words presented in SPR form ($M = 32.65$, $SD = 11.40$) was significantly higher than the number of correct responses for words presented in L1 form ($M = 31.04$, $SD = 10.26$): $t(47) = 2.370$, $p = 0.022$.

The five words with the highest pre-test/post-test score increases were: *seasickness* (SPR), *dogma* (SPR), *snore* (SPR), *outcome* (L1), *finite* (SPR). Of the target words with the ten highest ranking pre-test/post-test score increases, 14 were SPR words (six identified as concrete) and eight were L1 words (three identified as concrete) (see Table 3).

Table 3. Target Words with the Ten Highest Pre-Test and Post-Test Score Increases.

Ranking Increase		Target Word(s)	
		SPR	L1
1	44	seasickness (c)	
2	42	dogma	
3	41	snore (c)	
4	40	outcome	
5	39	finite	toxic (c)
6	38	devalue, hangover (c)	
7	37	vandalism (c), tropical (c)	identical
8	36	volatile, temporary, camouflage	flattery
9	35	unpopular (c), policy, chores	hemisphere (c)
10	34	acid (c), unrealistic, vindictive	

Note. Gain = Post-test score minus pre-test score. (c) = word identified as concrete from the weekly word list.

Weekly Tests

Ten target words were tested each lesson, once per week for ten weeks. The total number of correct responses to questions requiring target words presented in SPR form was 1644 ($N = 49$, $M = 33.55$, $SD = 5.20$), with a total weekly average of 328.8. The total number of correct responses for words presented in the L1 form was lower at 1555 ($N = 49$, $M = 31.73$, $SD = 5.03$), with a total weekly average of 311. These results were compared using a two-tailed, paired-samples t -test. Table 4 shows a significance of difference ($p < 0.05$) between the SPR and L1 scores. The number of correct responses to words presented in SPR form ($M = 33.55$, $SD = 5.20$) was significantly higher than the number of correct responses to words learned in L1 form ($M = 31.73$, $SD = 5.03$): $t(48) = 2.374$, $p = 0.0217$.

Table 4. Comparison of Total Weekly Test Scores for Target Words in SPR Form and Target Words in L1 form Using a Paired Samples t -Test.

	SPR				L1					
	Total	M	SD	df	Total	M	SD	df	t -score	p -value*
Score	1644	33.55	5.20	48	1555	31.73	5.03	48	2.374	0.0217

Note. $N = 49$ and for both SPR and L1 results. * $p < 0.05$, two-tailed.

The five words with the highest weekly test scores were: *duty* (SPR), *hangover* (SPR), *worthless* (L1), *tropical* (SPR), and *snore* (SPR). Of the 26 target words with the ten highest ranking weekly scores, 13 were SPR words (four identified as concrete) and 13 were L1 words (six identified as concrete) (see Table 5).

Table 5. Target Words with the Ten Highest Weekly Test Scores.

Ranking	Score	Target Word(s)	
		SPR	L1
1	50	duty	
2	48	hangover (c)	worthless
3	47	tropical (c), snore (c)	rural
4	46		envy
5	45	devalue, dilemma, agree, seasickness (c)	
6	44	avoid, traditional, frustration, chores, calm	
7	43		toxic (c), x-ray (c), hemisphere (c)
8	42		parallel (c)
9	41		extra (c), vindictive, unrealistic
10	40		translucent (c), incessant, apologize

Note. (c) = word identified as concrete from the weekly wordlist.

Attitudinal Questionnaire

The survey results are summarized below according to eight topic areas. The total number of participants was 49 ($N = 49$).

- Whole-class activities using large flash cards and the chalkboard: 47 participants (95.9%) agreed that they liked the activities, and 48 participants (98%) agreed that the activities were beneficial to learning.
- Small group activities using small flashcards while seated at desks: 48 participants (98%) agreed that they liked the activities, and 49 participants (100%) agreed that the activities were beneficial to vocabulary learning.
- Paired activities using small flashcards: 48 participants (98%) agreed that they liked the activities, and 49 participants (100%) agreed that the activities were beneficial to vocabulary learning.
- The SPRs: 47 participants (95.9%) agreed that they liked the SPRs. 27 participants (55.1%) agreed that the SPRs were easy to understand while 22 participants (44.9%) did not agree. 44 participants (89.9%) agreed that the SPRs were beneficial to vocabulary learning, and 46 participants (93.9%) agreed that they wanted to use the SPRs again in future vocabulary study.
- Private study (SPR wordlists): 41 participants (83.7%) agreed that they liked using the wordlists featuring SPRs in private study. 45 participants (91.8%) agreed that the SPR wordlists were beneficial to learning and indicated a desire to use them in future studies.

46 participants (91.8%) agreed that they would like to use SPRs for private study in the future.

- Private Study (SPR and L1 wordlists): 37 participants (75.5%) agreed that they liked both types of wordlists, followed by 8 participants (16.3%) preferring the L1 list, 3 participants preferring the SPR list (6.1%), and 1 participant (2%) preferring neither. Most (85.7%) agreed that both types of wordlists were beneficial to learning, followed by the L1 (8.2%) and then the SPR (6.1%). A majority (69.4%) indicated that they studied using the wordlists one or two times per week on average, followed by three to five (24.5%), ten or more (4.1%), and five to ten times (2%).
- Vocabulary sessions (SPR or L1): 27 participants (55.1%) indicated a preference for both types of sessions, followed by 11 participants (22.4%) preferring the SPR sessions and 10 participants (20.4%) the L1 sessions. 1 participant (2%) preferred neither session. 39 participants (79.6%) indicated that both sessions were beneficial to learning.
- SPRs and L1 translations: 28 participants (57.1%) indicated a liking for both SPR and L1 forms, expressing a preference for neither. This was followed by 12 participants (24.5%) preferring the SPR forms, and 8 participants (16.3%) preferring the L1 forms. 1 participant (2%) liked using neither form. 26 participants (53.1%) indicated that both types were beneficial to learning, followed by 12 participants (24.5%) indicating that the L1 forms helped learning the most, and 11 participants (22.4%) indicating that the SPR forms helped the most.

The first part of Question 22 of the questionnaire required the recall of any three target words learned that were presented in SPR form. The most frequently recalled word was *tropical*, with 19 responses, followed by *hangover* with 12 responses. The other target words with multiple responses were as follows: *fireworks* (10 responses); *seasickness*, *vandalism* (8 responses); *chores*, *suspicious*, *dogma* (7 responses); *avoid* (5 responses); *calm*, *agree*, *volatile*, *snore* (4 responses); *finite* (3 responses); *deadline*, *arbitrary*, *duty*, *discrimination*, *scope*, *policy*, *ethics*, *integral*, *asset* (2 responses).

Focus Group Discussions

Topic 1: SPR usage and motivation. The participants expressed the belief that the SPRs were of assistance to their vocabulary learning as the pictures provided more motivation and support than only studying with textual forms. For example, Student 1B18 (Class B, Group 5) expressed gratitude for the presence of the SPRs, stating that, if using textual forms only, “motivation does not appear”, and indicating that the SPRs made her learning a more positive experience: “I was able to feel as if I wasn’t studying.”

Topic 2: Perceived advantages of using SPRs to remember the target words. The participants stated how they thought the SPRs were more beneficial to learning than the Japanese forms. Student 1A5 (Class A, Group 1) regarded the SPRs as being beneficial to the comprehension and memorization of the target words, saying that she put more effort into establishing the word meaning than when she was given the Japanese translation. She found some of the pictures difficult to understand, and therefore found the matching activity difficult, yet claimed that “having the pictures made it easier to understand”.

Topic 3: Limitations of SPRs. Several participants, including Student 1A4 (Class A, Group 6) and Student 1B22 (Class B, Group 2), voiced the opinion that the SPRs were easy to

remember, yet some SPRs were difficult to understand. Similarly, Student 1A13 (Class A, Group 6) said that the pictures were easier to understand than the Japanese translations as they “were easier to enter your head”, yet “abstract things represented as pictures were difficult to understand”. Student 1B1 (Class B, Group 1) stated how the SPRs were difficult to understand if the personally held image of the target word varies from the one presented, due to differences in perceptions of word meaning between “Japanese and foreigners”.

Topic 4: Preference for Japanese translations over SPRs. Several participants indicated a rejection of using SPRs in favour of Japanese translations. For example, Student 1B8 (Class B, Group 2) would have preferred “correct” translations of the target words, and Student 1B19 (Class B, Group 3) said that the pictures were sometimes incomprehensible, so Japanese would have been better.

Topic 5: Desire for the inclusion of Japanese translations. Some participants also suggested the combined use of pictures and L1 Japanese translations. Student 1A1 (Class A, Group 4) stated how this combination was preferable, as pictures are easy to visualize yet difficult to understand: “The pictures make it easier to form an image. But there were times when they were difficult to understand; both the pictures and the Japanese words are better.” Other students such as Student 1A3 (Class A, Group 5) and Student 1B16 (Class B, Group 6) specified their belief of how the materials used should have included a Japanese translation to assist with the understanding and memorization of target words.

Topic 6: Classroom activities.

The participants indicated their liking for interactive activities using the SPRs for social reasons, perceiving the activities to be beneficial to learning. Student 1B2 (Class B, Group 6) said that she and her classmates “could understand by explaining the meanings in English”. Other students (including Student 1B11 in Group 1, Class B; Student 1B23 in Group 2, Class B; Student 1A9 in Group 1, Class A) also indicated their liking for the activities for social reasons, primarily due to having been given the opportunity to communicate and make friends.

Discussion

Recall for words presented in the form of SPRs was significantly higher than for Japanese written forms, indicating that the pictorial form was more beneficial to learning. However, any interpretation of the results needs to consider study limitations, including the sample size and the large number of confounding variables over the semester-long classroom-based study. Recall for words presented pictorially was nonetheless higher, and this result may have been due to an increased involvement of visual processing systems, in accordance with cognitive models (Baddeley & Hitch, 1974; Paivio, 1986), which suggest that activating both verbal and visual subsystems is advantageous to learning. The result may also have been due to learners having had a more involved and complex experience of the words, as shown in positive attitudinal responses which indicated that the SPRs had provided a different and thought-provoking vocabulary learning experience. Japanese translations might not have been processed to the same depth as the pictorial forms, as with the levels of processing theory, which theorizes that retention in memory is dependent upon the degree to which encoded memory traces are elaborated (Craik & Tulving, 1975). To the students, the presentation of Japanese written words may have been mundane and unimpressive; a continuation of the usual translational style of Japanese high school education. However, the SPRs could have given the

students a comparatively more meaningful and elaborate experience; being cartoon-like illustrations and having been experienced for the first time.

The higher rate of recall for concrete over abstract words is consistent with other studies which have demonstrated that concrete words are more easily remembered than abstract ones (e.g., de Groot & Keizjer, 2000), supporting the idea that the level of abstraction is a major influence upon how well words can be remembered (Baddeley, 2004). Of the words with the three highest recall rankings, five of the nine words were concrete and presented in SPR form, indicating that concrete words presented as pictures are more likely to be recalled than abstract and/or translational forms. The five most frequently recalled words in the survey (*tropical*, *hangover*, *fireworks*, *seasickness*, *vandalism*) in the absence of any cues were also concrete SPR words. These findings support the idea that the concrete or abstract quality of word meaning is fundamental as to how well a word can be picturized for learning.

The emotional quality of the target words was another common characteristic of the more successfully recalled vocabulary. The words *tropical*, *hangover*, and *snore* scored highly, with *seasickness* scoring highly in the survey, weekly tests, pre-tests and post-tests. These words appear to evoke strong emotional responses. For example, *snore* might evoke images/memory of a noisy family member; *hangover* and *seasickness* may be associated with feeling ill and vomiting. Sokmen (1993) suggested that associations are formed when learning L2 words are heavily influenced by attitudinal and emotional factors, as well as by personal memories, and several other studies (e.g., Kousta, et al., 2011; Vigliocco, et al., 2014) have indicated that emotion plays an important role in the acquisition of L2 vocabulary. The SPRs may have assisted learning by enhancing the emotional quality of words by providing learners with a picture to be used as a mental image, thereby encouraging the understanding and comprehension of word meaning on a personal level.

Responses to using the SPRs (from the questionnaire and focus discussion groups) were largely positive. There was neither an overt rejection of studying with the SPRs, nor any overall preference expressed for L1. The general appeal of the SPRs could partly have been due to the images being a clear departure from the students' previous experience of English language learning. In a study by Kikuchi (2009), the use of the grammar-translation method was identified as one of five main de-motivating factors for Japanese university students, all of whom experience six years of Japanese secondary schooling. Kikuchi (2013) also identifies being unable to memorize vocabulary as another source of demotivation for Japanese students. The engagement with simple, cartoon-like pictures – not unlike the emoji that many students use in social media communications – may have motivated the students to learn, and not demotivated them as appears to be the case with the grammar-translation method. The participants' liking of and appreciation for activities, which used the SPRs, included social reasons (e.g., the ability to interact with classmates and make friends), demonstrating that simple images can be used in learning situations that are more interactive and communicative compared with the grammar-translation method.

A common criticism of the SPRs centred on a lack of understanding as to what the images represented. While the participants generally perceived the SPRs to be beneficial to learning as the images were easy to remember, the lack of understanding for some pictures was viewed as a disadvantage to learning. One reason specified by the participants for this lack of understanding was the difference between Japanese and non-Japanese perceptions of word meaning. According to Nisbett (2003), Westerners tend to have an analytical viewpoint,

whereas East-Asians tend to see things more holistically. Danesi (2017) notes the difficulties with expressing ideas pictorially across nations and cultures. However, some participants appreciated the differences and valued them as a learning experience, consistent with the belief that building awareness between the mother tongue and the target language is beneficial to L2/FL learning (Swan, 1997). By representing the target words pictorially, the differences in meaning became salient, thereby adding a comparative linguistic and cultural dimension to the learning experience.

Other reasons given for the lack of understanding of the SPRs concerned the complexity of target word meanings, including their abstract quality and ambiguity. As a result, some participants expressed a preference for studying with Japanese forms, or at least an inclusion thereof. However, appreciation for the SPRs was expressed in that the pictures made the students consider target word meaning more and differently to that of the familiar Japanese forms, and despite sometimes being difficult to understand the simple images were (in themselves) easy to remember. The ease-of-processing heuristic theorizes that learners will assume that, if something is easy to cognitively process, it will be well remembered. In a study by Carpenter and Olsen (2012), participants overestimated their ability to recall Swahili words that were presented as pictures, and the study concluded that pictures could be useful for learning L2 vocabulary provided the learner's overconfidence in the capacity for pictures to be remembered (and therefore the associated words to be learned) is reduced. All 43 target words used in their study were concrete (e.g., *arm*, *ball*, *beach*), so perhaps their participants' ability to understand the pictures was a minor factor. However, the target words in this study were mostly academic. The participants commented in focus group discussions on how the SPRs were simple and easy to remember, yet any overconfidence they had in the images' capacity to assist with learning may have been mitigated by the difficulty experienced in trying to understand their meaning.

This study was limited in that, being classroom-based and involving private study, a multitude of extraneous factors (e.g., individual learning styles, exposure to English outside of the course) would have exerted an influence upon target word recall. Additionally, since all participants were a specific demographic – 18-year-old Japanese female first year university students (except for one Korean student), there is limited confidence in generalizing the results to other participant groups. A higher level of confidence might be possible with similar groups, such as all-female Japanese high school or second year university students. However, generalizing these results to other learning situations and demographics requires caution and further investigation.

Conclusion

This study has demonstrated that vocabulary suitable for study in an L2/FL vocabulary tertiary level program (of which a majority were from academic word lists) can be represented and presented pictorially in a simplistic form and used in a similar way to that of L1 translations, without having a detrimental effect upon learning. English words were repeatedly recalled from pictures in the absence of any L1 translational forms in a variety of classroom activities (some of which were interactive) and recalled at a higher rate than words presented in L1 form. Since the study was classroom-based, however, it can only be concluded that the SPRs performed well in comparison to the written Japanese words insofar as the SPR words were presented pictorially, and so the actual influence of the SPRs or L1 upon learning and testing can only be speculated upon. A general tendency was shown for concrete words and words with strong

emotional connotations to be recalled with greater frequency than abstract words, particularly when presented as simplified pictures rather than L1 (Japanese) written form. The study found agreement with the general belief that it is difficult to represent words pictorially, especially words that do not represent tangible things, yet the results of the study suggest that this assertion need not prevent even simplistic pictorial expressions of meaning from representing abstract vocabulary in EFL vocabulary learning.

The participants' general liking of the SPR materials and images themselves is a further indication that words represented pictorially may have a larger role to play in foreign language instruction, as they provide motivation, interest, and an alternative to translational approaches to vocabulary learning. Using images of a pictographic nature might be consistent with technological developments such as presenting information in pictorial form (e.g., icons, emoji), and vocabulary learning with flashcard applications for mobile devices. Students using such applications could be encouraged to have a visual element in their content, with created and found images being shared as a collaborative activity.

The major criticism was that, despite being easy to remember, some SPRs were difficult to understand, which is unsurprising given the undeniably problematic nature of picturizing words. However, the lack of understanding forced students to focus attention on the target words and explore the word meanings by speculating upon and criticizing the visual interpretations. An EFL vocabulary learning program may benefit from time devoted to the study of target words on a visual level, as students gain familiarity with images by creating original or examining existing images.

By focusing on the words in such a way, the participants displayed a metacognitive awareness of the limitations and the advantages of learning with pictures representing words. This awareness is significant in that, according to Vigliocco et al. (2014), "affective, not just linguistic development may be considered as precursors of the successful learning of abstract vocabulary" (p. 1775). Efficient L2/FL vocabulary learners use a variety of learning techniques to suit their individual needs (Folse, 2004). The study's language test results and attitudinal responses indicate that learning vocabulary expressed in simple pictorial form has the potential as one such supplemental or alternative method, thereby adding to the ways in which L2/FL vocabulary could be experienced in both group and individual learning situations. This potential may be further investigated with studies focusing upon image design, interactive activities, the effect upon different participant groups, and the use of digital technology such as mobile flashcard applications.

About the Authors

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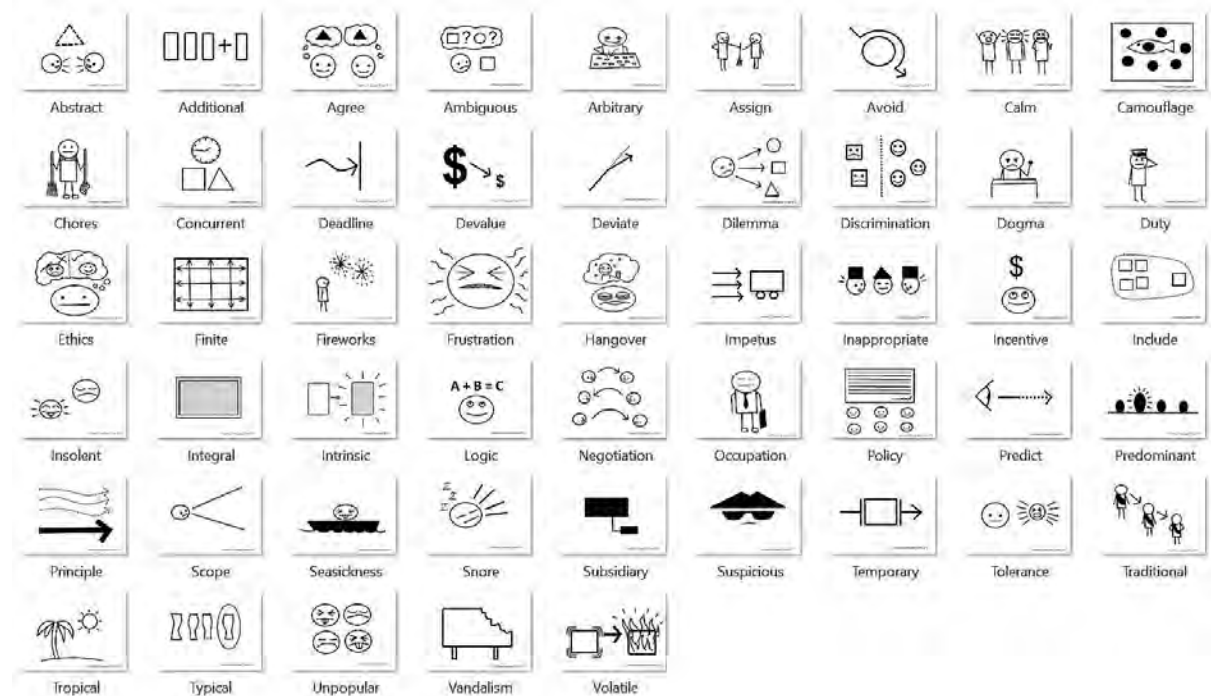
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Appendix A

Simplistic Pictorial Representations (SPRs)



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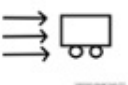




Appendix B

Target Words				
Wordlist 1 (SPR)	Wordlist 2 (L1)	Wordlist 3 (SPR)	Wordlist 4 (L1)	Wordlist 5 (SPR)
tropical (c) predict temporary arbitrary concurrent devalue deadline finite additional (c) duty	visual parallel (c) obsolete ruin extra (c) vindictive mindset stand out outcome reluctant	avoid integral volatile dilemma dogma abstract tolerance traditional hangover (c) unpopular (c)	presume doubt unrealistic maintenance significant envy (c) innovate translucent (c) insist consequent	discrimination negotiation typical insolent (c) scope impetus subsidiary agree vandalism (c) assign
Wordlist 6 (L1)	Wordlist 7 (SPR)	Wordlist 8 (L1)	Wordlist 9 (SPR)	Wordlist 10 (L1)
toxic (c) phenomenon provoke controversy contaminate differentiate flattery virtual distort (c) sans	fireworks (c) intrinsic inappropriate include suspicious frustration policy chores logic seasickness (c)	x-ray (c) hemisphere (c) identical livelihood worthless directly rural abandon saturate incessant	occupation (c) incentive predominant snore (c) principle camouflage calm deviate ambiguous ethics	compel sanction interfere apologize asset enduring fallacy vertical (c) collide acid (c)
<i>Note.</i> (c) denotes words identified as high in concreteness.				

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Appendix C

Self-study wordlists for Wordlist 5 (SPR) and Wordlist 8 (L1)

Word List 5			Word List 8		
			レントゲン	半球	まったく同じ
discrimination	negotiation	typical	x-ray	hemisphere	identical
			生計	価値のない	直接に
insolent	scope	impetus	livelihood	worthless	directly
			農村	放棄する	ずぶぬれにする
subsidiary	agree	vandalism	rural	abandon	saturate
			ひっきりなしの		
assign			incessant		

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