

Effects of Three Flashcard Methods on EFL Young Learners' Sight Word Recognition, Retention, and Generalization

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Abstract

This study compared effectiveness of three flashcard methods on EFL young learners' sight word recognition, retention, and generalization abilities. Participants contained three homogeneous fourth-grade classes in central Taiwan (N = 62) randomly assigned to receive traditional flashcard instruction (TD Group), picture-supported flashcard instruction (PS Group), and incremental rehearsal flashcard instruction (IR Group). The experimental instruction lasted for eight weeks with 35 minutes of instruction per week. Fifty-six sight words were used as the teaching and testing materials. Instruments included a sight word recognition test, a sight word generalization test, and three versions of a post-course questionnaire. The recognition test served as pretest, posttest, and delayed test (i.e., retention test) and the generalization test served as pretest and posttest. The questionnaire was adopted to assess participants' attitudes toward their respective treatments. Results on posttests showed that: (a) three flashcard methods were all significantly effective in enhancing participants' sight word recognition, retention, and generalization abilities; (b) IR Group significantly outperformed TD Group in word recognition posttest while non-significant difference existed between Groups of IR and PS and between PS and TD; (c) although non-significant difference existed among three groups in generalization, retention, and attrition rate, IR Group got the highest mean score on the retention test and generalization posttest while PS Group obtained the least attrition rate. Results based on the questionnaire data indicated most participants held positive attitudes toward their respective flashcard instructions. Based on findings, three educational implications and three suggestions for future research are provided.

Keywords : sight words, traditional flashcard method, picture-supported flashcard method, incremental rehearsal flashcard method, recognition, retention, generalization

1. Introduction

Reading words plays a significant role for children who are beginning to read and it is a fundamental factor leading learners to successful language competence (National Reading Panel, 2000). Moreover, Snow, Burns, and Griffin (1998) indicated that oral language acquisition and reading are similar - if readers can recognize words effectively, reading comprehension can be achieved easily as well. That is, if children do not acquire word recognition ability, they might struggle with reading text in the future (Sullivan, Konrad, Joseph, & Luu, 2013). Thus, as long as readers can develop skills on oral reading, they will be able to better discriminate between language patterns, as well as increase their enthusiasm for learning to read (Chall, 1967). Ehri (1998, 2005) indicated that the ability to read words may take several forms such as decoding, analogizing, predicting and accessing unfamiliar words by memory or sight. Also, early literacy skills have a connection with later conventional literacy skills such as decoding, oral reading, reading fluency, and reading comprehension. Among all early literacy skills, word recognition is the most important one, which plays an essential role in reading development. Moreover, knowledge of basic sight vocabulary is a success indicator of higher level reading; therefore, teaching sight words is essential, and the development of sight words can be effective in enhancing reading fluency, reading comprehension, and reading success (Burns, Dean, & Foley, 2004; Good, Johnsrude, Ashburner, Henson, Friston, & Frackowiak, 2001).

Basic reading skills need to be taught explicitly (National Reading Panel, 2000). When teaching sight words, simplicity should be taken into consideration as well (Browder & Lalli, 1991). Stuart, Masterson, and Dixon (2000) showed that teaching sight words in isolation is an effective strategy. Thus, based on Luyben (1973), a look-and-say method, the initial stage of developing sight word reading, enables learners to learn whole words. Moreover, for readers to put a word into their words bank, several repetitions for practice are required (Hargis, Terhaar-Yonkers, Williams, & Reed, 1988). According to Kupzyk, Daly, Melissa, and Andersen (2011), flashcard methods are convenient, simple formats for presenting items out of context.

Flashcard methods include various kinds of forms and procedures to present target items. A traditional flashcard method is utilized widely in sight word instruction. In the process of teaching words, each word is presented several times for learners to practice. Also, learners are encouraged to give responses quickly (Phillips & Feng, 2012). For young learners to acquire new words, providing picture cues is helpful. Thus, a picture-supported flashcard method is beneficial for young learners in their sight word learning (Helman & Burns, 2008). In contrast, the incremental rehearsal flashcard method is another flashcard strategy which puts known words together with unknown words, to increase the frequency of opportunities for learners to practice target words (Nist & Joseph, 2008).

In order to enhance effectiveness of learners' sight word acquisition, it is important to discover a useful teaching strategy. Moreover, Joseph (2006) indicated that word retention occurs only when learners can read the words automatically; thus, accessing learners' sight word retention is another indicator of the learners' learning outcomes. Furthermore, to be a fluent reader, the ability to generalize words in different contextual settings is critical (Petersen-Brown & Burns, 2011). With regard to the appropriate ratio used in the incremental rehearsal flashcard method, different ratios of unknown items to known items have been suggested (Burns et al., 2004; Cooke, Guzaukas, Pressley, & Kerr, 1993; Joseph, 2006; Szadokierski & Burns, 2008). Cooke et al. (1993) indicated that 100% of new items is more efficient for learning new words. However, Cooke and Reichard (1996) later found that most of the participants in 70% unknown to 30% known items condition had stronger gains in their learning rate and generalization than 50% unknown to 50% known and 30% unknown to 70% known conditions.

Previous studies on efficacy between traditional flashcard method and incremental rehearsal flashcard method in improving learners' sight word recognition, retention and generalization have been conducted in L1 and ESL contexts (Joseph & Nist, 2006; MacQuarrie, Tucker, Burns, &

Hartman, 2002; Volpe, Mule, Briesch, Joseph, & Burns, 2011). In the study of MacQuarri et al. (2002), the incremental rehearsal instructional condition led to more retained words in learners. However, based on Volpe et al. (2011), learners in the traditional flashcard instructional group outperformed the incremental rehearsal flashcard method group in word retention. There were mixed findings in the comparison of effectiveness between traditional flashcard method and incremental rehearsal flashcard method. With regard to word recognition and generalization, incremental rehearsal flashcard method was shown to be more effective than traditional flashcard method (Nist & Joseph, 2008; Volpe et al., 2011). This difference is probably owing to a small sample size in both studies ($N = 6$ in Nist & Joseph, 2008; $N = 4$ in Volpe et al., 2011) and the participants recruited in both studies had reading difficulties. On the other hand, comparisons of the effectiveness between traditional flashcard method and picture-supported flashcard method in enhancing learners' sight word recognition, retention, and generalization have been conducted in L1, ESL and EFL contexts (Emirmustafaoglu & Gokmen, 2015; Fossett & Mirenda, 2006; Maher, 2008; Meadan, Stoner, & Parette, 2008; Pan, 2011; Rivera, Koorland & Fueyo, 2002; Wang, 2007; Yoshi & Flaitz, 2002). The results revealed that picture-supported flashcard method is more effective in enhancing sight word recognition than traditional flashcard method (Meadan et al., 2008; Pan, 2011). However, studies on effectiveness of promoting learners' sight word recognition, retention, and generalization among traditional flashcard method, picture-supported flashcard method and incremental rehearsal flashcard method have not been conducted in L1, ESL, or EFL contexts. Therefore, the main purpose of this study is to compare effectiveness of traditional flashcard method with 100% unknown words, picture-supported flashcard method with 100% unknown words as well, and incremental rehearsal flashcard method with 70% unknown to 30% known words in enhancing EFL young learners' sight word recognition, retention, and generalization. The research questions were posed as follows:

1. Is traditional flashcard method effective in enhancing EFL young learners' sight word recognition, retention and generalization?
2. Is picture-supported flashcard method effective in enhancing EFL young learners' sight word recognition, retention and generalization?
3. Is incremental rehearsal flashcard method effective in enhancing EFL young learners' sight word recognition, retention and generalization?
4. Among the three flashcard methods, which is the most effective in enhancing EFL young learners' sight word recognition, retention and generalization?
5. What are learners' attitudes toward their respective treatments?

2. Literature review

2.1 Features and effectiveness of three flashcard methods

Traditional flashcard method has been widely used over the years. In this method, a word is presented on a flashcard without any other symbols (Meadan et al., 2008; Phillips & Feng, 2012). Empirical studies have demonstrated effectiveness of traditional flashcard method in terms of helping readers to learn to read words. First, in an examination of the best method to teach sight words, participants read words accurately and retained more words under traditional method than under incremental rehearsal flashcard method, as traditional flashcard method provides direct and explicit repeated modeling of words (Joseph & Nist, 2006). Secondly, Meadan et al. (2008) found participants under traditional flashcard instruction learned sight words faster, and could read more words in isolation in a post-assessment (utilizing only words) than those under picture-supported method. Last, Volpe et al. (2011) compared effects between traditional and incremental rehearsal flashcard instruction in terms of word recognition. The results revealed that traditional method is more efficient than incremental rehearsal method. Moreover, participants preferred traditional instruction as well.

Learning to read refers to the process of decoding the meaning of abstract word forms.

However, young learners have relatively less competence in understanding abstract word forms, and have difficulty associating abstract word forms with their corresponding meanings (Dekker, Mareschal, Johnson, & Sereno, 2014). When young learners learn to read, the materials are often accompanied with extensive and relative illustrations to assist readers in understanding meaning (Torcasio & Sweller, 2010). According to Chien (2015), when learning words, EFL learners acquire more words through the words on flashcards with annotation accompanied with text, sound, and pictures. Goodman (1967) suggested that sight word learning was enhanced when pictures accompanied the words. Presenting an unknown word paired with a pictorial clue to learners provides them with a non-linguistic prompt, and can even enhance their learning motivation (Van der Bijl, Alant, & Lloyd, 2006). Underwood (1989) also proposed that visual cues have more impact on word memorization than the condition with only text provided. Thus, picture-supported flashcard method is a model that utilizes picture cues to help learners to associate meanings with words (Platt, 2015). Hawthorne and Tomlinson (1997) further indicated that pictures can be effective only when their contents are well-known, realistic, and represent only one subject. Chase and Symonds (1992) proposed that the most effective way to learn new words is to increase the frequency of practice. Therefore, incremental rehearsal, a flashcard technique, is used to present known words and unknown words in a sequence (Szadokierski & Burns, 2008). Differing from traditional flashcard method, incremental rehearsal flashcard method is designed to teach new words by introducing unknown words alongside known words, to increase opportunities for learners to practice the target words (MacQuarrie et al. 2002; Nist & Joseph, 2008; Volpe et al. 2011). Moreover, incremental rehearsal technique can facilitate building fluency, leading to retention of words (Joseph, 2006). As incremental rehearsal flashcard method provides several opportunities for learners to practice the target items (Greenwood, Delquadri, & Hall, 1984), the connection among incremental rehearsal flashcard method, high repetition, reading fluency, and comprehension are reinforced (Burns, 2005). Numerous studies have demonstrated that incremental rehearsal flashcard method is an efficient and effective method for students as a group to retain and generalize word reading (MacQuarrie et al., 2002; Nist & Joseph, 2008). Neef, Iwata, and Page (1997) showed that presenting known words with unknown words rather than simply presenting unknown words can effectively facilitate learning and increase retention of unknown words. The most unique part of incremental rehearsal flashcard method is that it introduces one new word at a time in each round. In the process of teaching unknown words through known words, participants' learning motivation and task preference are increased (Burns et al., 2004; Dunlap & Koegel, 1980; Skinner, 2002). Moreover, high frequency repetition of words and a gradual introduction of new, unknown words, provide participants with enough time to move newly acquired word knowledge from short-term memory to long-term memory (MacQuarrie et al., 2002).

2.2 Measurements of sight word recognition ability

In order to achieve the ultimate goal of reading instruction, rapid word recognition ability is required (Berninger, Abbot, Vermeulen, & Fulton, 2006). To assess learners' sight word recognition ability, standardized word reading tests and self-developed tests are frequently used by researchers according to their different research parameters. In the study of Meadan et al. (2008), a self-developed sight word recognition test was administered to assess learners' sight word recognition ability. The scoring criterion was the percentage of correct oral readings of the target words. In Kupzyk et al.'s (2011) study, participants were asked to read unknown words presented during an instructional session. The total number of correctly read words (CRW) was the scoring criterion. Words were scored as correct if participants accurately read the word in question within 3 seconds, whereas words were considered incorrect if participants read the word in question inaccurately or couldn't pronounce the word within 3 seconds.

2.3 Measurements of sight word retention

To assess learners' word retention ability, MacQuarrie et al. (2002) administered a word

retention test 1, 2, 3, and 7 days after their intervention. In Nist and Joseph's (2008) study, a similar retention test containing all of the target words was administered 5 days after their intervention. No corrective feedback was given. The retention rates were assessed by calculating the number of words retained and multiplying that sum by 60. In the study of Szadokierski and Burns (2008), the retention probe was conducted 7 days after their instruction. In Volpe et al.'s (2011) study, learners received a retention test, including all of the unknown words introduced during the intervention, 7 days after the experimental instruction, to observe how many taught words were maintained over time. If participants read a word accurately within 3 seconds, the word was viewed as a known word. However, if a word was read incorrectly, the word was considered unknown. Corrective feedback was not provided either, but participants received verbal praise after producing correct responses.

2.4 Measurements of sight word generalization ability

To assess sight word generalization ability, words are put into a sentence or a context. In order to better probe learners' generalization ability, the generalization test was given before and after the intervention (Nist & Joseph, 2008). In Volpe et al.'s (2011) study, a generalization test was administered 7 days after the intervention to assess whether participants could accurately read the target words presented in sentences. Responses were considered correct if participants pronounced the target words accurately within 3 seconds. However, if participants paused for more than 3 seconds, or did not read the words accurately, the responses were viewed as incorrect. Only verbal praise was provided for correct answers.

3. Methodology

3.1 Participants

Participants of this study included three intact classes in central Taiwan. The number and gender distribution of the participants are shown in Table 1. Three classes were randomly assigned to receive traditional flashcard instruction (TD Group), picture-supported flashcard instruction (PS Group), and incremental rehearsal flashcard instruction (IR Group). Participants were fourth graders, whose ages ranged from 10 to 11 years old. All of them started their formal English education in the third grade, with one period of English class each week.

Moreover, to ensure the homogeneity among three groups, a Modified Peabody Picture Vocabulary Test – III Revised (PPVT-R) with 20 questions, adopted from Huang's (2011) study, was administered to assess participants' vocabulary proficiency. The reliability coefficient for the PPVT-R test was .73. ANOVA results show that the average scores of three groups were 11.38, 9.70, and 9.29 respectively, and there was no significant difference among them ($F = .199, p = .820$).

Table1. Distribution of gender across groups

Group	TD group		PS group		IR group	
Number	20		23		19	
Gender	8 boys	12 girls	13 boys	10 girls	10 boys	9 girls

3.2 Teaching materials

For the purpose of choosing appropriate sight words as the teaching materials, the word selection procedure consisted of three phases. First, the researchers used participants' English textbooks of Kang Hsuan, *Hello! Darbi* and Longman's *New Go Super Kid* as references sources. In order to confirm the difficulty level of the sight words, the word list of the Vocabulary Quotient (VQ) promoted by National Taiwan Normal University (2006) was taken into consideration as well. Hence, 60 words that would be taught to participants in their fifth and sixth grades were chosen and assumed to be unknown words and then 40 chosen words which were taught in their third and

fourth grades were assumed to be known words.

Second, prior to the experimental instruction, screening procedures were administered. All of the participants were asked to read the 100-word list, which was compiled by the researchers. For judging the familiarity of each test item, item difficulty and item discrimination indices were employed. For the sight word recognition test, test items with item difficulty indices lower than 0.38 were chosen as unknown words while words of item difficulty indices higher than 0.62 were chosen as known words. Finally, after the word screening, 56 unknown words and 24 known words were kept as the teaching materials for the eight-week course and the testing materials.

Third, in this study, 56 unknown words were classified into four vocabulary groups based on item difficulty index, letter restriction, and phonics rules proposed by Petersen-Brown and Burns' (2011) study as shown in Table 2. Each group of words was taught for 2 weeks, and each vocabulary group was equally divided into seven words for each week.

Table 2. Principles proposed by Petersen-Brown and Burns (2011)

Group	Letter Restriction	Phonics Rules
1	No more than seven letters	Each word can be decoded with letter and letter-combination sounds (e.g., <i>read</i>)
2	Eight letters or fewer	Each word can be decoded using common letter and letter-combination sounds (e.g., <i>bathroom</i>)
3	Ten letters or fewer	Each word can be decoded using common letter and letter-combination sounds (e.g., <i>cellphone</i>)
4	Either contain more than ten letters or can not be decoded by using the most common letter sounds (e.g., <i>Wednesday</i>)	

3.3 Instruments

Self-developed sight word recognition test (Appendix A), self-developed sight word generalization test (Appendix B), and three versions of questionnaire in Chinese (Appendixes C1-C3) were employed as instruments. Self-developed sight word recognition test consisted of 56 unknown words taught during the experiment. It served as pretest, posttest, and retention test and was given to participants individually on three occasions: one week before, immediate after, and one week after the eight-week experimental instruction. The scoring criterion followed the total number of CRW based on the study of Nist and Joseph (2008) and Volpe et al. (2011). However, as participants in the current study were EFL beginners, thus, some minor mistakes such as mispronouncing long vowel /i/ as /ɪ / were considered acceptable. The total score of self-developed sight word recognition test was 56 and its reliability coefficient was .97.

Self-developed sight word generalization test contained 28 sentences created based on the results of the word screening where 28 sight words with item difficulty indices lower than 0.32 were considered unknown words and chosen to form 28 sentences. Each sentence included one target unknown word which was underlined (e.g., Let's go to the theater!). All of the sentences, containing five to seven words, were similar in length. This test was also given to all participants one week before and immediate after the intervention as pretest and posttest respectively. The scoring criterion also followed Nist and Joseph's (2008) and Volpe et al.'s (2011) study. A point was given if participants read the target word correctly within the sentence. Since the participants in this study were EFL young learners, thus, some minor pronunciation mistakes were considered acceptable. The total score of self-developed sight word generalization test was 28, and the reliability coefficient for self-developed sight word generalization test was .91.

Three Chinese versions of 20-item questionnaire were first developed in English (Appendixes D1-D3) by the researchers and later translated into traditional Chinese because all participants' native language is Chinese. They were administered to participants after eight weeks of experimental instruction to assess their attitudes toward their respectively received flashcard instructional method. Each version of questionnaire was divided into four parts. Part I (items 1-6) explored participants' overall attitudes toward their respective sight word instructions. Part II (items 7-11) probed participants' attitudes toward the effectiveness of their respective flashcard

instructional methods in terms of sight word recognition, retention, and generalization. Part III (items 12-15) examined appropriateness and difficulty level of the teaching materials. Part IV (items 16-20) explored participants' confidence and motivation regarding acceptability of their respective flashcard instructional methods. The reliability coefficients for three versions of questionnaire were .81, .92, and .93 respectively.

3.4 Research design and procedures

During the intervention, three groups received traditional flashcard instruction, picture-supported flashcard instruction, or incremental flashcard instruction 35 minutes per week, respectively. Each flashcard was presented five times for TD Group (Volpe et al., 2011); in order to control the practice frequency, each flashcard was also presented five times for PS Group; whereas in order to increase the practice frequency each flashcard was presented seven times for IR Group (Volpe et al., 2011). All three groups were all taught by the same instructor. The experiment lasted ten weeks, including eight weeks for the experimental instruction and two weeks for the pretests, posttests, and delayed posttest.

3.5 Data analysis

SPSS statistical package was used to analyze participants' scores on the tests and questionnaire items. In order to investigate the homogeneity among three experimental groups, one-way ANOVA was conducted to compare pretest scores. Paired samples *t*-tests were used to examine if significant progress happened in each group participants' performance by comparing their scores on the pretests with those on the posttests (Research Questions 1-3). Moreover, to compare effectiveness among three flashcard instructional methods on participants' sight word recognition, retention and generalization, another three one-way ANOVA analyses were conducted. Finally, to investigate participants' attitudes toward their respective flashcard methods in enhancing their sight word acquisition, one-way ANOVA was also utilized to detect if there was any significant difference in responses to each questionnaire item among three groups.

4. Results and discussion

4.1 Results of pretests

Table 3 reports results of paired-samples *t* tests and ANOVAs on three groups' pretest and posttest scores on word recognition test, retention test (= delayed word recognition posttest), word generalization test, and recognition attrition rate (= [retention test – pretest]/ [posttest – pretest]). The mean scores on word recognition pretest of three groups were 8.20 (14.6%), 6.35(11.3%), and 9.89 (17.7%) respectively, out of a maximum of 56. ANOVA results revealed that non-significant difference existed among three groups in sight word recognition pretest performance ($F = .548, p = .581$).

Table 3. Results of paired-samples *t* tests and ANOVAs on three groups' pretest and posttest scores on word recognition test, retention test, word generalization test, and recognition attrition rate

Word Recognition Test (56 words)							
	TD Group (n ₁ = 20)		PS Group (n ₂ =23)		IR Group (n ₃ =19)		
	Mean	SD	Mean	SD	Mean	SD	<i>p</i> ₂
Pretest	8.20	12.327	6.35	11.113	9.89	9.091	.581
Posttest	29.10	15.019	32.87	16.889	41.68	13.487	*.038
<i>p</i> ₁	*.000		*.000		*.000		
Word Retention Test (= Delayed Word Recognition Posttest ; 56 words)							
	TD Group (n ₁ = 20)		PS Group (n ₂ =23)		IR Group (n ₃ =19)		
	Mean	SD	Mean	SD	Mean	SD	<i>p</i> ₂
Pretest	8.20	12.327	6.35	11.113	9.89	9.091	.581
Retention	26.80	15.565	31.83	16.908	38.58	15.247	.078
<i>p</i> ₁	*.000		*.000		*.000		
Attrition	-0.128	-0.088	-0.043	-0.069	-0.183	-0.347	.087
Word Generalization Test (28 words)							
	TD Group (n ₁ = 20)		PS Group (n ₂ =23)		IR Group (n ₃ =19)		
	Mean	SD	Mean	SD	Mean	SD	<i>p</i> ₂
Pretest	2.85	4.209	3.78	5.410	5.63	3.947	.170
Posttest	12.40	8.611	13.52	8.495	17.37	8.050	.162
<i>p</i> ₁	*.000		*.000		*.000		

Note 1: *p*₁ = *p* values of paired-samples *t* tests; *p*₂ = *p* values of ANOVAs

Note 2: Attrition = Attrition Rate = (retention score – pretest score)/ gain score

Note 3: TD = Traditional; PS = Picture-supported; IR = Incremental Rehearsal

On the other hand, as shown in Table 3, the mean scores on the sight word generalization pretest for three groups were 2.85 (10.2%), 3.78 (13.5%), and 5.63 (19.1%) respectively, out of a maximum of 28. ANOVA results also indicated non-significant difference among three groups in sight word generalization pretest performance ($F = 1.824, p = .170$).

4.2 Respective effects of three flashcard methods on enhancing young EFL learners' sight word recognition, retention, and generalization

Table 3 shows that mean scores on sight word recognition pretest and posttest for TD Group were 8.20 (14.6%) and 29.10 (52%) respectively, and results of paired-samples *t* test revealed that TD Group made significant improvement in sight word recognition ($t = 12.10, p = .000$). Regarding TD Group's performance in sight word retention, the mean scores on sight word recognition pretest and retention test (i.e., delayed word recognition posttest) were 8.20 (14.6%) and 26.80 (47.9%) respectively, and results also indicated that TD Group recognized significantly more sight words in retention test than in recognition pretest ($t = 10.268, p = .000$). Mean scores on sight word generalization pretest and posttest for TD Group were 2.85 (10.2%) and 12.40 (44.3%) respectively; likewise, results showed that TD Group experienced significant growth in their sight word generalization performance ($t = 7.145, p = .000$). Results of the present study support previous findings that traditional flashcard method is effective in enhancing learners' sight word recognition and retention (Joseph & Nist, 2006; Kaufman, McLaughlin, Derby, & Waco, 2011; Volpe et al., 2011; Wang, 2007) as well as sight word generalization (Volpe et al., 2011). A possible explanation for above significant results might be that traditional flashcard method provides learners with explicit modeling of target words as only unknown words were presented (Blackwell & Laman, 2013; Phillips & Feng, 2012). Thus, traditional flashcard method is effective and efficient for learning new words (Joseph & Nist, 2006; Volpe et al., 2011; Wang, 2006).

Mean scores on sight word recognition pretest and posttest for PS Group were 6.35 (11.3%) and 32.87 (58.7%) respectively, and paired-samples *t*-test results suggested that PS Group made remarkable progress in sight word recognition ($t = 9.325, p = .000$). Regarding PS Group's performance in sight word retention, mean scores on sight word recognition pretest and retention

test were 6.35 (11.3%) and 31.83 (56.8%) respectively. Results indicated that PS Group recognized significantly more sight words in retention test than in recognition pretest as well ($t = 9.040$, $p = .000$). Mean scores on sight word generalization pretest and posttest for PS Group were 3.78 (13.5%) and 13.52 (48.3%) respectively; hence, the results showed that PS Group gained a significant growth in their sight word generalization after their intervention ($t = 7.893$, $p = .000$). After receiving picture-supported flashcard instruction, the comparisons between pretests' and posttests' scores showed significantly positive effects, which indicated that picture-supported flashcard method was also markedly effective in enhancing learners' sight word recognition, retention and generalization. It's likely that pairing unknown words with familiar pictures on the flashcards can assist learners to transfer the new information to long-term memory (Torcasio & Sweller, 2010). These findings are similar to those of previous research projects claiming that visual cues, such as pictures, photographs or illustrations, are beneficial for sight word acquisition (Armstrong, 2000; Fossett & Mirenda, 2006; Maher, 2008; Meadan et al., 2008; Nelson, Reed, & Walling, 1976; Pan, 2011; Rokni & Karimi, 2013; Underwood, 1989; Wang, 2007).

Mean scores of sight word recognition pretest and posttest for IR Group were 9.89 (17.7%) and 41.68 (74.4%), and results revealed that IR Group made remarkable improvements under incremental rehearsal flashcard instruction ($t = 12.937$, $p = .000$). Regarding IR Group's performance in sight word retention, mean scores on sight word recognition pretest and retention test were 9.89 (17.7%) and 38.58 (68.9%) respectively. Results also suggested that IR Group recognized significantly more sight words in retention test than in recognition pretest ($t = 10.810$, $p = .000$). Mean scores on sight word generalization pretest and posttest for IR Group were 5.63 (20.1%) and 17.37 (62%) respectively. Likewise, results indicated that IR Group made significant growth in sight word generalization ($t = 8.375$, $p = .000$). Such results are in accordance with those of previous studies, reporting incremental rehearsal flashcard method was effective in sight word acquisition (Browder & Shear, 1996; Cooke et al., 1993; Nist & Joseph, 2008; Eveleigh, 2010; Petersen-Brown & Burns, 2011). A possible reason might be that learners have numerous opportunities to practice target words and can further maintain a higher ratio of words under incremental rehearsal flashcard instruction (Szadokierski & Burns, 2008). Furthermore, as target words were incrementally rehearsed with known words, thus, with the help of known words, learners can gradually have possibilities to experience errorless learning and to keep learning motivated (Burns et al., 2004; Eveleigh, 2010; MacQuarrie et al., 2002). Based on above results and discussion, implementation of incremental rehearsal flashcard method is strongly recommended for sight word acquisition.

4.3 ANOVA results of three groups' sight word recognition, retention, and generalization posttests

In order to answer research question four, which method is the most effective in enhancing EFL young learners' sight word recognition, retention and generalization among three flashcard methods, three one-way ANOVAs were conducted and results are also reported in Table 3. Mean scores on sight word posttest for TD Group, PS Group, and IR Group were 29.10 (52%), 32.87 (58.7%), and 41.68 (74.4%) respectively. The ranking of sight word recognition posttest scores among three groups is: IR > PS > TD.

ANOVA results in Table 3 indicated that there was a significant difference among three groups in sight word recognition posttest score ($F = 3.468$, $p = .038$). Results of Tukey post hoc comparisons reported in Table 4 showed that IR Group significantly outperformed TD Group in word recognition posttest ($p = .034$) while a non-significant difference existed between IR and PS Groups ($p = .158$) as well as TD and PS Groups ($p = .707$).

Table 4: Tukey post hoc comparisons of scores on recognition posttest for three groups

Group	Group	Recognition Posttest	
		Mean	<i>p</i>
Traditional (TD)	Picture-supported (PS)	-3.77	.707
	Incremental Rehearsal (IR)	-12.58	*.034
Picture-supported (PS)	Incremental Rehearsal (IR)	-8.81	.158

To assess participants' sight word retention ability, all participants received the same sight word recognition test again one week after the intervention to see how many words they had retained. The mean scores on the retention test (i.e., delayed word recognition posttest) shown in Table 3 were 26.80 (47.9%), 31.83 (56.8%), and 38.58 (68.9%) for TD Group, PS Group, and IR Group respectively. Although ANOVA results in Table 3 indicated that there was no significant difference in sight word retention test score ($F = 2.659, p = .078$) and attrition rate (i.e., [retention test – posttest] / [posttest – pretest]) ($F = 2.541, p = 0.087$) among three groups, PS Group obtained the lowest attrition rate (-0.043) preceded by TD Group (-0.128) and IR Group (-0.183) in order. One possible reason might be that visual cues like pictures could reduce attrition rate or enhance retention ability (Yoshii & Flaitz, 2002).

Mean scores on sight word generalization posttest reported in Table 3 were 12.40 (44.3%), 13.52 (48.3%) and 17.37(62%) for TD Group, PS Group, and IR Group respectively. The ranking of generalization mean scores among three groups was IR > PS > TD. Nevertheless, ANOVA results in Table 3 indicated a non-significant difference among three groups ($F = 1.877, p = .162$).

It was noticed that the percentages (44.3% ~ 62.0%) of correctness of generalization posttest for three groups were moderately lower than those (52.2%~74.4%) of recognition posttest. It's likely due to the fact that item difficulty indices of target words embedded in the sentences in sight word generalization test were lower than 0.32 while those of the words in sight word recognition test ranged from 0.00 to 0.62. Thus, participants might feel frustrated when reading sentences with target words. Moreover, some of the words other than the target words embedded in the sentences might be difficult for participants too. They might need more time to practice target words in sentence and to be familiar with their usage.

4.4 Participants' attitudes toward respective treatments

Table 5 reports one-way ANOVA results of each item of the questionnaire with 20 items divided into four parts for three groups. First of all, there was significant difference among the three groups on Item 3 "*I am attentive during the sight-word-enhancement class*" ($F = 8.408, p = .001$). The mean scores of the three groups were 4.25, 3.26, and 4.47 respectively for TD Group, PS Group and IR Group. The results of Tukey post hoc comparisons shown in Table 6 indicated that there was a significant difference between Groups of PS and TD ($p = .007$) as well as Groups of PS and IR ($p = .001$), whereas a non-significant difference between Groups of TD and IR ($p = .778$). It's likely due to the fact that the participants in TD Group were familiar with the traditional flashcard instruction since they experienced implementation of this kind of flashcard instruction in their formal curriculum, while and those in IR Group considered the incremental rehearsal flashcard instruction acceptable as well. However, PS Group might consider that the picture-supported flashcard provided excessive information (i.e., a picture + a sight word) at a time for them, and thus obstructed their concentration or attention during the instruction. This explanation can be supported by the results of Item 8 "*I think five/seven times of practicing each new sight word is sufficient in the sight-word-enhancement class,*" which were consistent with those of Item 9. The mean score of Item 8 for PS Group was 3.83, which was lower than that (4.25) of TD Group and that (4.47) of IR Group. Such results indicated more participants in PS Group thought five times of practicing a new sight word was insufficient than those in TD Group also with five times of practicing a new sight word as well as those in IR Group with seven times of practicing a new sight word. Results of Item 8 suggest that more than five times of practicing a new sight word, such as seven times, is needed for the picture-supported flashcard instruction due to more information provided on the picture-supported flashcards.

Table 5. One-way ANOVA results of each questionnaire item for three groups

Part I	TD		PS		IR		ANOVA	
Item	Mean	SD	Mean	SD	Mean	SD	<i>F</i>	<i>p</i>
1	4.70	.657	4.39	.655	4.53	.697	1.140	.327
2	4.50	.889	4.35	.775	4.68	.582	1.012	.370
*3	4.25	1.118	3.26	1.096	4.47	.841	8.408	*.001
4	4.45	.999	3.78	1.043	4.42	.961	3.066	.054
5	4.85	.367	4.48	.846	4.68	.671	1.668	.197
6	4.85	.366	4.35	.832	4.37	.895	3.020	.056
Average I	4.60	.539	4.10	.640	4.53	.650	4.924	*.011
Part II	TD		PS		IR		ANOVA	
Item	Mean	SD	Mean	SD	Mean	SD	<i>F</i>	<i>p</i>
7	4.55	.826	4.22	.850	4.42	.837	.864	.427
8	4.25	.910	3.83	1.029	4.47	.841	2.618	.081
*9	4.70	.571	3.87	.815	4.53	.841	7.336	*.001
10	4.35	.875	4.39	.783	4.37	.895	.013	.987
11	4.30	1.031	4.09	.949	4.42	.961	.632	.535
Average II	4.43	.498	4.08	.659	4.44	.727	2.164	.124
Part III	TD		PS		IR		ANOVA	
Item	Mean	SD	Mean	SD	Mean	SD	<i>F</i>	<i>p</i>
12	4.30	1.174	3.78	.902	4.32	1.057	1.834	.169
13	4.30	1.080	3.83	1.154	4.42	.837	1.955	.151
14	4.05	1.317	4.22	1.043	4.63	.683	1.577	.215
15	3.35	1.531	4.00	.953	4.21	1.134	2.686	.076
Average III	4.00	.824	3.96	.752	4.40	.724	4.403	.254
Part IV	TD		PS		IR		ANOVA	
Item	Mean	SD	Mean	SD	Mean	SD	<i>F</i>	<i>p</i>
16	4.70	.657	4.30	.822	4.53	.697	1.571	.216
17	4.15	1.089	4.39	.783	4.26	.991	.344	.710
18	4.35	.988	4.17	.778	4.37	.760	.348	.707
19	4.20	.834	4.26	.810	4.21	1.134	.027	.974
20	4.65	.670	4.22	.795	4.47	.841	1.711	.189
Average IV	4.41	.533	4.27	.546	4.37	.738	.100	.905

Maximal score: 5; * = $p < .05$

Part I: assessing participants' overall attitudes toward their respective sight word instructions

Part II: probing participants' attitudes toward the effectiveness of their respective flashcard instructional methods in terms of sight word recognition, retention, and generalization

Part III: examining appropriateness and difficulty level of the teaching materials

Part IV: exploring participants' confidence and motivation regarding acceptability of their respective flashcard instructional methods

Table 6. Tukey post hoc comparisons of questionnaire items 3 & 9 for three groups

		SD	<i>p</i>
Item 3			
TD	PS	.315	*.007
	IR	.330	.778
PS	IR	.320	*.001
Item 9			
TD	PS	.230	*.002
	IR	.241	.753
PS	IR	.233	*.018

Secondly, concerning Item 9 “*I think using the (TD/ PS/ IR) flashcard method helps me more easily read aloud sight words accurately.*” ($F = 7.336, p = .001$), the mean scores of the three groups were 4.70, 3.87, and 4.53 respectively for TD Group, PS Group, and IR Group. Results of further Tukey post hoc comparisons shown in Table 6 also indicated that there was a significant difference between Groups of TD and PS ($p = .002$) as well as Groups of IR and PS ($p = .018$), whereas a non-significant difference between Groups of TD and IR ($p = .753$). These results can work in concern with participants’ sight words recognition performance as well. Since IR Group held positive attitudes toward using incremental rehearsal flashcard method to enhance their sight word recognition abilities, it is consistent with the objective findings that they performed descriptively better than PS Group on the sight word recognition posttest. Since TD group and PS group performed similarly in the word recognition test but PS group obtained the lowest attrition rate in the retention test, it could be speculated that the participants in the PS group were not familiar with the picture-supported flashcard method and/or they subjectively felt the cognitive load was too heavy.

Additionally, Item 11 “*I think using (TD/ PS/ IR) flashcard method to teach sight words is helpful for me in terms of reading out English sentences or passages*” was used to investigate the participants’ attitudes toward their respective treatments regarding enhancing their sight word generalization abilities. The results indicated that there was no significant difference among three groups ($F = .632, p = .535$), which is consistent with the objective findings that there was no significant difference on the sight word generalization posttest performance among three groups either.

Finally, almost all of the mean scores on each part for three groups were higher than 4 out of 5 (80% positive agreement), suggesting that most participants held highly positive attitudes toward their respective flashcard instructional method. Moreover, one-way ANOVA results revealed that there was no significant difference from Part II to Part IV among three groups but a significant difference in Part I ($F = 4.924, p = .011$). Results of Tukey’s post hoc test indicated that there was a significant difference between Groups of TD and PS ($p = .026$), as well as Groups of IR and PS ($p = .025$), but no significant difference between Groups of TD and IR. The significant difference ($p = .011$) in Part I might mainly come from the significant difference ($p = .001$) in Item 3 assessing participants’ in-class attention to their respective flashcard treatments. Such results suggest that picture-supported flashcard instruction might provide excessive information at a time, which distracted participants’ attention to sight word learning, and thus needed more than five times of practicing a new sight word for EFL beginners.

5. Conclusion, educational implications, and limitations

This study compared effects of three flashcard methods (TD, PS, and IR) on EFL young learners’ sight word recognition, retention, and generalization. Results of paired-samples *t* tests demonstrated that three flashcard methods could significantly enhance EFL young learners’ sight word recognition, retention, and generalization. Results of one-way ANOVA and Tukey’s post hoc tests for sight word recognition performance showed that incremental rehearsal flashcard method led to the best performance and yielded significantly better effects than traditional flashcard method. It is likely due to the fact that rehearsing unknown words with known words was helpful, and higher frequency of practice also facilitated word recognition. On the other hand, picture-supported flashcard method produced the least attrition rate among three methods. It is possible that visual cues could reduce attrition rate (Yoshii & Flaitz, 2002). Regarding sight word retention and generalization, no significant difference existed among three groups. Results of questionnaire revealed that all three groups held positive attitudes toward their respective flashcard instructions. Generally speaking, most learners believed that they benefited from the implementation of their respective flashcard instruction in terms of sight word learning and were still looking forward to receiving more flashcard instruction after this eight-week experimental instruction.

Three educational implications for EFL elementary teachers are provided according to the

findings of this study. First, teachers can either choose incremental rehearsal flashcard method in vocabulary teaching to achieve immediate word recognition outcomes, or adopt picture-supported flashcard method to teach vocabulary to attain longer effects. Secondly, if teachers use picture-supported flashcard method for sight word teaching, frequency for practicing target words should be at least seven times. This suggestion is based on the questionnaire results showing that some participants in PS Group considered that practicing target words five times was insufficient for them, while those in IR Group thought they had adequate chances as they practiced each word at least seven times. Thirdly, teachers can even try to integrate incremental rehearsal flashcard method with picture-supported one. Burns (2005) indicated that unknown words were incrementally rehearsed with known words; thus, incremental rehearsal flashcard method provided learners with multiple chances to be repeatedly exposed to target words. On the other hand, as pictures on flashcards can help learners to retain target words for a relatively longer period (Fossett & Mirenda, 2006), implementation of picture-supported flashcards yields better results in attrition. Consequently, integrating these two flashcard techniques by using picture-supported flashcards to incrementally rehearse target words may be an ideal teaching method for sight word learning in terms of achieving both short-term and long-term memory retention.

Some limitations of this study followed by suggestions for future research are discussed as well. First of all, as the sample size in the current study was small, it is suggested that more subjects should be recruited in future studies. Secondly, participants in three groups still had room for improvement in word recognition and word generalization (especially in the latter) because their percentages of correctness on word recognition posttest ranged from 52.2% to 74.4%, and word generalization test, from 44.3% to 62.0%. It is likely that they needed more time to practice or more exposure to target words. Thus, the duration of the instructional time, especially for word generalization activity, should be lengthened. Lastly, as target words were assigned to each week's lesson from easy to difficult based on item difficulty indices in the present study, and the results were not ideal, it's suggested that future studies distribute target words evenly by mixing the words with different difficulty indices each week (Howard, DaDeppo, & De La Paz, 2008).

三種字卡教學法對小學生英文視覺字之 認知力、記憶力和應用能力上之成效

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摘 要

本研究比較三種字卡教學方法對小學生英文視覺字彙之立即認讀力，記憶力和類化能力的成效。參加本研究的學生為來自中臺灣三班英文能力相當的四年級學生，共 62 人。此三班學生隨機被給予其中一種閃示卡教學方法：傳統文字閃示卡教學法，圖文閃示卡教學法和增量複述閃示卡教學法。本研究教學持續 8 週，每週 35 分鐘。教學和測試題材為 56 個視覺字彙。研究工具包括視覺字彙之認讀測驗，視覺字彙類化測驗和三個版本的課程問卷。視覺字彙之認讀測驗被用來當做前測，後測和延遲測試，而視覺字彙類化測驗也被用來當做前測和後測。問卷被用來調查參與者對其所給予的閃示卡教學法的態度。研究結果為：(a) 三種閃示卡教學法在提昇參與者的英文視覺字彙之立即認讀力，記憶力和類化能力三方面都非常有效；(b) 在後測的視覺字彙認讀測驗上增量練習閃示卡組明顯優於傳統文字閃示卡組，而圖文閃示卡組則分別與增量複述閃示卡組及傳統文字閃示卡組皆無顯著差異；(c) 雖然三組類化能力，記憶力和遺忘率方面無顯著性差異，但增量複述閃示卡組在視覺字彙認讀之延遲測驗和視覺字彙類化後測中獲得最高的平均分數，而圖文閃示卡組的單字遺忘率最低。問卷結果顯示：大多數參與者對各自的閃示卡教學法正向態度。最後根據此研究結果，本論文提供了三個教學上的建議和三個對未來研究的建議。

關鍵詞：視覺字彙、傳統文字閃示卡教學法、圖文閃示卡教學法、增量複述閃示卡教學法、立即認讀、記憶力、類化能力

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Appendixes

Appendix A

Self-developed Sight Word Recognition Test

1	sleep		29	angry	
2	Monday		30	street	
3	bathroom		31	shy	
4	computer		32	thirsty	
5	tired		33	Sunday	
6	read		34	festival	
7	cellphone		35	chicken	
8	taste		36	terrible	
9	family		37	write	
10	wonderful		38	library	
11	thank		39	student	
12	show		40	brave	
13	eye		41	excited	
14	woman		42	money	
15	bank		43	Friday	
16	horse		44	hurt	
17	bear		45	lazy	
18	Saturday		46	theater	
19	pear		47	great	
20	flying		48	Wednesday	
21	strong		49	laugh	
22	party		50	honest	
23	hospital		51	morning	
24	smart		52	lonely	
25	jacket		53	smell	
26	favorite		54	bedroom	
27	full		55	Thursday	
28	Tuesday		56	friend	

Number of Correctly Read Words: _____

Appendix B

Self-developed Sight Word Generalization Test

1. I am going to the <u>hospital</u> .	
2. How many <u>bears</u> are there?	
3. Let's go to the <u>theater</u> !	
4. How much is the <u>cellphone</u> ?	
5. The <u>library</u> is on Yellow Road.	
6. Let's get some <u>pears</u> and apples!	
7. The birds are <u>flying</u> in the sky.	
8. My school is on Red <u>Street</u> .	
9. That <u>woman</u> is talking to your father.	
10. Today is the Dragon Boat <u>Festival</u> .	
11. You are an <u>honest</u> boy.	
12. She feels very <u>thirsty</u> now.	
13. My sister is very <u>shy</u> .	
14. He looks sad and feels <u>terrible</u> .	
15. My sister is a <u>brave</u> girl.	
16. I feel <u>tired</u> after the race.	
17. I do not feel <u>lonely</u> .	
18. Is he a <u>strong</u> boy?	
19. You have a <u>wonderful</u> family.	
20. He is my best <u>friend</u> .	
21. I can see a <u>full</u> moon today.	
22. What is your <u>favorite</u> food?	
23. I am <u>excited</u> about going swimming.	
24. There are four people in my <u>family</u> .	
25. Is your mother <u>laughing</u> now?	
26. I can <u>read</u> and dance.	
27. The cake <u>tastes</u> very good.	
28. I fell down and my hands <u>hurt</u> .	

Note: the underlined words are unknown words

Number of Correctly Read Words: _____

Appendix C1

使用文字閃示卡進行視覺字彙教學之課程問卷

同學們好：

請閱讀每一題的內容後，根據自己的想法，依次在量表上圈選。每一題題目右邊的數字代表你對題目的同意程度，1 代表非常不同意，2 代表不同意，3 代表稍微同意，4 代表同意，5 代表非常同意。

每一題只能圈選一個數字；請不要遺漏任何一題。作答上有任何問題，請舉手發問。

	非常 不同意	不 同意	稍 微 同 意	同 意	非 常 同 意
1. 我喜歡這次上的英文視覺字彙強化學習課程。	1	2	3	4	5
2. 我覺得學習英文視覺字彙是重要的。	1	2	3	4	5
3. 上這次視覺字彙強化學習課程時，我是專心的。	1	2	3	4	5
4. 視覺字彙強化學習課程讓我覺得記得視覺字彙是容易的。	1	2	3	4	5
5. 我喜歡老師在課堂開始前使用遊戲複習學過的單字。	1	2	3	4	5
6. 我喜歡在課堂上使用文字閃示卡來進行視覺字彙的教學。	1	2	3	4	5
7. 我覺得使用文字閃示卡進行教學能幫助我學習視覺字彙。	1	2	3	4	5
8. 我覺得上視覺字彙強化學習課程中，每個單字重複練習 5 次是足夠的。	1	2	3	4	5
9. 使用文字閃示卡進行視覺字彙教學，讓我更容易正確的讀出視覺字彙。	1	2	3	4	5
10. 使用文字閃示卡進行視覺字彙教學，多次重複練習新的視覺單字能讓我將它們記得更久。	1	2	3	4	5
11. 使用文字閃示卡進行視覺字彙教學，對我朗讀英文句子或文章時有幫助。	1	2	3	4	5
12. 我覺得視覺字彙強化學習課程中所學習到的視覺單字難易度是適合我的。	1	2	3	4	5
13. 我覺得在視覺字彙強化學習課程中，每週上 7 個新單字的數量是合適的。	1	2	3	4	5
14. 我覺得文字閃示卡能幫助我學習新的視覺單字。	1	2	3	4	5
15. 我覺得閃示卡上僅有文字沒有圖片輔助對我學習新的視覺單字是困難的。	1	2	3	4	5
16. 我覺得利用文字閃示卡進行視覺字彙教學，可以增加我學習英文的動機。	1	2	3	4	5
17. 我覺得利用文字閃示卡進行視覺字彙教學，讓我在念出視覺單字時更有信心。	1	2	3	4	5
18. 如果未來老師繼續使用文字閃示卡進行視覺字彙教學，我覺得我不會害怕學習新的視覺單字。	1	2	3	4	5
19. 如果未來老師繼續使用文字閃示卡進行視覺字彙教學，我有信心可以嘗試唸出新的視覺單字。	1	2	3	4	5
20. 若未來有機會，我希望老師可以繼續使用文字閃示卡進行視覺字彙教學。	1	2	3	4	5

問卷到此結束，謝謝您的合作。

Appendix C2

使用圖文閃示卡進行視覺字彙教學之課程問卷

同學們好：

請閱讀每一題的內容後，根據自己的想法，依次在量表上圈選。每一題題目右邊的數字代表你對題目的同意程度，1 代表非常不同意，2 代表不同意，3 代表稍微同意，4 代表同意，5 代表非常同意。

每一題只能圈選一個數字；請不要遺漏任何一題。作答上有任何問題，請舉手發問。

	非常 不同意	不 同意	稍 微 同 意	同 意	非 常 同 意
1. 我喜歡這次上的英文視覺字彙強化學習課程。	1	2	3	4	5
2. 我覺得學習英文視覺字彙是重要的。	1	2	3	4	5
3. 上這次視覺字彙強化學習課程時，我是專心的。	1	2	3	4	5
4. 視覺字彙強化學習課程讓我覺得記得視覺字彙是容易的。	1	2	3	4	5
5. 我喜歡老師在課堂開始前使用遊戲複習學過的單字。	1	2	3	4	5
6. 我喜歡在課堂上使用圖文閃示卡來進行視覺字彙的教學。	1	2	3	4	5
7. 我覺得使用圖文閃示卡進行教學能幫助我學習視覺字彙。	1	2	3	4	5
8. 我覺得上視覺字彙強化學習課程中，每個單字重複練習 5 次是足夠的。	1	2	3	4	5
9. 使用圖文閃示卡進行視覺字彙教學，讓我更容易正確的讀出視覺字彙。	1	2	3	4	5
10. 使用圖文閃示卡進行視覺字彙教學，多次重複練習新的視覺單字能讓我將它們記得更久。	1	2	3	4	5
11. 使用圖文閃示卡進行視覺字彙教學，對我朗讀英文句子或文章時有幫助。	1	2	3	4	5
12. 我覺得視覺字彙強化學習課程中所學習到的視覺單字難易度是適合我的。	1	2	3	4	5
13. 我覺得在視覺字彙強化學習課程中，每週上 7 個新單字的數量是合適的。	1	2	3	4	5
14. 我覺得閃示卡上的圖片能幫助我學習新的視覺單字。	1	2	3	4	5
15. 我覺得閃示卡上同時有文字以及圖片能降低學習新視覺單字的困難度。	1	2	3	4	5
16. 我覺得利用圖文閃示卡進行視覺字彙教學，可以增加我學習英文的動機。	1	2	3	4	5
17. 我覺得利用圖文閃示卡進行視覺字彙教學，讓我在念出視覺單字時更有信心。	1	2	3	4	5
18. 如果未來老師繼續使用圖文閃示卡進行視覺字彙教學，我覺得我不會害怕學習新的視覺單字。	1	2	3	4	5
19. 如果未來老師繼續使用圖文閃示卡進行視覺字彙教學，我有信心可以嘗試唸出新的視覺單字。	1	2	3	4	5
20. 若未來有機會，我希望老師可以繼續使用圖文閃示卡進行視覺字彙教學。	1	2	3	4	5

問卷到此結束，謝謝您的合作。

Appendix C3

使用文字閃示卡進行增量複述視覺字彙教學之課程問卷

同學們好：

請閱讀每一題的內容後，根據自己的想法，依次在量表上圈選。每一題題目右邊的數字代表你對題目的同意程度，1 代表非常不同意，2 代表不同意，3 代表稍微同意，4 代表同意，5 代表非常同意。

每一題只能圈選一個數字；請不要遺漏任何一題。作答上有任何問題，請舉手發問。

	非常 不同意	不 同意	稍 微 同 意	同 意	非常 同意
1. 我喜歡這次上的英文視覺字彙強化學習課程。	1	2	3	4	5
2. 我覺得學習英文視覺字彙是重要的。	1	2	3	4	5
3. 上這次視覺字彙強化學習課程時，我是專心的。	1	2	3	4	5
4. 視覺字彙強化學習課程讓我覺得記得視覺字彙是容易的。	1	2	3	4	5
5. 我喜歡老師在課堂開始前使用遊戲複習學過的單字。	1	2	3	4	5
6. 我喜歡在課堂上使用文字閃示卡來進行增量複述單字的視覺字彙教學。	1	2	3	4	5
7. 我覺得使用文字閃示卡進行增量複述單字的視覺字彙教學能幫助我學習視覺字彙。	1	2	3	4	5
8. 我覺得上視覺字彙強化學習課程中，每個單字重複練習 <u>7次</u> 是足夠的	1	2	3	4	5
9. 使用文字閃示卡進行增量複述單字的視覺字彙教學，讓我更容易正確的讀出視覺字彙。	1	2	3	4	5
10. 使用文字閃示卡進行增量複述單字的視覺字彙教學，多次重複練習新的視覺單字能讓我將它們記得更久。	1	2	3	4	5
11. 使用文字閃示卡進行增量複述單字的視覺字彙教學，對我朗讀英文句子或文章時有幫助。	1	2	3	4	5
12. 我覺得視覺字彙強化學習課程中，課堂上學習到的視覺單字難易度是適合我的。	1	2	3	4	5
13. 我覺得在視覺字彙強化學習課程中，每週上 7 個新單字的數量是合適的。	1	2	3	4	5
14. 我覺得用已學過的單字來輔助我學習新的視覺單字是有幫助的。	1	2	3	4	5
15. 我覺得用已學過的單字來輔助我學習新的單字能降低學習新視覺單字的困難度。	1	2	3	4	5
16. 我覺得利用文字閃示卡進行增量複述單字的視覺字彙教學，可以增加我學習英文的動機。	1	2	3	4	5
17. 我覺得利用文字閃示卡進行增量複述單字的視覺字彙教學，讓我在念出視覺單字時更有信心。	1	2	3	4	5
18. 如果未來老師繼續使用文字閃示卡進行增量複述單字的視覺字彙教學，我覺得我不會害怕學習新的視覺單字。	1	2	3	4	5
19. 如果未來老師繼續使用文字閃示卡進行增量複述單字的視覺字彙教學，我有信心可以嘗試唸出新的視覺單字。	1	2	3	4	5
20. 若未來有機會，我希望老師可以繼續使用文字閃示卡進行增量複述單字的視覺字彙教學。	1	2	3	4	5

問卷到此結束，謝謝您的合作。

Appendix D1**Questionnaire on Using Traditional Flashcard Method to Teach English Sight Words**

Dear Students:

Please read each statement and circle the number (1, 2, 3, 4, 5) that tells to what extent you agree with it. The number “1” stands for “extremely disagree”, 2 for “disagree”, 3 for “slightly agree”, 4 for “agree”, and 5 for “extremely agree”.

Please select only one number for each item and make sure all items are answered. If you have any question, please feel free to ask.

1 = Strongly Disagree; 2 = Disagree; 3 = Slightly Agree; 4 = Agree; 5 = Strongly Agree

1. I like the sight-word-enhancement class.	1	2	3	4	5
2. I think learning sight words is important.	1	2	3	4	5
3. I am attentive during the sight-word-enhancement class.	1	2	3	4	5
4. The sight-word-enhancement class makes me feel that memorizing sight words is easy.	1	2	3	4	5
5. I like instructor's using games to review previously taught words before starting a new lesson.	1	2	3	4	5
6. I think I like the instruction of sight words with traditional flashcard method.	1	2	3	4	5
7. I think using the traditional flashcard method can help me learn sight words.	1	2	3	4	5
8. I think five times of practicing each new word is sufficient in the sight-word-enhancement class.	1	2	3	4	5
9. I think using the traditional flashcard method helps me more easily read aloud sight words accurately.	1	2	3	4	5
10. I think practicing new words multiple times helps me memorize them longer when the traditional flashcard method is used to teach sight words.	1	2	3	4	5
11. I think using the traditional flashcard method to teach sight words is helpful for me in terms of reading out English sentences or passages.	1	2	3	4	5
12. I think the difficulty level of the sight words taught in the sight-word-enhancement class is appropriate.	1	2	3	4	5
13. I think the quantity of learning seven new words per time (1 time/week) is appropriate in sight-word-enhancement class.	1	2	3	4	5
14. I think the traditional flashcard method can facilitate my new sight word learning.	1	2	3	4	5
15. I think showing only sight words without pictures in the traditional flashcards is difficult for me to learn new sight words.	1	2	3	4	5
16. I think using the traditional flashcard method to teach sight words can increase my motivation for learning English.	1	2	3	4	5
17. I think using the traditional flashcard method to teach sight words can enhance my confidence in reading them out.	1	2	3	4	5
18. If the instructor continues using the traditional flashcard method to teach sight words in the future, I think I will not feel afraid of learning new sight words.	1	2	3	4	5
19. If the instructor continues using the traditional flashcard method to teach sight words in the future, I think I will have confidence in reading out new sight words.	1	2	3	4	5
20. If possible, I hope the instructor can continue using the traditional flashcard method to teach sight words in the future.	1	2	3	4	5

Thanks for your participation!

Appendix D2**Questionnaire on Using Picture-Supported Flashcard Method to Teach English Sight Words**

Dear Students:

Please read each statement and circle the number (1, 2, 3, 4, 5) that tells to what extent you agree with it. The number “1” stands for “extremely disagree”, 2 for “disagree”, 3 for “slightly agree”, 4 for “agree”, and 5 for “extremely agree”.

Please select only one number for each item and make sure all items are answered. If you have any question, please feel free to ask.

1 = Strongly Disagree; 2 = Disagree; 3 = Slightly Agree; 4 = Agree; 5 = Strongly Agree

1. I like the sight-word-enhancement class.	1	2	3	4	5
2. I think learning sight words is important.	1	2	3	4	5
3. I am attentive during the sight-word-enhancement class.	1	2	3	4	5
4. The sight-word-enhancement class makes me feel that memorizing sight words is easy.	1	2	3	4	5
5. I like instructor's using games to review previously taught words before starting a new lesson.	1	2	3	4	5
6. I think I like the instruction of sight words with the picture-supported flashcard method.	1	2	3	4	5
7. I think using the picture-supported flashcard method can help me learn sight words.	1	2	3	4	5
8. I think five times of practicing each new word is sufficient in the sight-word-enhancement class.	1	2	3	4	5
9. I think using the picture-supported flashcard method helps me more easily read aloud sight words accurately.	1	2	3	4	5
10. I think practicing new words multiple times helps me memorize them longer when the picture-supported flashcard method is used to teach sight words.	1	2	3	4	5
11. I think using the picture-supported flashcard method to teach sight words is helpful for me in terms of reading out English sentences or passages.	1	2	3	4	5
12. I think the difficulty level of the sight words taught in the sight-word-enhancement class is appropriate.	1	2	3	4	5
13. I think the quantity of learning seven new words per time (1 time/week) is appropriate in sight-word-enhancement class.	1	2	3	4	5
14. I think the pictures in the picture-supported flashcards can facilitate my new sight word learning.	1	2	3	4	5
15. I think simultaneously showing pictures and their English words in the picture-supported flashcards can decrease difficulty in learning new sight words.	1	2	3	4	5
16. I think using the picture-supported flashcard method to teach sight words can increase my motivation for learning English.	1	2	3	4	5
17. I think using the picture-supported flashcard method to teach sight words can enhance my confidence in reading them out.	1	2	3	4	5
18. If the instructor continues using the picture-supported flashcard method to teach sight words in the future, I think I will not feel afraid of learning new sight words.	1	2	3	4	5
19. If the instructor continues using the picture-supported flashcard method to teach sight words in the future, I think I will have confidence in reading out new sight words.	1	2	3	4	5
20. If possible, I hope the instructor can continue using the picture-supported flashcard method to teach sight words in the future.	1	2	3	4	5

Thanks for your participation!

Appendix D3**Questionnaire on Using Incremental Rehearsal Flashcard Method to Teach English Sight Words**

Dear Students:

Please read each statement and circle the number (1, 2, 3, 4, 5) that tells to what extent you agree with it. The number "1" stands for "extremely disagree", 2 for "disagree", 3 for "slightly agree", 4 for "agree", and 5 for "extremely agree".

Please select only one number for each item and make sure all items are answered. If you have any question, please feel free to ask.

1 = Strongly Disagree; 2 = Disagree; 3 = Slightly Agree; 4 = Agree; 5 = Strongly Agree

1. I like the sight-word-enhancement class.	1	2	3	4	5
2. I think learning sight words is important.	1	2	3	4	5
3. I am attentive during the sight-word-enhancement class.	1	2	3	4	5
4. The sight-word-enhancement class makes me feel that memorizing sight words is easy.	1	2	3	4	5
5. I like instructor's using games to review previously taught words before starting a new lesson.	1	2	3	4	5
6. I think I like the instruction of sight words with the incremental rehearsal flashcard method.	1	2	3	4	5
7. I think using the incremental rehearsal flashcard method can help me learn sight words.	1	2	3	4	5
8. I think seven times of practicing each new word is sufficient in the sight-word-enhancement class.	1	2	3	4	5
9. I think using the incremental rehearsal flashcard method helps me more easily read aloud sight words accurately.	1	2	3	4	5
10. I think practicing new words multiple times helps me memorize them longer when the incremental rehearsal flashcard method is used to teach sight words.	1	2	3	4	5
11. I think using the incremental rehearsal flashcard method to teach sight words is helpful for me in terms of reading out English sentences or passages.	1	2	3	4	5
12. I think the difficulty level of the sight words taught in the sight-word-enhancement class is appropriate.	1	2	3	4	5
13. I think the quantity of learning seven new words per time (1 time/week) is appropriate in sight-word-enhancement class.	1	2	3	4	5
14. I think using previously studied words to facilitate new sight word learning is helpful.	1	2	3	4	5
15. I think using previously studied words to facilitate new sight word learning can decrease difficulty in learning new sight words.	1	2	3	4	5
16. I think using the incremental rehearsal flashcard method to teach sight words can increase my motivation for learning English.	1	2	3	4	5
17. I think using the incremental rehearsal flashcard method to teach sight words can enhance my confidence in reading them out.	1	2	3	4	5
18. If the instructor continues using the incremental rehearsal flashcard method to teach sight words in the future, I think I will not feel afraid of learning new sight words.	1	2	3	4	5
19. If the instructor continues using the incremental rehearsal flashcard method to teach sight words in the future, I think I will have confidence in reading out new sight words.	1	2	3	4	5
20. If possible, I hope the instructor can continue using the incremental rehearsal flashcard method to teach sight words in the future.	1	2	3	4	5

Thanks for your participation!