Effects of Word Card Strategy versus Word List Strategy on Taiwanese EFL Junior High School Students' Vocabulary Retention

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Abstract

This paper primarily compared the effects of a word card strategy versus a word list strategy, and spaced versus massed practice on Taiwanese EFL junior high school students' English vocabulary retention and secondarily explored their attitudes toward each strategy. Participants included 120 Taiwanese EFL ninth graders divided into card-spaced, card-massed, list-spaced, and list-massed groups receiving identical 8-week instruction on 120 target words presented on either word cards or word lists. A vocabulary test serving as the pretest, posttest, and delayed test was administered: just before, one week after, and five weeks after the experiment. Two questionnaires developed by the researchers explored participants' attitudes toward cards versus lists. Individual interviews further probed students' attitudes toward both strategies. Statistical analyses of three vocabulary test scores suggested that the word card strategy yielded significantly better performance on vocabulary retention, whereas spaced practice (practicing or studying target words at one-week intervals) led to better but non-significant results than massed practice (practicing or studying target words all at one time). Results derived from questionnaires and individual interviews indicated a majority of the word-card group preferred the word card strategy to the word list strategy to facilitate their vocabulary retention. Based on the overall results of the current study, three educational implications and five suggestions for future studies were presented.

1 Introduction

1.1 Statement of background and problem

Nation (2008a) ranked word cards second among four strategies (guessing from context, word cards, word parts, dictionaries), and provided a sample syllabus for the development and use of the word card strategy with spaced retrieval. Nation and Webb (2010) described spaced retrieval as recalling or retrieving word meanings or forms one or two times, waiting a short time and retrieving these words again, and then waiting a bit longer and retrieving them again with the intervals between the retrievals being months apart. Nation also claimed that by using word cards, students could successfully learn large numbers of words in a very short time and retain this knowledge for a long period. The researchers were impressed by but also skeptical about Nation's word card strategy with spaced retrieval because it is rarely, if ever used, for English vocabulary learning in

Taiwan while the other three vocabulary learning strategies (VLSs) are quite often adopted by Taiwanese/Chinese English as a Foreign Language (EFL) learners. For instance, some local studies (Chen, 1998; Chen & Yeh, 2004; Wu, 2005) reported that both (a) guessing from context and (b) using dictionaries were frequently used among such students. Adoption of the word-parts strategy and teaching of word-parts knowledge were reported by Yang and Huang (2009), and Wu (2005).

To the best of the researchers' knowledge, no public junior high school English teacher in Taiwan has ever implemented the word card strategy to facilitate students' vocabulary growth. On the contrary, based on the researchers' literature review, observation and brief questionnaires used with colleagues and students, most Taiwanese EFL students have experience of using word lists to enhance their vocabulary learning/retention. Some local studies investigating the effects of word list strategy on vocabulary retention indicated that the study of word lists significantly increased Taiwanese EFL high school students' vocabulary in a short time (Lin, 2009) or yielded significantly higher vocabulary retention than (article) reading (Lu, 2004). Similarly in other countries, some studies pinpointed that studying word lists resulted in significantly higher vocabulary retention than contextualized vocabulary learning (Laufer & Shmueli, 1997; Qian, 1996) or sentence making (Mehrpour, 2008). However, to the best of the researchers' knowledge, no study assessed the effects of the word list versus word card strategy on vocabulary retention. Nation's preference for word cards over word lists aroused the researchers' skepticism and curiosity, which in turn inspired them to conduct this study to test or even to challenge Nation's claim by examining (a) the effects of word cards versus word lists on vocabulary retention and (b) EFL learners' attitudes toward both strategies. Furthermore, Nation (2001) encouraged readers to experiment with his proposed sub-principles for direct, decontextualized vocabulary learning, such as with or without word cards, which further reinforced the researchers' motivation for such a study.

While providing guidelines for word card learning, Nation (2001, 2008a, 2008b, 2010) always paired retrieval with spaced practice and stressed the importance of spaced retrieval in word card learning. This aroused the researchers' curiosity toward the effects of spaced practice versus massed practice (i.e. practicing or studying target words all at one time) on word card versus word list learning. Furthermore, based on the first researcher's EFL teaching and learning experiences, it was hypothesized that spaced practice might lessen the effect discrepancy between word card and word list strategy, since it might facilitate both types of vocabulary learning, which in turn might narrow the discrepancy. However, this hypothesis calls for an empirical study.

Moreover, statements in previous VLS studies inspired the researchers to conduct this experiment. For example, Schmitt (1997, p. 200) contended that "few individual vocabulary strategies have been researched in any depth," except "guessing from context" and "the Keyword Method." In agreement with Schmitt's contention, Chen (1998) stated it was hard for teachers and researchers to recommend VLSs to learners because the efficacy of most VLSs remained largely unknown. Gu (2003) objectively and comprehensively concluded that "the choice, use, and effectiveness of vocabulary learning strategies very much depend on the task (e.g., breadth vs. depth), the learner (e.g., cognitive and cultural styles of learning, motivation), and the context (e.g., L1, L2, or FL contexts)" (p. 18). It can be hypothesized by synthesizing the above three statements that: (a) the most frequently used VLSs may not be the most effective; (b) some VLSs are more effective for word retention, others for word use; (c) some VLSs are more effective for beginners, others for intermediate or advanced learners; (d) some VLSs are more effective for children, others for adults; and (e) some VLSs are more effective for EFL learners, others for ESL learners. This study compares the effectiveness of the word card versus word list strategy on EFL junior high school students' word retention, specifying context (EFL environment), learner (junior high school students), and task (vocabulary/word-paired retention).

1.2 Purposes of study and research questions

This study probed (a) effects of the word card strategy versus word list strategy on EFL learners' vocabulary retention, (b) effects of spaced practice versus massed practice on word card ver-

sus word list learning in terms of vocabulary retention, and (c) students' attitudes toward word cards versus word lists. The following are the four research questions:

1. Does the word card strategy yield significantly better effects on EFL learners' vocabulary retention than the word list strategy?
2. Does spaced practice result in significantly better effects on EFL learners' vocabulary retention than massed practice?
3. Does spaced practice significantly reduce the effectiveness discrepancy between the word card and word list strategy?
4. What are EFL learners' attitudes toward word cards versus word lists?

1.3   Importance of study

Since, to the best of the researchers' knowledge, no prior study had compared these two VLSs in Taiwan or abroad, if this research demonstrates word card strategy as significantly better than word list in terms of vocabulary retention, the researchers can not only implement this strategy in future classes, but also confidently advocate as well as introduce it to EFL instructors. On the other hand, if results indicate that the word list strategy produces significantly better effects than the word card strategy on vocabulary memorization, it may confirm that the word list strategy works better for EFL learners than the word card strategy. If no significant difference emerges, the word card strategy can be recommended as an alternative for decontextualized vocabulary learning to enrich EFL instructors' and learners' vocabulary teaching/learning repertoire.

2   Literature review

This literature review covers (a) retrieval, (b) the word card strategy, and (c) the word list strategy in foreign/second language (FL/SL) learning. A sub-section on VLSs frequently used by Taiwanese EFL learners illustrates that the word card strategy was rarely or never used.

2.1   Retrieval

Royer (1973) studied the effects of retrieval in the form of a test-like activity on receptive vocabulary knowledge of a foreign language (i.e. translating FL word into the first language [L1]). The retrieval group used word cards (with target words and L1 equivalents separated on each side of a card) to retrieve/recall/self-test meanings of foreign words within a limited time, while the non-retrieval group studied the same foreign words with L1 meanings presented simultaneously within the same length of time. Results showed the retrieval group significantly outperformed the non-retrieval group in the test assessing receptive vocabulary knowledge (i.e. translating target or foreign words into L1). Royer (1973) reported that the results of his study supported Izawa's (1967, 1968, 1969, 1970) findings and assertions that retrieval (i.e. test-like activity) might be crucial to the acquisition of word pairs (i.e. foreign word form and its L1 meaning).

Carrier and Pashler's (1992) four experiments explored the influence of retrieval on retention of paired associates (i.e. target words and their equivalent meanings either in L1 or target language [TL]). The retrieval groups endeavored to recall the response in a period when only the stimulus was presented and the response was presented after a five-second delay. The study groups studied paired associates with both target words and their equivalent L1 or TL meanings presented simultaneously. In line with Royer's (1973) findings, their results showed that the retrieval groups significantly outperformed the study groups in learning paired associates. Among competitive hypotheses for superiority of retrieval over pure study (i.e. both target words and their equivalent L1 or TL meanings were presented for study), Carrier and Pashler (1992) adopted the ones stating "that retrieval strengthens existing retrieval routes (Birnbaum & Eichner, 1971; Bjork, 1975) or requires creation of new routes (Bjork, 1975)" (p. 640) to explain their findings.

2.2 Word card strategy in FL/SL learning

Although Nation (1982, 2001, 2008a, 2008b, 2010) strongly advocates the word card strategy both in his research papers and books, the researchers found only scant literature on this strategy after a long and hard search. While there are only limited materials related to word card learning or strategy, Table 1 categorizes nine advantages and two disadvantages by synthesizing word-card related studies.

Advantages	Studies (in chronological order)
1. Word cards help students retrieve the word meaning and the form from the memory.	(a); (c); (e2), (e4), (e5), (e6); (f); (g)
2. Word cards help students learn a large amount of receptive and productive vocabulary learning at an initial stage of word learning.	(e1), (e2), (e3), (e4), (e5), (e6); (c); (d);
3. Word cards avoid serial/list effect.	(b); (c); (e2), (e4), (e6); (f); (g); (h);
4. Word cards help students use time efficiently on the unknown words.	(b); (c); (e2), (e4), (e5); (g); (h);
5. Word cards allow students to use L1 translation.	(e2), (e3), (e4), (e6);
6. Word cards enhance diversity of in-class activities.	(e5); (f); (g); (h);
7. Word cards involve manual activities.	(c)
8. Word cards help students build up the feeling of achievement.	(c); (e2); (h);
9. Word cards are very convenient for students to bring with them anytime anywhere.	(e4);
Disadvantages	**Studies**
1. Word cards are bulky.	- Leeke & Shaw (2000)
2. Word card learning does not help students with word use (Larson & Smelley, 1972; Judd, 1978; Turner, 1983; Oxford and Crookall, 1990).	- Reviewed by Nation (2001)

Note. (a) = Royer, 1973;   (b) = Baddeley, 1990;   (c) = Mondria & Mondria-de Vries, 1994;
      (d) = Waring, 1997;   (e1) = Nation, 1982;   (e2) =Nation, 2001; (e3) = Nation, 2003;
      (e4) = Nation, 2008a;   (e5) = Nation, 2008b;   (e6) = Nation & Webb, 2010;
      (f) = Coxhead, 2004;   (g) = Takač, 2008;   (h) = Rosszell & Brown, 2009

Table 1: Advantages and disadvantages of word card strategy

2.3 Word list strategy in FL/SL learning

Compared with word card strategy, more studies were conducted to investigate the effects of word list strategy on vocabulary retention. For instance, the results of Qian's (1996) study indicated that memorizing decontexualized word lists yielded better ESL vocabulary retention than studying contextualized words. Laufer and Shmueli (1997), echoing Qian's findings, revealed that studying EFL words presented in lists and sentences resulted in superior vocabulary retention than those presented in texts or elaborated texts (i.e. longer texts). Likewise, Mehrpour (2008) reported that memorizing new EFL words in lists (i.e. an English word with its L1 meaning) augmented vocabulary retention significantly better than making written or oral sentences.

In Taiwan, Lu (2004) reported that a word-list group of 31 EFL 12th graders studying bilingual word lists (i.e. English words with L1 meanings) significantly outperformed their reading counterparts, 33 high school students, learning the same target words by reading articles in terms of vocabulary retention, but both groups performed similarly in overall reading comprehension. Compatible with Lu's findings, Lin (2009) reported that studying word lists with or without sample sentences yielded significantly more positive effects on Taiwanese vocational high school students' vocabulary retention. Yet differences between these two types of word lists with and without sample sentences were non-significant in terms of vocabulary retention and overall scores on a standardized reading proficiency test.

The effects of word list strategy and word card strategy had been separately studied but were never investigated or compared in the same study. The key difference between the word list and word card strategy is that the former simultaneously presents a foreign word form and its meaning in L1 or FL synonym(s) on a list, meaning no retrieval or word guessing is needed. Nation (1982) concluded that research evidence suggested that "simultaneous presentation of a word form and its meaning is the best for the first encounter, and thereafter, a delayed presentation is the best" (p. 21) due to the extra effort needed for retrieval or guessing. In other words, word-list (or simultaneous) presentation works better when first viewing a word to discover its meaning, while word-card (or delayed) presentation works better in subsequent encounters to retrieve or consolidate a word's meaning and/or form.

2.4   *Vocabulary learning strategies used by Taiwanese EFL learners*

Four studies (Chen, 1998; Chen & Yeh, 2004; Liao, 2004; Wu, 2005) replicated Schmitt's (1997) survey procedures to delve into Taiwanese EFL learners' VLSs for (a) discovering word meanings and (b) consolidating encountered words. Table 2 lists the top three to five most frequently used or helpful (a) meaning discovery strategies and (b) consolidation strategies ascertained by the four studies.

Study/Participant	Meaning Discovery Strategies	Consolidation Strategies
Chen (1998) (a) 174 college students (b) 81 high schoolers	(1) using bilingual dictionary, (2) guessing from context, (3) analyzing part of speech, (4) asking classmates for meaning, (5) asking teacher for paraphrase or synonym of new word	(1) verbal repetition, (2) studying sounds of words, (3) written repetition, (4) continuing to study over time, (5) interacting with native speakers.
Liao (2004) 625 college freshmen	(1) using electronic dictionary, (2) using bilingual dictionary, (3) guessing from context, (4) asking classmates for meaning	(1) written repetition, (2) studying sounds of words, (3) verbal repetition, (4) studying spelling carefully
Chen & Yeh (2004) 90 college freshmen	(1) using bilingual dictionary, (2) asking teachers for L1 translation, (3) guessing from context.	(1) taking notes in class, (2) verbal repetition, and (3) studying sounds of words.
Wu (2005) (a) 101 8th graders, (b) 90 11th graders, (c) 112 university sophomores	(1) using electronic dictionary, (2) using bilingual dictionary, (3) asking classmates, (4) guessing from context, and (5) studying word lists, rated as 4th most frequent and 3rd most helpful by 11th graders	(1) studying sounds of words, (2) repetition of a word's form (= written repetition) (3) verbal repetition, (4) studying spelling, and (5) testing oneself with word tests.

Table 2: Top three to five most frequently-used or helpful VLSs

Four conclusions can be drawn by examining the results of the studies shown in Table 2. Firstly, dictionary was the most frequently used or helpful discovery strategy in Taiwan. Secondly, guessing from context was the most frequently used discovery strategy of most Taiwanese EFL learners. Thirdly, verbal repetition, studying sounds of words, and written repetition were among the top five most frequently used consolidation strategies across the four studies. Fourthly, word card strategy was absent from all four studies. There are two possible reasons for such unanimous results. First, word cards were rarely, if ever, used or considered as a VLS in Taiwan. Second, word card strategy was absent from the VLS scale(s) employed by these four studies and thus there was no rating for it. The second reason sounds rational upon hearing it. However, if we think further about why it was not included by Schmitt (1997, 2000) on the VLS scale(s) adopted by these four studies, we may get the same reason as the first explanation, which illustrates that word

cards are scarcely used by EFL learners, such that no one had proposed to include it in a VLS scale. On the contrary, word list strategy was categorized as a meaning discovery strategy, ranking as the fourth most frequently used discovery strategy by the high school group and overall fifth in Wu's (2005) study. Based on the results of the aforementioned studies, it can be concluded that word card strategy was scantly used in Taiwan, while word-list strategy was used far more often, especially by high school students, to enrich their English vocabulary knowledge or enlarge their English vocabulary size.

3   Methodology

3.1   Participants

Four intact classes of ninth graders in a public junior high school in Keelung City, Taiwan, were randomly assigned to four groups: (a) card-spaced; (b) card-massed; (c) list-spaced; and (d) list-massed. The second researcher taught the four classes with the same attitude and rigor to ensure no bias towards any method. Students' average age was 15. They started learning EFL in the third grade in public elementary schools. Like all public elementary school students in Taiwan, they received one period (40 minutes) of English instruction per week through the sixth grade, focusing on listening and speaking. In junior high school, they received four or five periods (45 minutes/period, four periods for 7th and 8th graders, five for 9th graders) of English instruction weekly, primarily focusing on vocabulary, grammar and reading, and secondarily on listening and speaking. Main instructional medium for English class was Mandarin Chinese; English textbooks used by participants currently and previously provided a list of key words for each lesson in an index, with a total of 9-12 word lists for the 9-12 lessons in every textbook. Each key word was followed by its phonetic symbols, part of speech, and Chinese meaning. Participants often studied such word lists for quizzes, tests, and/or exams. In other words, all participants were familiar with the use of word lists, but were rarely exposed to the word card strategy.

3.2   Materials

The four groups studied 120 target words selected from "Basic Word 2000" released by Taiwan's Ministry of Education (MOE), but not covered in their English textbooks (I~VI). They are high-frequency words labeled with 3–5 stars by "Collins Cobuild Electronic Dictionary" (1998 edition) and classified as nouns (41.67 %), verbs (38.53%), adjectives (19.17%), or adverbs (3.33%). Based on Nation's (2001) suggestion of adding a sample sentence or collocation on the card, a sample sentence was supplied for each target word to expedite vocabulary learning.

The researchers designed and made word cards and word lists before the experiment. The size of a word card was about 4.0 × 8.5 centimeters. On one side of the card was written one target word, its part of speech, and a sample sentence, with the other side left blank deliberately for participants to write down the L1 equivalent in class. 120 word cards with target words were made, divided into three packs (two with 45 word cards and one with 30 word cards) and distributed to participants in the first, fourth, and seventh week, respectively. Word lists were presented on five pieces of A4-sized sheets with a plastic folder. Twenty-six target words, their parts of speech, and sample sentences were included in a single word list, but not their L1 equivalents, which would be written by participants in class. Participants were asked to write the L1 equivalents both on the word cards and word lists in class to ensure that they would pay attention to the second researcher's instruction in class. Examples of word cards and word lists are as follows:

A word-card example:

Front side of the word card   Flip side of the word card

Accept (v.) Will you accept my gift?	(Note: This side was left blank for students to write L1 equivalent in class)

A word-list example:

1. accept v. _____   (Note: It was left blank for participants to write
    Will you accept my gift?   L1 equivalent in class)

3.3   Instruments

Instruments included two questionnaires, a pretest, a posttest, a delayed test, weekly achievement quizzes, plus individual interviews of students, as described below.

3.3.1   Pretest, posttest, and delayed test

A teacher-made vocabulary test appraised participants' receptive vocabulary knowledge (i.e. translating English words into Chinese) and productive vocabulary knowledge (i.e. translating Chinese words into English) of 120 target words with 60 items each measuring receptive and productive knowledge. It was derived from a pilot test administered to a class of 9th graders with similar English proficiency at the same school to ensure that all target words were unknown or unfamiliar to them. The pilot test was slightly revised and then adopted as the pretest, posttest and delayed test (Appendix A) administered to the participants before, one week after and five weeks after the study without prior notice.

3.3.2   Weekly achievement quizzes

Weekly achievement quizzes were used to guide massed practice or spaced practice with target words. There were thus two versions. Version A was for the two groups with spaced practice and assessed the target words taught in the current as well as previous weeks, while Version B was for the two other groups with massed practice and assessed the target words taught in the current week only.

3.3.3   Two questionnaires

Questionnaire 1 was administered in two versions (1A and 1B) only to the word-card groups (i.e. card-massed and card-spaced) to probe their attitudes toward (a) spaced practice versus massed practice and (b) word cards versus word lists. Questionnaire 1A (Appendix B), designed for the card-spaced group, consisted of seven multiple-choice items: Items 1–4 examined card-spaced students' views relating to the weekly achievement quizzes functioning as a mechanism of massed practice versus spaced practice in terms of number/quantity of words tested and the range of words to be tested; and Items 5–7 investigated their attitudes toward word cards versus word lists. Questionnaire 1B (Appendix C), designed for the card-massed group, followed the same format but excluded Items 3 and 4 from Question 1A, which did not apply to the card-massed group because of the lack of spaced practice experience. Questionnaire 2 with six items was also administered in two versions: 2A (Appendix D) for word-card groups inquiring about acquain-

tance with the word card strategy and students' implementation of this strategy; and 2B (Appendix E) for word-list groups inspecting students' familiarity with word list strategy and their use of this strategy. The aforementioned questionnaires were administered in Chinese to participants to ensure full understanding of all questionnaire items.

3.3.4 Individual interviews

The main purpose of the individual interviews was to explore students' attitudes toward word cards versus word lists in depth. The second author conducted semi-structured individual interviews with twelve participants, with three interviewees randomly selected from each group. Each interview was conducted in Mandarin Chinese in a quiet, vacant classroom during the lunch break and lasted about 10–15 minutes. The interview questions covered four areas: (a) their likes or dislikes about word cards and/or word lists; (b) whether they found learning from word cards and/or word lists practical; (c) whether they would keep using word cards or word lists as a vocabulary learning strategy in the future, even if not required to do so; and (d) advantages and disadvantages of word cards versus word lists. Interviewees from the word-list groups were additionally asked if they covered Chinese meanings or English words and retrieve them when using word lists for vocabulary learning. The interviewer allowed interviewees to elaborate on their answers or divert from questions for a very short time, and occasionally probed deeper by asking follow-up questions based on the interviewees' responses.

3.4 Experiment and data collection procedures

Table 3 delineates the procedures of the experiment and data collection under the headings of (a) pre-experiment, (b) experiment, and (c) post-experiment.

Stage	Task or Activity
Pre-experiment	1. Conducting a four-week pilot study and revising the proposal of this study based on pilot study findings, 2. Designing and administering a pilot vocabulary test, 3. Making the vocabulary test serving as pretest, posttest, and delayed test by revising the pilot vocabulary test 4. Creating word cards and word lists, and 5. Making handouts regarding the usages of word cards and word lists.
Experiment	6. Administering pretest in the first week, 7. Teaching 120 target words over eight weeks (15 per week, followed by weekly achievement quiz the next day), 8. Allocating 15 minutes of in-class time per week for word-card group to practice and share their experience of using word card strategy and for word-list group to practice word list strategy and memorize the target words on their own.
Post-experiment	9. Implementing Questionnaire 1 at the end of the experiment to investigate participants' attitudes toward word cards versus word lists and their opinions of weekly achievement quizzes functioning as a mechanism for spaced practice or massed practice, 10. Administering Questionnaire 2A to word-card group examining students' familiarity and implementation of word card strategy and Questionnaire 2B to word-list group inspecting student's familiarity and employment of word list strategy at the end of the experiment,. 11. Administering posttest without prior notice one week after the end of the experiment, 12. Conducting individual interviews of students, and 13. Administering delayed test without prior notice one month after the posttest.

Table 3: Experiment and data collection procedures

3.5 Data analysis

A series of paired-sample *t* tests, independent-samples *t* tests, and analysis of variance (ANO-VA) investigated the effects of word card versus word list strategy and spaced versus massed practice on participants' vocabulary retention. Moreover, interview data were first transcribed verbatim in Mandarin Chinese and then translated into English. Based on the four categories of semi-structured questions, responses were sorted into thirteen codes: liking of word cards; liking of word lists; dislike of word cards; dislike of word lists; advantage of word cards; advantage of word lists; disadvantage of word cards; disadvantage of word lists; practicability of word cards; practicability of word lists; possibility of future use of word cards; possibility of future use of word lists; frequency of retrieving English words or Chinese meanings. These responses mainly supplemented or illustrated the results of the statistical analyses in answering the research questions, especially the fourth question investigating participants' attitudes toward both VLSs.

4   Results and discussion

4.1   Results for Question 1: Does word card strategy yield significantly better effects on EFL learners' vocabulary retention than word list strategy?

Table 4 reports the results of three independent-samples *t* tests probing the mean differences between the word-card and word-list groups' pretest, posttest and delayed test scores. Results for the pretest were non-significant with $p=.417$, suggesting that there is a non-significant group mean difference between these two groups for the pretest. By contrast, results for the posttest were significant with $p=.007$ and for the delayed test with $p=.000$, suggesting that the word-card group significantly outperformed the word-list group on both the posttest and the delayed test. These results support Nation's (2001, 2003, 2008a, 2008b, 2010) claim that the word card strategy is more effective than the word list strategy in FL vocabulary retention.

	Group	N	Mean	SD	MD	t	df	*p*-value
Pretest	Card	60	4.00	9.24	-1.52	-.814	118	.417
	List	60	5.52	11.08				
Posttest	Card	60	61.65	22.86	11.18	2.721	118	.007
	List	60	50.47	22.05				
Delayed test	Card	60	42.8	23.13	17.16	4.312	118	.000
	List	60	25.63	20.39				

Note: MD = Mean Difference

Table 4: Results of independent-samples *t* tests for word-card versus word-list group on pretest, posttest, and delayed test

Independent-samples *t* tests for the posttest and delayed test scores confirm that the word card strategy was significantly more effective than the word list strategy. The results for the posttest in Table 4 show that the use of the word card strategy resulted in 11 more words being retrieved than with the word list strategy. This suggests that the word card strategy helped students retain/retrieve 11 more words than the word list strategy for the 120 target words studied. The results of the delayed test in Table 4 reveal that the use of the word card strategy led to 17 or more words being retrieved than with the word list strategy. This suggests that the word card strategy assisted students to retain 17 more words than the word list strategy, even though they did not continue to study the 120 target words for the five weeks after the experiment. The results of delayed test in Table 4 likewise show students regressing by approximately 19 words with the word card strategy versus 25 words with the word list strategy. This once again indicate that the word card strategy helped students retain more words in long-term memory than the word list strategy.

Based on the previous literature review and data collected from questionnaires and personal interviews of this study, it would appear that four possible reasons, listed below, would explain why the word-card group outperformed the word-list group significantly in both the posttest and the delayed test. Firstly, word cards impel students to retrieve word meanings and/or forms, because a foreign word is written on one side of the word card and the L1 equivalent on the other. However, word lists discourage students from retrieving because both foreign words and L1 equivalents appear juxtaposed on the word lists. Mondria and Mondria-de Vries (1994) demonstrated that (a) retrieving items from word cards led to better retention than seeing word pairs (word forms and meanings) simultaneously from word lists and (b) successfully recalling items (retrieval) enhanced long-term retention. Later, Nation (2001, 2008a, 2008b, 2010) showed that retrieving word forms or meanings resulted in superior learning than seeing words, and the linkage between forms and meanings was bolstered by each retrieval. Most recently, Takač (2008) agreed with Mondria and Mondria-deVries' (1994) and Nation's (2001, 2008a, 2008b, 2010) assertion that the process of recalling word meaning or its form establishes a strong connection in the memory.

Furthermore, data from Questionnaire 2 supported the idea of retrieval's pivotal role in vocabulary learning. For example, Table 5 listing the numbers and percentages of retrieval frequency among groups from the questionnaire data indicates that over 95% of the word-card group often or sometimes engage in retrieval activities, while only two-thirds (66.7%) of the word-list group often or sometimes covered target words or their L1 equivalent meanings with their hands to retrieve them and one-third (33.3%) of the word-list group never did. This could be a reason why the word-card group significantly surpassed the word-list group in the posttest and the delayed test.

	Retrieving L1 equivalent			Retrieving target word and spelling		
	Often	Sometimes	Never	Often	Sometimes	Never
Card-spaced	14 (46.7%)	13 (43.3%)	3 (10%)	13 (43.3%)	15 (50%)	2 (6.7%)
Card-massed	16 (53.3%)	14 (46.7%)	0 (%)	17 (56.7%)	13 (43.3%)	0 (%)
Sub-Total 1	30 (50%)	27 (45%)	3 (5%)	30 (50%)	28 (46.7%)	2 (3.3%)
List-spaced	10 (33.3%)	13 (43.3%)	7 (23.3%)	10 (33.3%)	13 (43.3%)	7 (23.3%)
List-massed	14 (46.7%)	3 (10%)	13 (43.3%)	14 (46.7%)	3 (10%)	13 (43.3%)
Sub-Total 2	24 (40.0%)	16 (26.7%)	20 (33.3%)	24 (40.0%)	16 (26.7%)	20 (33.3%)
Total	54 (45%)	43 (35.8%)	23 (19.2%)	54 (45%)	44 (36.7%)	22 (18.3%)

Table 5: Numbers and percentages of reported retrieval frequency for the four groups

Even though 66.7% of the word-list group often or sometimes engaged in retrieval activities which might reduce the discrepancy in vocabulary memorization between the word-list and word-card groups, the word-card group still significantly surpassed the word-list group in the posttest and delayed test scores. It was predicted that such a significant intergroup difference for the posttest and delayed test might not be attained, if 95% or more of the word-list group often or sometimes engaged in retrieval activities. The results in Table 5 correlate with Izawa's (1967, 1968, 1969, 1970) finding that retrieval is essential to acquisition of word pairs. Based on the findings of prior research and the present study, retrieval activities are strongly recommended for EFL classes to boost vocabulary retention.

Secondly, word cards can prevent the serial/list effect, whereas word lists may induce it, with one item stimulating the memory of another or aiding the recall of the next. Mondria and Mondria-de Vries (1994) showed that word lists might result in learners being able to recognize or retrieve words from lists but not from other sources due to the serial/list effect. Nation (2001, 2008a, 2010) demonstrated the principles of word card use and encouraged learners to change the order of the word cards to avoid the serial/list effect. In line with Nation, both Coxhead (2004) and Takač (2008) advocated such card shuffling.

Thirdly, word cards encourage students to focus on unknown words first, whereas word lists prompt them to pay attention to each word from the beginning to the end. Several word-card researchers and supporters (Coxhead, 2004; Mondria & Mondria-de Vries, 1994; Nation, 2001,

2008a, 2008b; Nation & Webb, 2010; Rozzell, 2007; Rozell & Brown, 2009; Takač, 2008) suggested that learners should move unknown or difficult words to the front of a pack so as to spend time more efficiently on such words at the front rather than waste time on those already known.

Fourthly, word cards involve manual activity, while word lists entail cognitive activity only (Mondria & Mondria-de Vries, 1994). When learning from word cards, students use their hands to turn cards, either checking the next word card or going through a pack. By means of manual activities, learning vocabulary is no longer only a boring cognitive activity in the brain, but a manual activity with playful elements (word cards) in the hand. According to the researchers' personal teaching experience and observation, manual activities are especially suitable for students who are easily distracted to help them concentrate on words they are learning and/or for students inclined to learn with their hands. This is congruent with Mondria and Mondria-de Vries' (1994) assertion that learners concentrate better on tasks supported by motor and manual activities.

4.2 Research Question 2: Does spaced practice result in significantly better effects on EFL learners' vocabulary retention than massed practice?

Table 6 presents the results of three independent-samples t tests of the mean differences between spaced- and massed-practice to ascertain whether spaced practice (i.e. practicing or studying target words at one-week intervals) had significantly better effects on vocabulary retention than massed practice (i.e. practicing or studying target words all at one time) for the pretest, posttest, and delayed test. Results of these three tests were non-significant, with p=.340 for the pretest and p=.315 for the posttest as well as the delayed test, suggesting that spaced practice had better but non-significant effects on vocabulary retention than massed practice. One reason for the non-significant results might be that all students in the card-massed group engage in retrieval activities whenever they learned from word cards.

	Group	N	Mean	SD	t	df	MD	p-value
Pretest	Spaced	60	3.87	7.39	-.959	118	-1.78	.340
	Massed	60	5.65	12.37				
Posttest	Spaced	60	58.18	23.62	1.009	118	4.25	.315
	Massed	60	53.93	22.48				
Delayed test	Spaced	60	36.37	24.307	1.008	118	4.3	.315
	Massed	60	32.07	22.376				

Table 6: Results of independent-samples t tests for spaced-practice versus massed-practice group on pretest, posttest, and delayed test

Besides, Table 5 reveals that more than half (56.6%) of those in the list-massed group often or sometimes covered either English words or their Chinese equivalents on word lists to do retrieval. The effect of spaced-practice was reduced, because a majority of participants in both groups engaged in retrieval activities either with word cards or word lists. Although spaced practice did not yield significantly better effects on the participants' vocabulary retention than massed practice for the posttest and the delayed test, it is still considered crucial for word-card learning, as explained in the following discussion of the results for Research Question 3.

4.3 Results of Question 3: Does spaced practice significantly reduce the effectiveness discrepancy between the word card and word list strategy?

Table 7 presents the results of three one-way ANOVAs comparing the pretest, posttest and delayed test scores among four groups: card-spaced, card-massed, list-spaced, list-massed group. The results for the pretest with p=.565 and for the delayed test with p=.208 suggest non-significant differences among the four groups, whereas results for the posttest with p=.041 suggest a signifi-

cant difference among the four groups. Due to the significant difference among groups for the posttest, LSD tests were conducted for a follow-up investigation.

Group	n	Pretest			Posttest			Delayed Test		
		Mean	SD	p	Mean	SD	p	Mean	SD	p
card-spaced	30	2.47	4.15		64.40	23.58		44.90	22.68	
card-massed	30	5.53	12.31	.565	58.90	22.18	.041	40.70	23.77	.208
list-spaced	30	5.27	9.48		51.97	22.35		27.83	23.16	
list-massed	30	5.77	12.64		48.97	22.03		23.43	17.29	

Table 7: Results of one-way ANOVA for four groups on pretest, posttest, and delayed test

Table 8 presents the results of the LSD tests and reveals that the mean difference between card- and list-spaced groups was 12.43 in the posttest, larger than that (9.93) between card- and list-massed groups in the posttest. This finding fails to support the hypothesis that spaced practice reduces the discrepancy between card- and list-spaced groups, since spaced practice was hypothesized to boost the effect of word list strategy and thus reduce the effectiveness discrepancy between word card and word list strategies. On the contrary, the results of this study imply that spaced practice widened the effectiveness discrepancy between word card and word list strategies more than massed practice, suggesting that spaced practice worked better with the word card than with the word list strategy, which in turn supports Nation's (2001, 2008a, 2008b, 2010) suggestion of integrating spaced practice into word card strategy.

(I) Type (J) Type	MD (I - J)	Sig. (p-value)	Std. Error
card-spaced card-massed	5.50	.347	5.821
list-spaced	*12.43	.035	5.821
list-massed	*15.43	.009	5.821
card-massed list-spaced	6.93	.236	5.821
list-massed	9.93	.091	5.821
list-spaced list-massed	3.00	.607	5.821

Note: *p < .05

Table 8: Post hoc LSD tests for four groups on posttest

The results of the post hoc LSD tests also indicate that card-spaced group significantly outperformed both the list-spaced and list-massed groups for the posttest, but the difference in posttest scores between it and the card-massed group was non-significant for the posttest. This suggests that the word card strategy with spaced practice augments vocabulary retention; therefore, spaced practice is again highly recommended in conjunction with the word card strategy to help students retain more words.

4.4   Results of Question 4: What are EFL learners' attitudes toward word cards versus word lists?

Participants' attitudes toward word cards versus word lists were explored through individual interview and questionnaire. The interview results indicate that 70% of the interviewed word-card students who experienced both strategies preferred theword card strategy, even though the teacher did not ask them to use it after the experiment, whereas only 50% of the word-list group showed their willingness to keep using word lists. Results from Questionnaires 1A (for card-spaced group) and 1B (for card-massed group) show that 60% of the word-card group preferred the word card strategy to word list strategy. Furthermore, results from Questionnaire 2 indicate that word cards were more convenient, as students could carry the cards with them anytime anywhere, while word

lists were cumbersome. For instance, the majority (81.7%) of word-card students considered *convenient to carry* to be one of the advantages of word cards. However, a mere 20% of the word-list students regarded *convenient to carry* to be one of the advantages of word lists, while 40% reported that word lists were inconvenient to carry. The percentage of students who find word cards convenient to carry is four times higher than that for word lists. A possible reason for these results might be the size of word cards (4.0 × 8.5 cm), which makes them very convenient for students to bring along, while the size and the appearance of word lists (five pieces of A4-sized paper with a plastic folder) makes them inconvenient. This explanation is borne out by the interview excerpts below:

> Student A: I prefer word cards because I can carry them with me everywhere. I think carrying word cards with me is very convenient.

> Student C: Word cards are convenient as well as useful. I memorize words on my way to school especially when the teacher is going to give us a quiz. I put them in my pocket, and then I can easily take out word cards to check if my spelling or translation is right or wrong.

5   Conclusions, educational implications, limitations and suggestions

5.1   Conclusions

This study investigated the effects of word card strategy versus word list strategy as well as spaced practice versus massed practice on EFL junior high school students' vocabulary retention and their attitudes towards both strategies. Results indicated that: (1) the word card strategy yielded significantly better effects on vocabulary retention than the world list strategy; (2) spaced practice had some positive but non-significant effects on vocabulary retention when compared to massed practice, because the effects of spaced practice might be reduced by retrieval activities carried out by most students in the card- and list-massed groups; (3) spaced practice worked better with the word card than the word list strategy; and (4) more students (60%) who experienced both the word card and word list strategies preferred the word card strategy to the word list strategy. Based on the results of the current and previous studies, the word card strategy with spaced practice is strongly recommended for EFL junior high school students who need effective strategies to facilitate their vocabulary retention.

5.2   Educational implications

According to the results of the present study and previous research, along with the researchers' personal EFL learning and teaching experiences, three educational implications are suggested: (1) employment of the word card strategy; (2) employment of the word list strategy; and (3) combination of the word card and word list strategy.

5.2.1   Employment of the word card strategy

Since the word card strategy proved to be more effective than the word list strategy in the present study, it is highly recommended that teachers present the word card strategy and demonstrate the principles of this strategy to students. Furthermore, another suggestion is for textbook designers and publishers to cooperate with teachers to devise well-arranged word cards to be attached as appendices to textbooks. Then, students need not make word cards by themselves, but can still learn from them by simply using the appendices attached to textbooks both in and out of class.

5.2.2   Employment of the word list strategy

In addition to the word card strategy, it is also worthwhile presenting the word list strategy to students, if retrieval activities can be applied to it, such as when students cover either the word

meanings or word forms with their hands. The results of Questionnaire 2B show that two-thirds (66.7 %) of those in the word-list group often or sometimes covered Chinese equivalents or English words, and retrieved them when learning from word lists, while one-third (33.3%) did not do so. Since two-thirds of those in the word-list group reported experience in retrieval, the effect of word lists will be much better, if retrieval can be emphasized and applied to the word list strategy.

5.2.3   Combination of the word card and word list strategies

Nation (1982) suggested that the word list strategy works better for the first encounter with a word to discover its meaning and the word card strategy for subsequent encounters to strengthen its meaning and form due to the additional opportunities it affords for retrieval. As a result, both word lists and word cards are useful learning strategies. Students can utilize both to facilitate their vocabulary retention in and out of class. For example, students can engage in retrieval activities with word cards to enhance vocabulary memorization and learn from word cards in their spare time, because it is very convenient for them to carry word cards wherever they go. In addition to word cards, students can employ word lists to discover word meanings after first encountering unknown words or quickly skim words before tests. If students utilize both strategies, their vocabulary learning strategy repertoires will be enriched and retention will be facilitated.

5.3   Limitations and suggestions

Although the current study yielded fruitful results for the implementation of the word card strategy, two limitations should still be noted. Firstly, the sample was limited to junior high schoolers; we might not be able to generalize the findings to other age groups of EFL learners. Future studies can probe the effects on different age groups: for example, elementary school, senior high school, or college students. Secondly, the time frame of this experiment was restricted to eight weeks. Future studies could prolong the experiment, possibly producing different effects of spaced practice on retention.

Three suggestions for future research are made here based on the limitations of this study. Future studies may: (a) compare the effects of word card strategy versus other VLSs (like guessing from context, paraphrasing, or note-taking rather than word list strategy) on EFL students' vocabulary retention; (b) follow the present methodology, but further discuss the types of words (e.g. action verbs, nouns, adjectives, adverbs, five-letter words, multi-letter words) that are retained better by learning from word cards, and the reasons for such a result; and (c) include the gender issue, that is, examining performance differences between male and female learners using word card versus word list strategy, or discussing male and female learners' preferences for learning from word cards or word lists.

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Appendices

Appendix A: Pretest, posttest, and delayed test

Class: Number: Name: Score:
親愛的同學：請認真作答，表現優秀者加本次段考平時成績總平均2分！！！

I. Please write the meaning of each vocabulary item in English.
(請寫出下列中文字彙的英文拼法)

Chinese (中)	詞類	English (英)	Chinese (中)	詞類	English (英)
1. 感謝、感激	v.	a	31. 獨立的	adj.	
2. 成功	v.		32. 影響	v.	i
3. 古老的	adj.		33. 分行、分店	n.	
4. 選舉	v.		34. 記者	n.	
5. 儀器	n.		35. 外交官	n.	
6. 中央的、中間的	adj.		36. 有信心的	adj.	
7. 索價	v.		37. 最大值	n.	
8. 假設	v.		38. 必要的	adj.	
9. 主要的	adj.		39. 入口	n.	
10. 創造	v.		40. 意見	n.	
11. 辯論	n./v.		41. 國外的、海外的	adj.	
12. 描述、敘述	v.		42. 月台	n.	
13. 限制、極限	n.		43. 正面的、積極的	adj.	
14. 提供	v.		44. 教授	n.	
15. 拒絕	v.		45. 懷疑	v.	
16. 強調	v.		46. 達到	v.	r
17. 物體	n.		47. 表現、舉止	v.	
18. 期待、盼望	v.	e	48. 結果、導致	v.	
19. 表達	v.		49. 科學家	n.	
20. 大學	n.		50. 秘密	n.	
21. 系統	v.		51. 貿易	n.	
22. 錯誤的	adj.		52. 正式的	adj.	
23. 相似的	adj.		53. 比較	v.	
24. 獲得、得到	v.	g	54. 忽略、忽視	v.	
25. 缺少	v./n.		55. 存在	v.	
26. 守衛、警衛	v./n.		56. 寺廟	n.	
27. 僕人、傭人	n.		57. 導遊、嚮導	n.	
28. 幽默	n.		58. 隧道	n.	
29. 支持	v.		59. 獨特的	adj.	
30. 包含	v.		60. 工程師	n.	

II. Please write the meaning of each English word in Chinese and its part of speech.
(請寫出下列英文字彙的中文意思及其詞類)

English (英)	詞類	Chinese (中)	English (英)	詞類	Chinese (中)
1. accept			31. character		
2. universe			32. assistant		
3. meaning			33. effort		
4. avoid			34. intelligent		
5. male			35. lawyer		

6. broadcast			36. blame		
7. increase			37. available		
8. climate			38. method		
9. tradition			39. nature		
10. negative			40. courage		
11. curious			41. operation		
12. deliver			42. select		
13. pressure			43. passenger		
14. direct			44. patient		
15. insist			45. desire		
16. handle			46. generous		
17. employ			47. especially		
18. quarter			48. realize		
19. remind			49. income		
20. enemy			50. responsible		
21. fair			51. search		
22. female			52. ordinary		
23. suggest			53. hardly		
24. promise			54. solve		
25. gesture			55. furniture		
26. government			56. survive		
27. electric			57. temperature		
28. silence			58. wing		
29. improve			59. therefore		
30. explain			60. complete		

Appendix B: Questionnaire 1A (for Word-spaced Group)

Dear participants:

It is a questionnaire about English vocabulary teaching this semester. Your answers will not influence your grades. Please answer the questions seriously according to your experience. Thanks for your cooperation.

Class: _____ Number : _____ Name : _____

1. The weekly achievement quiz contains 15 items. You think it is _____.
    A. extremely few   B. few   C. appropriate   D. many   E. extremely many
2. How many items do you think are appropriate to be contained in the weekly achievement quiz? _____
    A. under 15 items   B. 16~20 items   C. 21~25 items   D. 26~30 items   E. more than 30 items
3. Based on the previous question, what range do you think is appropriate to be contained in the weekly achievement quiz? _____
    A. under 15 items   B. 15~30 items   C. 31~45 items   D. 45-60 items
4. The weekly achievement quiz contains items that have been taught in the previous one or two weeks. What do you think about it? _____
    A.   It is great. I can review the previously taught items again.
    B.   I do not think there is any difference.
    C.   I think it is too difficult for me to memorize so many items.
5. If you can choose either word cards or word lists to help you memorize words, which one will you choose? Why? _____
    A.   I will choose word lists. (Please answer question 6 continuously.)
    B.   I will choose word cards. (Please answer question 7)
6.   You choose the word lists to help you memorize words because _____.
     (You can choose more than one answer.)
    A.   It is convenient for me not to turn cards.
    B.   It is very clear for me to see all items simultaneously.
    C.   I can skim quickly.
    D.   I can look for the word quickly.

E. I can take notes easily.
F. I can review quickly.
G. I can see the English word and the Chinese equivalent simultaneously which helps me memorize.
H. Target words are organized in lists systematically for me to review.
I. Others. (Please write down your answer briefly.)

    _____

7. You choose word cards to help you memorize words because _____
    (You can choose more than one answer).
    A. I can carry them with me everywhere.
    B. I can review in spare time.
    C. When I memorize the words, I can examine myself by retrieving either the foreign word or the Chinese equivalent.
    D. Others. (Please write down your answer briefly.)

    _____

Appendix C: Questionnaire 1B (for Word-massed Group)

Dear participants:
    It is a questionnaire about English vocabulary teaching this semester. Your answers will not influence your grades. Please answer the questions seriously according to your experience. Thanks for your cooperation.

Class: _____ Number : _____ Name : _____

1. The weekly achievement quiz contains 15 items. You think it is _____.
    A. extremely few   B. few   C. appropriate   D. many   E. extremely many
2. How many items do you think are appropriate to be contained in the weekly achievement quiz? _____
    A. under 15 items   B. 16~20 items   C. 21~25 items   D. 26~30 items   E. more than 30 items
3. If you can choose either word cards or word lists to help you memorize words, which one will you choose?
   Why? _____
    A. I will choose word lists. (Please answer question 4 continuously.)
    B. I will choose word cards. (Please answer question 5)
4. You choose the word lists to help you memorize words because _____.
   (You can choose more than one answer.)
    A. It is convenient for me not to turn cards.
    B. It is very clear for me to see all items simultaneously.
    C. I can skim quickly.
    D. I can look for the word quickly.
    E. I can take notes easily.
    F. I can review quickly.
    G. I can see the English word and the Chinese equivalent simultaneously which helps me memorize.
    H. Target words are organized in lists systematically for me to review.
    I. Others. (Please write down your answer briefly.)
    _____
5. You choose word cards to help you memorize words because _____
   (You can choose more than one answer).
    A. I can carry them with me everywhere.
    B. I can review in my spare time.
    C. When I memorize words, I can examine myself by retrieving either the foreign word or the Chinese equivalent.
    D. Others. (Please write down your answer briefly.)

    _____

Appendix D: Questionnaire 2A (for Word-card Groups)

Dear participants:
    It is a questionnaire on the word card strategy. Your answers will not influence your grades. Please answer the questions seriously according to your experience. Thanks for your cooperation.

Class: _____   Number : _____   Name : _____

1. Following activities can be used with word cards.
   Please tick the activities you know. (You can tick more than one activity.)
     ☐ A. I can evaluate myself by retrieving the L1 equivalent when looking at the target word on one side of the word card and vice versa.
     ☐ B. Change the order of word cards in the pack. You can mix up the order of word cards by putting the more difficult words at the front of the pack.
     ☐ C. The most effective way is to review one hour after teacher's instruction, and then the next day, and then couple of days later, and then a week later, and then a month later.
     ☐ D. I read aloud target words on word cards to myself.
     ☐ E. Make good use of your available time such as the recess between the classes, while waiting for a bus or a friend, etc.
2. How often do you do the activity of **"evaluate myself by retrieving the L1 equivalent when looking at the target word on one side of the word card and vice versa"** when using word cards?
    ☐Often.   ☐ Seldom.   ☐ Never.
3. How often do you do the activity of **"Change the order of word cards in the pack by putting the more difficult words at the front of the pack"** when using word card?
    ☐Often.   ☐ Seldom.   ☐ Never.
4. How often do you do the activity of **"reviewing one hour after teacher's instruction, and then the next day, and then couple of days later"**, and then a week later, and then a month later" when using word cards?
    ☐Often.   ☐ Seldom.   ☐ Never.
5. How often do you do the activity of **"reading aloud the target words to yourself"** when using word cards?
    ☐Often.   ☐ Seldom.   ☐ Never.
6. How often do you do the activity of **"reviewing in your spare time such as the recess between the classes, while waiting for a bus or a friend, etc."** when using word cards?
    ☐Often.   ☐ Seldom.   ☐ Never.

Appendix E: Questionnaire 2B (for Word-list Groups)

Dear participants:
    It is a questionnaire on word list strategy. Your answers will not influence your grades. Please answer the questions seriously according to your real experience. Thanks for your cooperation.

Class: _____   Number : _____   Name : _____

1. Following activities can be used with word lists. Please tick the activities you know. (You can tick more than one activity.)
    ☐ A. I read aloud target words on word lists to myself.
    ☐ B. I write down the information relevant to target words on word lists such as the grammatical pattern, past tense, past participle, etc.
    ☐ C. I review word lists in my free time.
    ☐   D. I review word lists in my spare time such as the recess between the classes, while waiting for a bus or a friend, etc.
    ☐ E. When I use word lists, I cover the Chinese meanings or English words and retrieve them.
2. How often do you do the activity of "covering the Chinese meanings or English words and retrieve them" when using word lists?
    ☐ Often.   ☐ Seldom.   ☐ Never.

3. How often do you do the activity of *"reading aloud the target words to yourself"* when using word lists?
   ☐Often.   ☐ Seldom.   ☐ Never.
4. How often do you do the activity of *"writing down the information relevant to target words on the list such as the grammatical pattern, past tense, past participle, etc"* when using word lists?
   ☐ Often.   ☐ Seldom.   ☐ Never.
5. How often do you do the activity of *"reviewing word lists in your free time"?*
   ☐ Often.   ☐ Seldom.   ☐ Never.
6. How often do you do the activity of "reviewing word lists in your spare time such as the recess between the classes, while waiting for a bus or a friend, etc."?
   ☐ Often.   ☐ Seldom.   ☐ Never.