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Effective Vocabulary Learning:

An Investigation of Memory Strategies for English Vocabulary Acquisition

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Abstract

Vocabulary acquisition is an important part of second language acquisition (SLA) and investigating effective vocabulary learning strategies (VLS) is a mission of educators. This study aims to figure out whether two memory strategies (i.e., semantic mapping and imagery) are more effective than rote memorization (i.e., L1 rehearsal) for Hong Kong secondary students to learn English vocabulary. In the study, semantic mapping was used to display each target English word with three Chinese concepts relevant to the English word, while imagery involved the association of the verbal code with a visual code. L1 rehearsal required learners to memorize the L1 translation of the target English words by rehearsal. Focusing on 24 secondary two students in a local school, this study examined the effectiveness of the two selected memory strategies through an experiment and follow-up interviews. The data suggested that the two memory strategies had no significant advantage over L1 rehearsal for both immediate vocabulary learning and longer vocabulary retention. Some positive effects of the memory strategies and their potential problems were spotted in the interviews. Based on the data, pedagogical implications related to familiar context, learner autonomy, preservation of L1 translation, and cultural education are discussed.

Keyword: vocabulary acquisition, memory strategies, semantic mapping, imagery, L1 rehearsal, secondary EFL learners, Hong Kong

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1. Introduction

Vocabulary acquisition is an essential element of second language acquisition (SLA) (Schmitt, 2008). Wilkins (1972) said, "without grammar, very little can be conveyed, without vocabulary, nothing can be conveyed" (p.111). Acting as the primary meaning carrier, vocabulary influences learners' receptive and productive skills (González-Fernández & Schmitt, 2017). Selecting effective vocabulary learning strategies (VLS) is crucial to successful vocabulary acquisition. The most famous VLS taxonomy raised by Schmitt (1997) includes determination strategies, social strategies, memory strategies, cognitive strategies, and metacognitive strategies. Two memory strategies, which are semantic mapping and imagery, are investigated in this study. As one of the five VLS, memory strategies involve associating new knowledge with preexisting schemas, thus facilitating long-term retention (Schmitt, 2000). Memory strategies are significantly relevant to EFL classrooms because they can be integrated into in-class vocabulary instruction. However, as O'Malley et al. (1985) suggested, Asian students show resistance to memory strategies, and their heavy reliance on rote memorization is noticeable. According to Schmitt (1997), rote memorization belongs to cognitive strategies. It refers to repetitive learning, consisting of memorizing the L1 equivalence of an L2 word by rehearsal (Sagarra & Alba, 2006). This research aims to investigate whether memory strategies have greater effects on Hong Kong students' vocabulary learning than the cognitive strategy of rote memorization (L1 rehearsal).

2. Literature Review

2.1 Vocabulary acquisition

There are two main processes in vocabulary acquisition: explicit learning and incidental learning (Schmitt, 2000). Explicit learning refers to the focused learning of vocabulary,

while incidental learning is the process of learning vocabulary when the learner's attention is on messages rather than the words themselves (Schmitt, 2000). Nation (2001) argued that incidental learning helped learners gain comprehensive vocabulary knowledge through "message-focused activities," while Schmitt (2000) believed that it was slower, more ambiguous, and lacking in focused attention.

Regarding the effectiveness of VLS, scholars had considerable discussions on the depth of processing (Sagarra & Alba, 2006; Nemati, 2009; Baleghizadeh & Naeim, 2011). "Depth of Processing Hypothesis" suggests that the more cognitive energy learners exert when manipulating and assimilating a word, the more likely it will be recalled and used later (Craik & Lockhart, 1972). However, L2 learners are commonly found to prefer strategies involving minimum depth of processing, which can be explained by the human brain's limited capacity for processing and storing information (Baddeley, 2003; Just & Carpenter, 1992). These strategies are primarily cognitive strategies such as verbal and written repetition, which do not focus on mental processing but engage learners in mechanical learning (Schmitt, 1997).

2.2 Memory strategies

Considering learners' common preference for cognitive strategies, an indispensable role of language teachers is to engage learners in more complex lexical processing (Sagarra & Alba, 2006). Memory strategies are more effective than techniques that only involve shallow mental manipulation or processing (O'Malley & Chamot, 1990; Oxford, 1990). The involvement of previous knowledge when learning new vocabulary is the main characteristic of memory strategies (Schmitt, 1997). Thompson (1987) proposed that memory strategies worked by developing a retrieval plan, integrating new words into

existing cognitive units, and providing retrieval cues. According to Craik and Lockhart's (1972) "Depth of Processing Hypothesis," the cognitive energy involved in this process contributes to the retention of new vocabulary.

The two selected memory strategies in this study are semantic mapping and imagery. Imagery transfers new vocabulary into concepts in memory through meaningful visual images, either in an actual picture or in the mind (Nemati, 2009). Figure 1 shows the images of "loop" "herd" and "summit", which were included in Nemati's (2009) study that aimed to investigate the effectiveness of imagery. Imagery is based on associating a word with a picture, and the processing of the picture-verbal combination involves great cognitive power (Oxford & Crookall, 1990).

Loop Herd Summit

Figure 1: Imagery in Nemati's (2009) study

Semantic mapping categorizes and structures information in a graphic form (Johnson et al., 1986), which aims to increase learners' memory of vocabulary by manipulating relationships among words (Nattinger, 1988). A typical semantic map includes a key concept and its semantically related concepts organized in different categories (Dilek & Yürük, 2013), as shown in Figure 2. The key concept of this semantic map is "transportation," and six means of transportation are categorized based on where they can be found (i.e., water, sky, land).

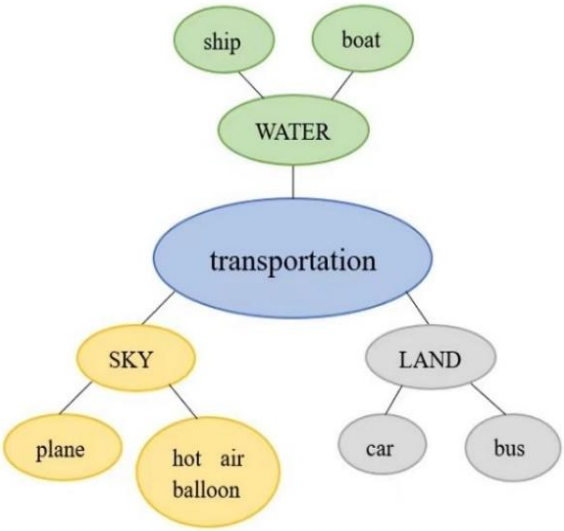
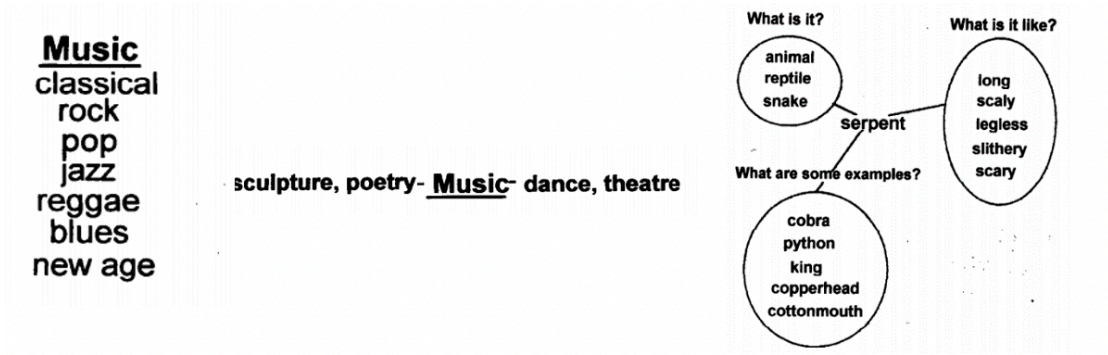


Figure 2: Example of a semantic map on "transportation"

Semantic mapping is a flexible technique, and teachers may adapt it to serve their contexts (Baleghizadeh & Naeim, 2011). Foil and Alber (2002) came up with multiple variations of semantic mappings, such as the vertical map, the horizontal map, and integrating questions into a map, which are shown in Figure 3.



Vertical map Horizontal map Semantic map with integrated questions

Figure 3: Variations of semantic mapping (Foil & Alber, 2002)

To test the effectiveness of semantic mapping among Spanish learners in the USA, Sagarra and Alba (2006) presented their participants with the L1 translation of the target word (*Sobaco*) and asked them to write down three relevant concepts in L1. Figure 4

illustrates how the word "*Sobaco*" is presented in Sagarra and Alba's (2006) experiment.

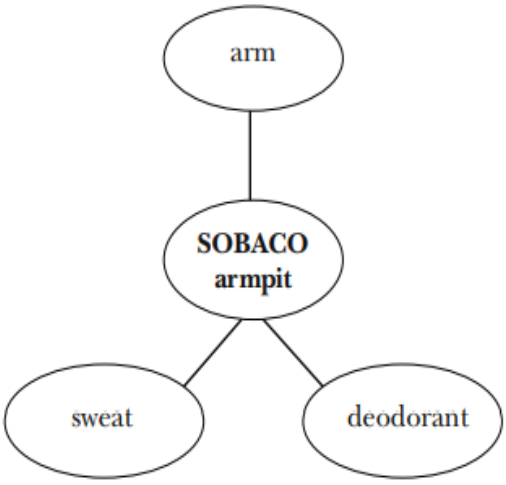


Figure 4: Incorporation of L1 into a semantic map (Sagarra & Alba, 2006)

2.3 Rote memorization (L1 rehearsal)

Rote memorization refers to the learning process that aims to fix knowledge through sheer repetition (Khoii & Sharififar, 2013). Scholars believed that rote memorization included no reference to logic (Yang & Dai, 2011) and involved very little cognitive processing (Sagarra, & Alba, 2006). In the field of vocabulary acquisition, rote memorization is often investigated in the form of L1 rehearsal, which means memorizing the L1 translation of a foreign word by rehearsal (Sagarra, & Alba, 2006). Previous studies have investigated and compared the effectiveness of memory strategies and rote memorization, and the results are presented below.

2.4 Previous studies on the effectiveness of imagery, semantic mapping, and rote memorization

Some previous studies demonstrated the effectiveness of using imagery for vocabulary acquisition. Nemati's (2009) investigation on grouping, acronyms and imagery

demonstrated the long-term effectiveness of utilizing memory strategies in Indian EFL classrooms. Nemati (2009) concluded that the employment of visual images activated learners' right hemisphere, which is responsible for imagination and spatial thinking. The right hemisphere effectively distributes new information and facilitates memorization (Danesi, 2003). In Zahedi and Abdi's (2012) research on the effect of imagery and direct translation, the significant effect of imagery was proved. Zahedi and Abdi (2012) pointed out that imagery led to more active engagement of cognitive activities, deeper processing, and better retention of vocabulary.

Research on semantic mapping is also abundant. Zahedi and Abdi (2012) compared the effects of semantic mapping and direct translation with Iranian EFL learners. In this experiment, learners were given the autonomy to relate the new word with their prior knowledge. Learners were required to brainstorm as many words that are relevant to the central word as possible. Then the teacher organized all the related concepts and created a semantic map. The result in the posttest suggested that the advantage of semantic mapping over L1 translation was statistically significant.

However, not all scholars advocated semantic mapping. Sagarra and Alba's (2006) study incorporated L1 into a semantic map. After presenting the participants with the target word and its L1 translation, participants were required to write down three related words in L1. This strategy was compared with L1 rehearsal, which required participants to read the word-translation pairs silently and write them repeatedly. The result suggested that semantic mapping was less effective than L1 rehearsal. Sagarra and Alba (2006) explained that semantic mapping was ineffective because of its narrow focus on meanings, ignoring the form-meaning link. Erten and Tekin (2008) also concluded that

presenting semantically related words may cause cross-association, interference among words, and overloading.

There are some more studies examining the effectiveness of semantic mapping and rote memorization. Khoii and Sharififar's (2013) study showed that semantic mapping had no superiority over rote memorization despite the time and mental energy it consumed, while Badr and Abu-Ayyash's (2019) research indicated that semantic mapping always had more positive impacts on vocabulary acquisition compared to rote memorization.

2.5 Research gap and questions

Noticeably, nearly no published research chose Chinese EFL learners to investigate the effectiveness of memory strategies. The effectiveness of VLS is highly relevant to learners' L1, proficiency in L2, cultural background, and reasons for learning L2 (Schmitt, 2000). The results of previous studies, which were mainly done with university students in foreign countries, may not apply to secondary EFL learners in Hong Kong. Mechanical rote memorization has long been a prevalent way to learn English vocabulary among Chinese learners (Yang & Dai, 2011). However, O'Malley and Chamot (1990) found that even if students' initial educational system emphasized rote memorization, they may also adapt to effective memory strategies. Based on this finding and the "Depth of Processing Hypothesis", I assume that memory strategies are more effective than L1 rehearsal, which is a typical example of rote memorization. To investigate my hypothesis, these questions are examined:

1. Are memory strategies (i.e., semantic mapping and imagery) more effective than L1 rehearsal for immediate vocabulary learning?
2. Are memory strategies (i.e., semantic mapping and imagery) more effective

than L1 rehearsal for longer vocabulary retention (one week)?

3. What are students' perceptions of the memory strategies?

3. Methodology

3.1 Participants

The participants in this study are 24 secondary two students who are around 13 years old, including 11 girls and 13 boys. They are from a band 2 school in Yuen Long and study English as a second/ foreign language.

3.2 Materials

3.2.1 Experimental words

This study focuses on 18 words (Appendix 1) selected from the corpus COCA with similar frequencies. To avoid the influence of word class on the result, all the selected words are concrete nouns.

3.2.2 Presentation of words

Booklets were used to present the words to participants. The L1 translation was reserved when testing the effectiveness of semantic mapping and imagery to avoid learners' anxiety and maladaptation caused by unfamiliar vocabulary learning methods. Similar to Sagarra and Alba's (2006) research, after reading the central word and its Chinese translation, participants added three conceptually related words in Chinese to the central word. When studying words with images, participants first looked at the L1 translation to understand the word accurately and then associated the word with the image. When engaged in L1 rehearsal, participants read the word and its L1 translation repeatedly.

Figure 5: Semantic mapping, imagery, and L1 rehearsal

The 24 participants were divided into three groups, with each group receiving a different booklet. The 18 words have different presentation orders in the three booklet versions. As shown in Table 1, every six words formed a word set, and semantic mapping was used to memorize word set A for Group 1, word set C for Group 2, and word set B for Group 3. Likewise, the words used to examine the effects of imagery and L1 rehearsal were different, respectively, in the three groups. This design reduces the error in case some words are more easily memorized through a particular strategy.

Strategy	Presentation order of words (Group 1)	Presentation order of words (Group 2)	Presentation order of words (Group 3)
Semantic mapping	Word set A (6)	Word set C (6)	Word set B (6)
Imagery	Word set B (6)	Word set A (6)	Word set C (6)
L1 rehearsal	Word set C (6)	Word set B (6)	Word set A (6)

Table 1: Experimental Design

3.3 Instrument

3.3.1 Pretest

A 15-minute pretest (Appendix 2) was conducted before the study to test participants'

knowledge of 46 words, during which they needed to translate the words into Chinese. In the end, 24 words not known by any participant were chosen, with 6 words for the trial study and 18 words for the experiment (Appendix 1).

3.3.2 Trial study

A trial study was carried out to get participants familiar with the procedure. Two words were learned by each strategy. Participants received a brief introduction to the three VLS before the trial study began. The experimenter illustrated how the strategies work by referring to three examples presented on a PowerPoint slide.

3.3.3 Treatment

In the official experiment, three versions of booklets (Appendix 4) were delivered to the three groups. They first read the instruction (Appendix 3) on the cover page. When the study started, participants spent 90 seconds memorizing the first word using semantic mapping. After 90 seconds, they were instructed to turn to page two and learn the second word. The same procedure was repeated until participants finished learning the first six words with semantic mapping. To minimize the primacy and recency effects, the order of words in each word set was randomly assigned, which means participants in each group learned different words at the same time. Then, they completed a posttest for semantic mapping. The same procedure was applied to investigate imagery and L1 rehearsal.

3.3.4 Posttest

Posttests were conducted during the experiment and one week after the experiment. In the immediate posttest, participants should translate the English words. Each posttest

for the corresponding strategy lasted for five minutes, and it was carried out right after the participants finished learning the six words using that strategy.

A delayed posttest (Appendix 5) was conducted one week after the official experiment. In the delayed posttest, participants were provided with 24 Chinese words, and they needed to choose the correct Chinese translations for the 18 words they had learned.

3.3.5 Interview

After the delayed posttest, 5 participants were invited to attend interviews. They answered the following questions in Cantonese (Appendix 6):

1. Which method do you like the most when you memorized the words? Why?
2. What mental activity did you experience when you used each method to memorize words?
3. Do you think the three methods helped you recall the word meanings during the posttest? Which method is the most effective? How did that method help you recall the word meanings?
4. Do you think semantic maps and images are more effective than L1 rehearsal when memorizing new vocabulary?
5. Which method will you use to learn new words in the future? Why?

3.4 Data analysis

A combination of quantitative method and qualitative method was involved in this study, so both quantitative and qualitative analyses were used for data analysis.

3.4.1 Quantitative analysis

Quantitative analysis was used to analyze 24 participants' scores in the immediate and delayed posttests. SPSS was used to calculate if there are any significant differences in students' performance in the posttests for the three strategies. It was found that participants' scores in the immediate and delayed posttests do not follow a normal distribution. In this case, the Mann-Whitney U test is suggested (Nachar, 2008), which is one of the most reliable non-parametric tests (Landers, 1981). The statistical test aims to figure out whether participants have better performance on the words memorized by memory strategies in the two posttests.

3.4.2 Qualitative analysis

The qualitative data (Appendix 7) was collected from the face-to-face interviews with five participants, and it was translated into English for analysis. To investigate the interviewee's subjective evaluations of semantic mapping and imagery, an inductive approach was adopted to categorize the themes in their responses. When using the inductive approach to analyze data, general categories are derived from research objectives, while specific categories are established from the close reading of the data (Thomas, 2006). Participants' opinions on the effects of memory strategies were broadly divided into the pros and cons of involving the two memory strategies, and several subcategories were formed based on their responses.

4. Results and discussion

4.1 The effect of memory strategies on immediate vocabulary acquisition

Strategy	N	Mean (M)	Standard Deviation	Sig.	Is null hypothesis rejected
Semantic mapping	24	4.83	1.551	.113	No
L1 rehearsal	24	5.46	1.021		

Imagery	24	5.63	0.875	.664	No
L1 rehearsal	24	5.46	1.021		

Table 2: Comparison of memory strategies and L1 rehearsal in the immediate posttest

Table 2 shows that participants' average score on the immediate posttest for semantic mapping (M=4.83) is lower than the one for L1 rehearsal (M=5.46). The result of the Mann-Whitney U test (p=.113) suggests that there is no significant difference between these two methods. The average score on the immediate posttest for imagery (M=5.63) is higher than the one for L1 rehearsal (M=5.46), but this difference is still not statistically significant (p=.664). In response to the first research question, memory strategies are not more effective than L1 rehearsal for immediate vocabulary learning.

Strategy	N	Mean (M)	Standard Deviation	Sig.	Is null hypothesis rejected
Semantic mapping	24	4.83	1.551	.046	Yes
Imagery	24	5.63	0.875		

Table 3: Comparison of the two memory strategies in the immediate posttest

From Table 3, we can see that imagery (M=5.63) is more effective than semantic mapping (M=4.83) for immediate vocabulary learning (p=.046). In addition, the standard deviation (SD) of the data of semantic mapping is nearly twice the SD of imagery, which implies that participants' scores on the semantic mapping are more dispersed. In other words, the effectiveness of semantic mapping might depend on individual differences to a greater extent.

4.2 The effect of memory strategies on longer vocabulary retention

Strategy	N	Mean (M)	Standard Deviation	Sig.	Is null hypothesis rejected
Semantic mapping	24	3.17	1.606	.438	No
L1 rehearsal	24	2.83	1.880		
Imagery	24	3.08	1.717	.579	No
L1 rehearsal	24	2.83	1.880		

Table 4: Comparison of memory strategies and L1 rehearsal in the delayed posttest

According to Table 4, the difference between participants' performance in the delayed posttests for semantic mapping (M=3.17) and L1 rehearsal (M=2.83) is not statistically significant (p=.438). The difference between imagery (M=3.08) and L1 rehearsal (M=2.83) also cannot be proved (p=.574). To summarize, memory strategies are not more effective than L1 rehearsal for longer vocabulary retention.

Strategy	N	Mean (M)	Standard Deviation	Sig.	Is null hypothesis rejected
Semantic mapping	24	3.17	1.606	.842	No
Imagery	24	3.08	1.717		

Table 5: Comparison of the two memory strategies in the delayed posttest

Table 5 illustrates that there is no significant difference between the effect of semantic mapping (M=3.17) and imagery (M=3.08) on longer vocabulary retention.

4.3 Comparison of the short-term and long-term effects

Strategy	N	Immediate Mean (M)	Delayed Mean (M)
Semantic mapping	24	4.83 (3)	3.17 (1)
Imagery	24	5.63 (1)	3.08 (2)
L1 rehearsal	24	5.46 (2)	2.83 (3)

Table 6: Comparison of the short-term and long-term effects of the three methods

Although the hypothesis that memory strategies are more effective than L1 rehearsal is not proved, it is noticeable that the rankings of the mean scores on the three examined methods are different in the immediate and delayed posttests. As shown in Table 6, the mean score on imagery (M=5.63) is the highest in the immediate posttest, followed by the mean score on L1 rehearsal (M=5.46), and semantic mapping has the lowest mean score (M=4.83). However, the mean score on semantic mapping (M=3.17) is the highest in the delayed posttest, and the lowest mean score in the delayed posttest belongs to L1 rehearsal (M=2.83). These results imply that the words that are successfully memorized with the assistance of semantic maps may be less likely to be forgotten as time goes by. The advantages of using semantic mapping can be perceived by looking at participants' responses in the interviews.

4.4 Participants' evaluation of memory strategies

In the interviews, two participants indicated that their favorite vocabulary learning strategy was imagery, and three participants liked semantic mapping the most. They made their choice based on their beliefs in the effects of the three methods on vocabulary memorization and recalling. The interviewees' feedback on the two memory strategies indicated both strengths and shortcomings of them, which can clarify the functions of the two memory strategies and probably explain why they are not more effective than L1 rehearsal in the two posttests.

4.4.1 Semantic mapping

4.4.1.1 Advantages of semantic mapping

Participants provide some positive feedback on semantic mapping. One advantage is that it gives learners high autonomy. When adding three relevant concepts to the semantic maps, learners were allowed to use their unique logic and ideology to process information and depend on themselves to strengthen their memory. When the interviewees were asked about their mental activities when learning vocabulary with semantic maps, the verb "think/thought" appeared frequently:

- *I would **think** of the concepts related to the central word.*
- *I just **thought of** other relevant concepts and **wrote** them down in the semantic maps.*

The inclusion of "think/thought" demonstrates that the participants were involved in the vocabulary learning process mentally. This mental activity is deeper and more active than the one involved in L1 rehearsal because more cognitive energy was exerted to look for relevant knowledge in one's schema. Meanwhile, different from other strategies, learners' involvement in semantic mapping is visible since they need to write down the concepts in their minds on the map. The visualization of mental activity produces learning evidence, allowing teachers and learners to regulate the learning process. The visible involvement might be a reason why the mean score on semantic mapping becomes the highest in the delayed posttest.

Learner autonomy is well preserved in this thinking process because learners can utilize their own mind system to generate individualized interpretations of the central words. When two participants were asked about the relevant concepts they would add to the word "thongs", they gave different answers:

- *When you saw "thongs", what (relevant concept) would you write?*

  *"**Go to the beach**."*

What would you write, Chloe?

*"**Go outside**", "**convenient**", and "**easy to wear**."*

As we can see, learners have the full autonomy to choose the concepts relevant to the central words in any way. When the added concepts are related to one's personal experiences, this relevancy even cannot be easily perceived by others. According to Ryan and Deci's (2000) cognitive evaluation theory, "autonomy" is one of the psychological needs that are required for developing intrinsic motivation. Besides, learners who think and work with strategies tend to have higher self-efficacy and more confidence in their learning ability (Holec, 1981; Benson, 2003).

Figure 6 provides more evidence of learner autonomy manifested in the semantic maps. When adding relevant concepts to the word "boar", one participant described the colors of a boar as "black and grey", while another participant used the word "deluge" to refer to the excessive propagation of boars. Craik and Lockhart (1972) believed that learners' active construction and elaboration of words' meaning are beneficial to the deep processing of the meaning and thorough understanding of the definition.

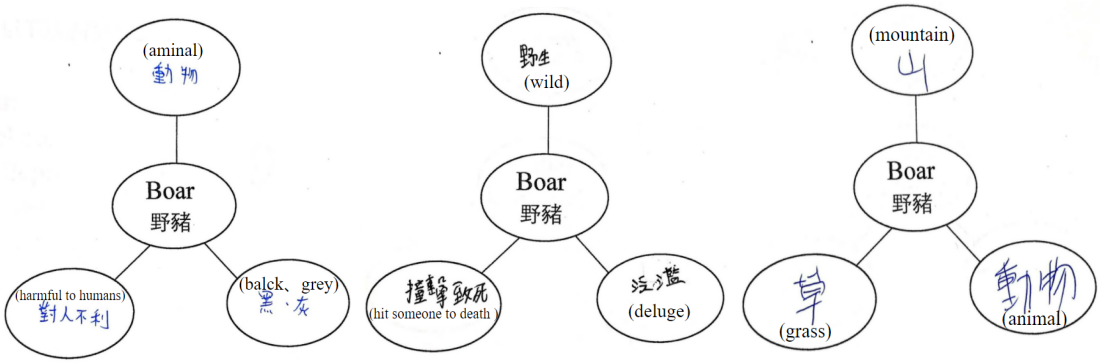


Figure 6: Learner autonomy manifested in the semantic maps

Meanwhile, learner autonomy allows participants to utilize the prior knowledge that

can do good for memorization. One example of this prior knowledge is personal experiences. Interviewees have described how they integrated personal experiences into semantic maps and why personal experiences could strengthen memorization. One advocator of semantic mapping believed that the most attractive thing about using a semantic map was the integration of personal experiences:

- *I can use the things that happened to me. Anyway, I can use **my personal experiences** to **make associations**.*

This interviewee also made an interesting comparison between using semantic mapping and imagery:

- *This (semantic mapping) is different from using an image randomly chosen by others. You haven't experienced what is depicted in the picture, so you don't have **a sense of familiarity**.*

The lack of familiarity perceived by him when learning words with imagery is probably because the grouping of the images and words was not congruent with his schema. On the contrary, personal experiences facilitate the construction and elaboration of meaning by connecting new information to learners' schema (Carr & Mazur-Stewart, 1988). Harmer (2001) believed that only when the schema is activated can someone recognize the information since it fits well with the pattern he or she already learned.

In fact, the positive effect of personal experiences on vocabulary acquisition has been discussed by many scholars. Carr and Wixson (1986) suggested that relating new vocabulary to personal experiences can make the vocabulary personally meaningful, enhance learners' understanding, and facilitate retention of the words. One interviewee described how her personal experiences made the word "kennel" meaningful:

- *(On the semantic map) I wrote **the name of my friend** who has a dog. And then*

I described what the house of the dog looks like.

She also recalled her mental activity when seeing the word "kennel" again:

- *I could think of my friend (who has a dog)'s name and then the word's meaning "the place where a dog lives."*

It is obvious that associating "kennel" with her friend strengthens the connection between the interviewee and the new word, which helps her develop a personal clue about the word's meaning. Her words imply that learners are learning the meaning rather than the word form when connecting the central words to personal experiences. This connection helps establish contexts that are familiar to learners for the central words. Krashen (1982) argued that contexts are non-linguistic supports that encourage learners to comprehend messages that are beyond their levels. Sweller (1994) also suggested that using contexts close to learners' lives can activate their preexisting schema and cause less cognitive load, thus facilitating their vocabulary acquisition. Figure 7 includes more examples of integrating personal experiences.

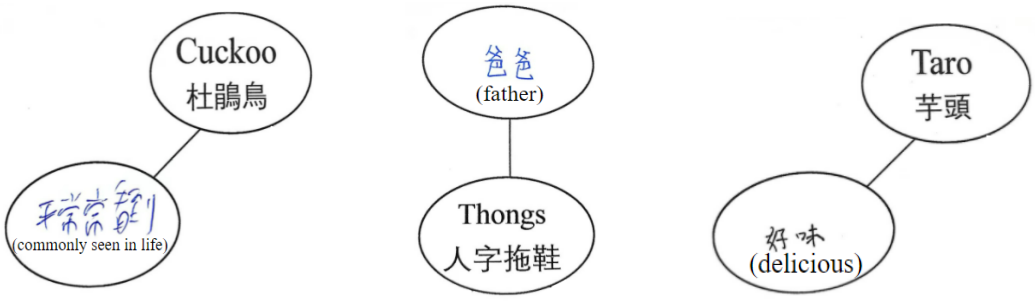


Figure 7: Associations between new vocabulary and personal experiences

4.4.1.2 Disadvantages of semantic mapping

Despite its advantages, the quantitative data show that semantic mapping is not statistically more effective than L1 rehearsal, which makes its shortcomings worthy of study. Participants mentioned that the inclusion of multiple concepts leads to distraction,

inhibiting them from focusing on the central word. One interviewee complained about the overloading caused by semantic mapping when she was asked why she did not like it:

- *When I used the semantic maps to learn new words, I would **mix up** the concepts in the semantic maps. After a long time, I couldn't tell **which concept that the English word referred to**.*

She believed that adding three relevant concepts can decentralize her attention to the Chinese translation and blur the corresponding relation between the central word and its Chinese translation in her mind. As time passed by, she may still remember the Chinese words in the semantic map of an English word but forget which one was the L1 translation and which three were the added concepts. This is doubly true when the participant does not know the English of the added concept, which made him/her unable to rule it out when figuring out the L1 translation. Figure 8 illustrates this process. In this interviewee's eye, the three words acted as interference and increased the difficulty of matching the English word to its Chinese translation.

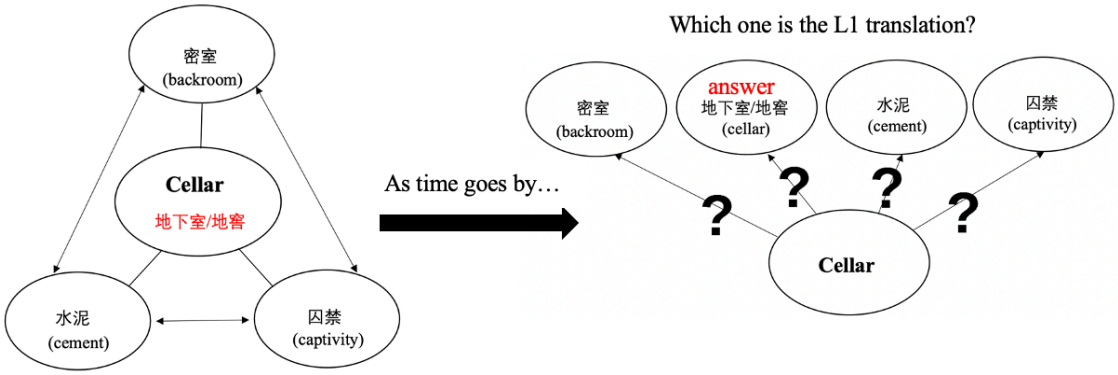


Figure 8: Decentralization of attention and overloading

Another interviewee pointed out another negative side of semantic mapping when was asked whether she could recall the corresponding semantic maps of the words in the posttest:

- *Sometimes **I could recall the three words** I wrote but **couldn't remember what the central word meant**…When I think of "sea", I may **think of another concept** "surfing", **which was also written by me** (the central word is "yacht").*

It was discussed that learners' active construction of meanings and integration of personal experiences can activate more cognitive energy and lead to better retention of vocabulary. However, the response above suggests that these processes may also be counterproductive in the case of semantic mapping since she tended to remember the concepts constructed by her rather than the given Chinese translation, which the constructed concepts should serve. Her words also imply that this problem might be more obvious when interconnection is accidentally created among the three relevant concepts since the retrieval of one concept can activate the memory of another.

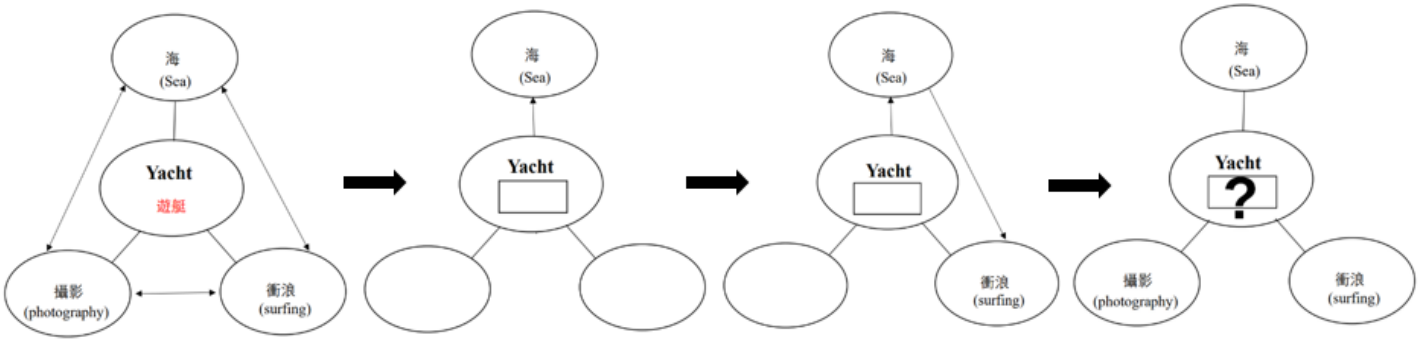


Figure 9: The tendency to recall the concepts constructed by oneself

As shown in Figure 9, "sea" and "surfing" are concepts relevant to the central word "yacht"; meanwhile, these two words are related to each other. At the same time, they are much more familiar to the interviewee compared to "yacht." That is probably why when she thought of "sea," she would remember "surfing" rather than the central word "yacht," and sometimes even she recalled the three relevant concepts but still could not figure out the meaning of the central word. Although participants are supposed to raise three concepts relevant to the central word, it is possible for the things that are all related

to the same word to have connections as well. To deal with this problem, teachers may need to remind students to select concepts that are relatively irrelevant to each other.

In addition to the interference and overloading caused by semantic mapping, the relatively long learning time required by it is also a concern of the interviewees. When an interviewee was asked why he regarded semantic mapping as the most effective strategy but still chose to use L1 rehearsal in the future, he explained as below:

- *It (L1 rehearsal) is more convenient.* ***I have many things to do.*** *I think* ***drawing a semantic map is helpful to memorize the words, but it is not convenient.***

He believed that drawing a semantic map for each word required learners to spend more time on vocabulary learning compared to L1 rehearsal. Considering this fact and the limited time in the experiment, the lowest mean score on the semantic mapping in the immediate posttest can be explained. The interviewee mentioned that he would prefer a time-saving vocabulary learning strategy because he has other tasks to finish. Hong Kong students face pressure and stress from nonstop homework, assessment, private tutoring, deprived sleep, and insufficient leisure time (Cho & Chan, 2020). Considering these fatiguing factors, it is normal that students may prefer the method that needs less time and mental energy.

4.4.2 Imagery

4.4.2.1 Advantages of imagery

The interviewees also proposed some advantages of imagery. One interviewee indicated that images offered visual explanations of the words:

- *The images* ***explained the words****, which helped me memorize the words' meanings…Sometimes when you looked at the images, you would* ***understand***

the words' meanings more clearly.

This interviewee believed that images helped with memorization by clarifying the meaning of the words and supporting comprehension. Even though the L1 translation was shown to participants, some concepts that are not part of their daily life may not be that familiar to them. For example, one interviewee indicated that before looking at the image of "yacht (遊艇)", she would mix it up with "ferry (渡船)", which is a common transport in Hong Kong.

Interestingly, one interviewee's experience of learning the word "cottage" with imagery implies that some images may be more effective than others:

- *There was an English word that means a type of house in the countryside, and we were shown the image of the house.* ***It was a luxurious house, so I could remember it clearly***.

This response suggests that images with exaggerated features can be easier to memorize. Although the definition of a "cottage" should be a small house in the countryside, it may already look luxurious compared to the common housing types in Hong Kong. Despite the interviewee's inaccurate interpretation of the word "cottage," her words bring some enlightenment to English vocabulary teaching. First of all, selecting some images with exaggerated or eye-catching features can leave learners with deep impressions, thus facilitating the retention of the words. Besides, when introducing some concepts that are foreign to the learners' cultures, it is helpful to have cross-cultural discussions to raise their intercultural awareness. Meanwhile, these processes may correct learners' incorrect interpretation of the culture-specific words. The unexpected feedback can lead to better memory since learners need more cognitive effort to encode the feedback incongruent with their previous knowledge (Fazio &

Marsh, 2009).

Besides offering visual illustration, the imagery also helps with memorization by establishing referential connections between the visual and verbal codes (Clark & Paivio, 1991). Three participants have discussed the interactions between the two codes:

- *If you **remember what the word looks like**, you can **think of the meaning of the word**.*
- *When I **saw the word** in the posttest, I could **recall the image**.*
- *When I **see an image**, the corresponding **word will appear in my mind**…*

These discussions on the relationship between images and words correspond to Paivio's (1971) dual-coding theory, which suggests that images can be represented by both visual and verbal codes. The reasons why participants could figure out the meaning of the word when recalling the image and why they could think of the image when seeing the word are the referential connections between the visual and verbal codes (Clark & Paivio, 1991). These links establish the corresponding relationship between the two codes and allow mental activities such as naming images and imaging vocabulary (Clark & Paivio, 1991).

In this study, the referential links are more powerful between the images and L1 translation, which is in a language that is more familiar to the participants compared to English. However, by allowing learners to decode the English word, the L1 translation helped them establish referential links between the image and the English word, which is the goal of using imagery to learn English vocabulary. This process is summarized in Figure 10.

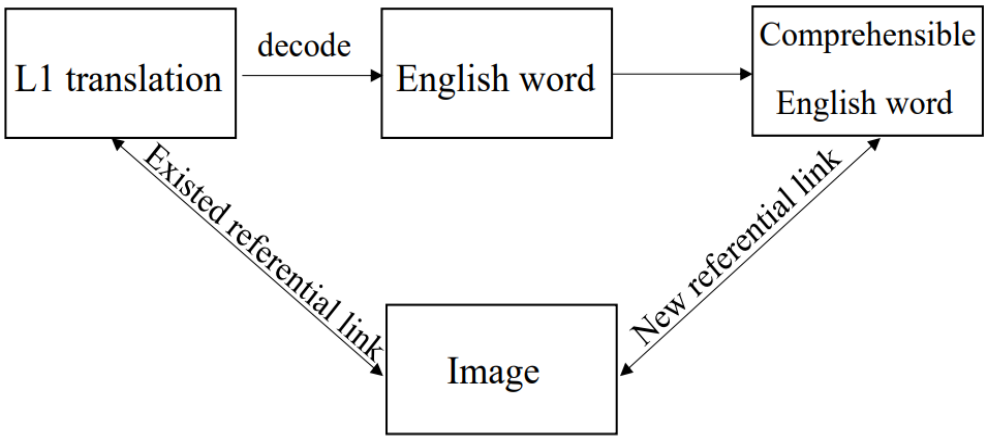


Figure 10: The referential links involved in this study

Even though most of the participants may find it difficult to build up these new referential links in such a short time, the involvement of images still provides an alternative way for them to retrieve the meaning due to the existing links between them and the L1 translation. In other words, if the participants can remember either the Chinese translation or the image of an English word, he/she should be able to tell the meaning of the word.

4.4.2.2 Disadvantages of imagery

Similar to semantic mapping, the superiority of imagery over L1 rehearsal is not statistically significant. This phenomenon can probably be explained by some potential problems with using imagery. One interviewee pointed out that the presentations of words in images are vague since one image may include more than one thing:

- *Sometimes an image **includes more than one thing**, and you **may not know which thing is referring to**. If the Chinese is not written in this case, I may be confused.*

It is mentioned that the inclusion of images gives learners opportunities other than the L1 translation to recall the meaning of vocabulary. However, the response above reminds us that if the new referential link is not built between the image and the word, participants may still not be able to tell the word's meaning even if they remember which image it was matched to. The reason is that an image may include more than one thing, or it can be interpreted from different angles. For example, if a participant forgot the meaning of "cellar" but remembered its image used in the experiment (Figure 11), he/she may perceive it as something different. Some university students who did not participate in the experiment were invited to name the image. Their diverse responses shown in Figure 11 demonstrate the importance of establishing a stable referential link between the image and the English word when using imagery to learn vocabulary. Meanwhile, the results of this little test and the interviewee's confusion caused by the distracting features imply that it is important to choose an image that aligns with the learner's personal interpretation of the word.

Figure 11: The image of "cellar" & university students' naming of this image

In addition to the vague presentation of words, an interviewee also indicated that images selected by the experimenter may not strike chords with them:

- *You haven't experienced what is depicted in the picture, so you don't have a*

sense of familiarity.

It is mentioned that the learning materials that fit well with learners' schemas can accelerate information processing and facilitate learning (Harmer, 2001). On the contrary, the fixed images selected by the teachers may require learners to spend more time comprehending the image, extracting the core visual message, and establishing a referential link between it and the English word. Therefore, unfamiliar materials require learners to pay more mental effort to process and remember the information (Anderson, 1994), which can take a longer time to achieve the same effect as using something familiar to them. If enough learning time cannot be guaranteed, the pre-selected image not only fails to help with meaning retrieval but also causes overloading and confusion.

5. Pedagogical implications and suggestions

Although the results cannot prove the higher effectiveness of involving memory strategies in vocabulary learning, the comparison between participants' scores on the three tested methods in the immediate and delayed posttests suggests that the memory strategies may potentially lead to better retention of the learned words. "Learned" is a keyword here. The limited time for vocabulary learning in the experiment makes it difficult for the participants to fully internalize and learn the new words, as indicated by the interviewees. Also, the extra information in the semantic maps and the images can turn into distracting factors rather than meaning retrieval cues due to the time limitation. These factors can decrease the effectiveness of memory strategies. Even though no significant result can be observed from the quantitative data, participants' evaluations of the inclusion of memory strategies enlightened us on vocabulary teaching and learning.

5.1 Use familiar contexts

Learners' preference for the integration of personal experiences, the "familiarity" in learning materials, and the association between the new concept and something known all demonstrate that they are eager for the senses of connection and controllability when facing new knowledge. Therefore, English teachers should consider involving contexts close to learners' lives in vocabulary teaching, which can activate appropriate schema and impose less cognitive load (Sweller, 1994). Also, introducing a familiar context can help students encode the new information in a more meaningful and effective way (Song & Bruning, 2016). For example, as a joint finding, it is shown that the correct rate of the word "boar" is extremely high in the delayed posttest. Some participants indicated that they could easily remember this word because the news about the government humanely destroying boars dominated the social media in Hong Kong during that period, and their memory of the word "boar" was strengthened by relating it to this background.

This finding also suggests that English teachers should pay attention to the hot social issues and figure out how the contexts can be used to assist vocabulary teaching or if the target vocabulary can be associated with the social background. In addition to the positive effects on vocabulary learning and retention, the involvement of familiar contexts also triggers authentic vocabulary use and language engagement (Wong et al., 2016). Therefore, language learners can not only learn the meaning of the vocabulary but also how to practice the language in authentic situations.

5.2 Provide autonomy in choosing the method and learning materials

The high standard deviation of participants' scores on semantic mapping in the

immediate posttest, interviewees' diverse evaluations of the methods, and their concerns all remind educators that individual difference is an important topic in vocabulary acquisition. Different vocabulary learning strategies have different requirements for cognitive capacity, spatial thinking abilities, and even learning time. This study suggests that deep cognitive processing cannot guarantee better retention. Also, semantic mapping is attractive to those who love integrating personal experiences and making associations. However, participants who cannot endure the cognitive load or think of concepts with distinguishing characteristics may find this strategy complex and overloading. The significant difference between students' performance on the words learned by semantic mapping and imagery in the immediate posttest further demonstrates the complexity of determining the best vocabulary learning strategy for individuals. Although both semantic mapping and imagery are memory strategies that emphasize the association of new words and old schemas (Schmitt, 2000), the processes and codes (i.e., verbal alone vs. dual codes) involved are different. Therefore, teachers need to cater to learner diversity and give students the freedom to choose the one that suits them most.

In addition, teachers can give learners the autonomy to decide on the auxiliary materials by themselves. It was mentioned in the interview that the image provided by the teacher could cause confusion if it included more than one thing. Besides, an interviewee pointed out that the unfamiliarity of pre-selected images makes them difficult to remember. These problems can be solved if the learners have the freedom to choose the image that fits well with their interpretation and schema. Similarly, learners can draw semantic maps by themselves. For those who complained that the relevant concepts could easily distract their attention to the L1 translation, it is helpful for them to make

the L1 translation in big font.

5.3 Understand the role of L1 translation in vocabulary acquisition

Responses collected from the interviews imply that L1 translation should be integrated into the memory strategies, but its functions are different from the Chinese translation in L1 rehearsal. Some participants complained that they would mix up the L1 translation with the added concepts as time went by. If the L1 translation is not presented in the semantic map, learners' memory of the word's meaning may even become vaguer. Similarly, as one participant indicated, when an image includes several elements, she can easily forget which object the word refers to if the image is not memorized with the L1 translation.

In addition, the L1 translation makes language learners comprehend the vocabulary accurately in a short time, which reserves enough time for them to digest other information that comes with the memory strategies. This study suggests that abundant learning time is an essential condition for implementing memory strategies, which involve deeper information processing and more cognitive energy. Participants' confusion of the elements in the two memory strategies demonstrates that if not enough learning time is given, deep cognitive processing will not lead to longer retention of the vocabulary but only overloading. Therefore, the L1 translation should be included in the memory strategies when teaching vocabulary, especially when the target learners live in a hectic and stressful environment.

5.4 Raise cross-cultural awareness

One interviewee's misinterpretation of the image of "cottage," which is caused by the

cultural difference between Hong Kong and the west, reminds us that cultural education can be integrated into vocabulary teaching. When introducing cross-cultural concepts or cultural-loaded words, discussions on the underlying cultural differences can not only strengthen students' memory of the words but also facilitate intercultural communication in class. Byram (1989) believed that learning a language is also learning a culture. Introducing the target culture in an EFL classroom can give learners opportunities to study the lifestyles, values and norms, and mindsets of the speakers of the target language (Ho, 1998). Meanwhile, they can also reflect on their own culture by making the comparison.

6. Retrospect and prospect

6.1 Limitation of the study

In addition to the small number of participants and insufficient time assigned to the experiment, another limitation of this study is the different question forms in the immediate and delayed posttest. In case participants could hardly remember the words' meanings one week after the experiment, the Chinese translations were given in the delayed posttest. Participants only needed to match the words with the correct translation. Since participants were required to translate the words with no hints provided in the immediate posttest, the difficulties of the two posttests are different. However, this concession is necessary to receive enough data to compare participants' performance on the three methods in the delayed posttest.

Besides, the results might be more convincing if the experiment could be conducted online instead of using booklets. Although participants were supervised by four teachers and told not to turn back to review the words they had already learned, it is

still possible that some of them did not follow the instruction. If it is switched to an online one, the experimenter can prevent participants from reviewing the learned words by manipulating the system setting. Also, an online experiment can make the Chinese translation included in the semantic mapping and imagery only appear for a few seconds to eliminate the possibilities that some participants rely too much on the L1 translation when the two memory strategies are examined.

6.2 Suggested directions for further research

Based on the discussion of interviewees' feedback on the memory strategies and the quantitative results, some pedagogical suggestions for vocabulary teaching were raised. However, these suggestions are preliminary hypotheses whose validity needs to be examined and supported by further research. In addition to the effects of integrating cultural education, which might be difficult to measure, the effects of the other three suggestions (i.e., familiar context, high learner autonomy, the inclusion of L1 translation) can be investigated with experiments sharing a similar procedure like this research.

Considering the limitations discussed above, the experiments are better conducted online with more than 100 participants. When testing the effectiveness of using familiar contexts, the experimenter can select some words related to the participant's cultural background and hot social issues. Meanwhile, the same number of words remote from their life, such as terminologies, should be selected to compare participants' learning outcomes. The procedure of my study can be applied, but the experimenter must make sure all the words are learned with the same strategy, and the learning time of each word can be extended to two minutes.

To demonstrate the positive effect of providing autonomy in choosing the learning method, the experimenter can present all of them on the screen at the same time for participants to choose. If the research aims to examine the autonomy in choosing learning materials, the learning method can be limited to imagery. However, participants are given the freedom to search for the image online.

Some researchers might be interested in the effect of including L1 translation in memory strategies. In this case, one group of participants should learn the words using memory strategies with the L1 translation included, while the other group learns the same words using the same memory strategies without L1 translation.

7. Conclusion

This study investigated whether memory strategies are more effective than L1 rehearsal for vocabulary learning. The quantitative data suggest that this hypothesis cannot be proved, and some possible reasons can be traced from the interviewees' discussions on the potential problems of the two memory strategies. They pointed out that semantic mapping caused interference among words and required more study time, while images may vaguely present the words' meaning and lack connections with learners' experiences. Despite these drawbacks, all interviewees believe that memory strategies can help with memorization in one way or another. Their positive feedback on semantic mapping and imagery indicates that these two strategies have some advantages over L1 rehearsal, including the preservation of learner autonomy and multidimensional explanations of the word. Noticeably, they all think that memory strategies are more effective than L1 rehearsal for vocabulary acquisition. Based on the research findings, some pedagogical suggestions are made for future vocabulary teaching, including

creating familiar contexts, preserving learner autonomy, and integrating cultural education. To further examine and support the validity of these teaching methods, some directions for future research were raised at the end of the paper.

(7823 words)

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Appendix 1: Experimental words

1. Six words for the trial study

Jasmine	Colleague	Nun
Leaflet	Sparrow	Plague

2. Eighteen words for the official experiment

Pollen	Boar	Trolley
Taro	Cuckoo	Pram
Aloe	Scallop	Crutch
Plum	Thongs	Tulip
Yacht	Cottage	Monk
Kennel	Cellar	Cardigan

Appendix 2: Pretest

Pretest (4/11/2021)

Name: _____

Please write down the Chinese meaning of the word if you know it.

Horn	Vest
Attic	Sandal
Lizard	Boar
Pollen	Cuckoo
Cliff	Oyster
Taro	Scallop
Aloe	Vinegar
Plum	Wheat
Papaya	Pickle
Balcony	Zealot
Carpet	Cottage
Knight	Cellar
Yacht	Trolley
Compass	Pram
Kennel	Crutch
Leaflet	Nun
Tenant	Plague
Colleague	Thong
Monk	Sneaker
Pajamas	Squirrel
Cardigan	Sparrow
Shawl	Cactus
Jasmine	Tulip

Appendix 3: Instruction on the cover page of the booklet

An Investigation of Three Strategies for English Vocabulary Acquisition

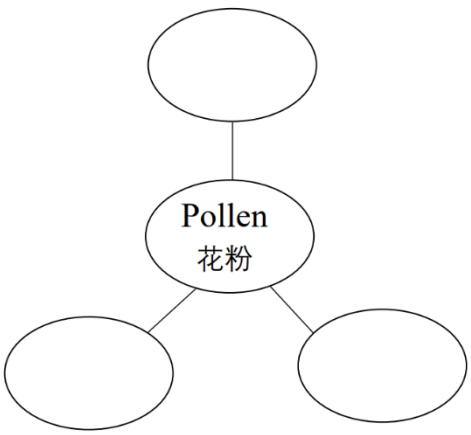
針對三種詞彙記憶法有效性的研究

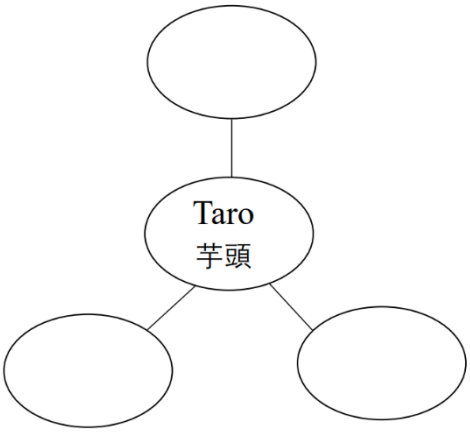
姓名：

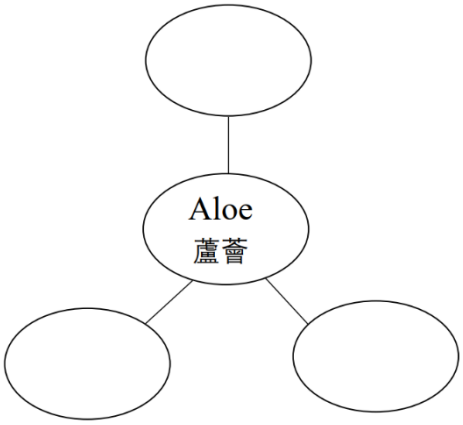
本實驗旨在研究三種詞彙記憶法（語義圖、圖片記憶、單純的中文翻譯）的有效性，在過程中請遵循以下幾點：

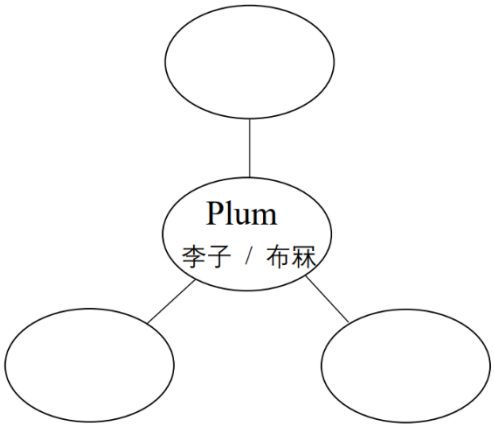
1. 你有 90 秒的時間記憶每個單詞，90 秒後你將進入下一個單詞的學習，不可重複瀏覽記憶過的單詞；
2. 當使用**語義圖**記憶單詞時，請閱讀目標詞彙及其中文釋義，並用中文添加三個與目標詞彙相關的概念；
3. 當使用**圖片**記憶詞彙時，請閱讀目標詞彙及其中文釋義，並結合圖片內容進行記憶；
4. 當使用**中文翻譯**記憶詞彙時，請重複閱讀目標詞彙及其中文釋義。

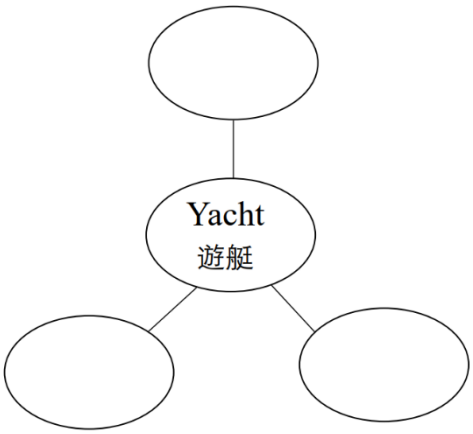
Appendix 4: Learning materials in the experiment with immediate posttest included (Group 1)

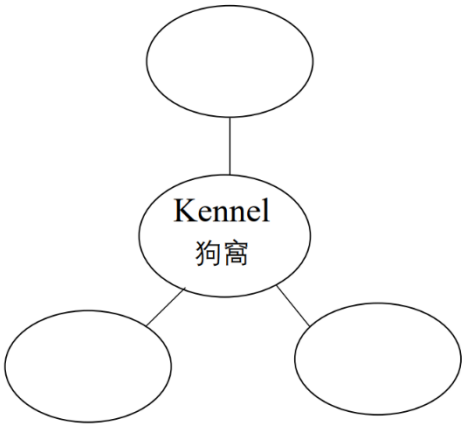












Please write down the Chinese of the words.
請寫出以下單字的中文翻譯

1. Pollen:
2. Taro:
3. Aloe:
4. Plum:
5. Yacht:
6. Kennel:

Boar 野豬

Cuckoo 杜鵑鳥

Scallop 扇貝

Thongs 人字拖鞋

Cottage 鄉間小屋

Cellar 地下室 / 地窖

Please write down the Chinese of the words.

請寫出以下單字的中文翻譯

1. Boar:
2. Cuckoo:
3. Scallop:
4. Thongs:
5. Cottage:
6. Cellar:

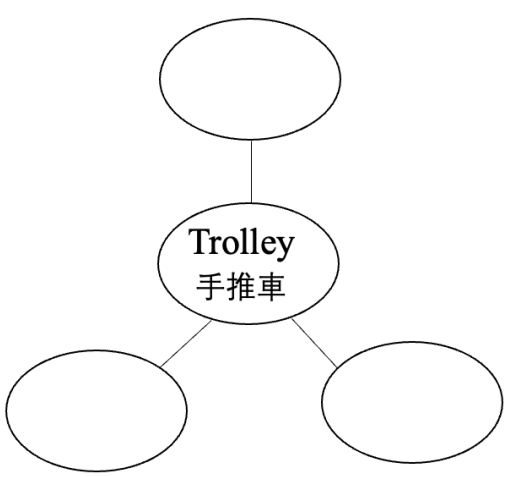
Trolley 手推車　Pram 嬰兒車　Crutch 拐杖

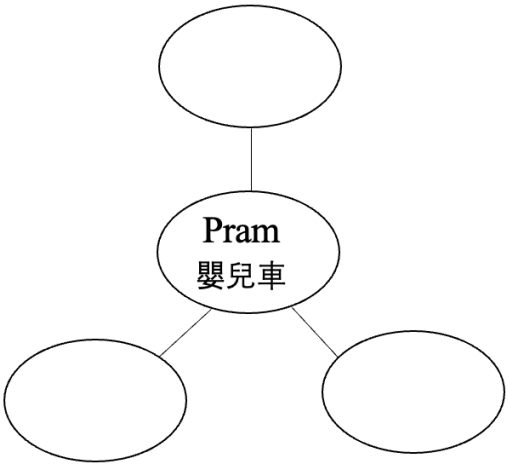
Tulip 鬱金香　Monk 和尚　Cardigan 開襟毛衣

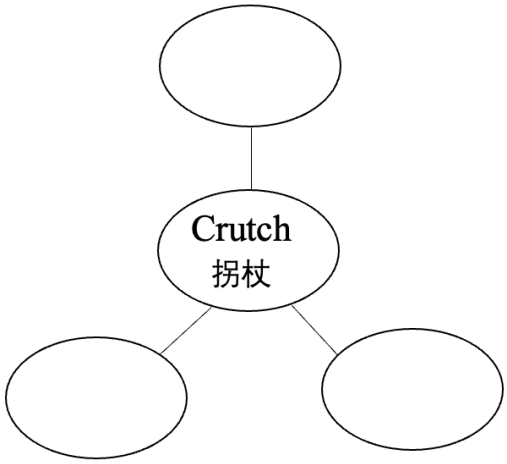
Please write down the Chinese of the words.
請寫出以下單字的中文翻譯

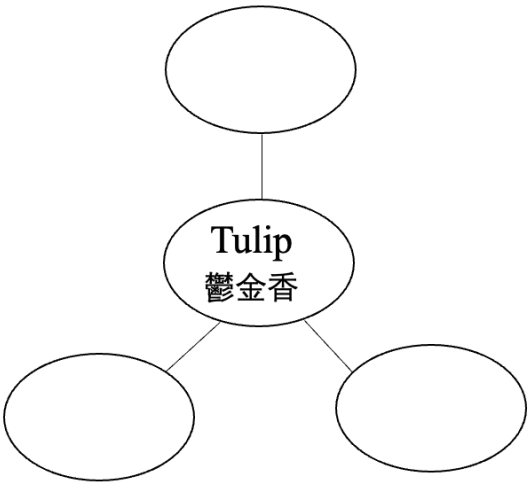
1. Trolley:
2. Pram:
3. Crutch:
4. Tulip:
5. Monk:
6. Cardigan:

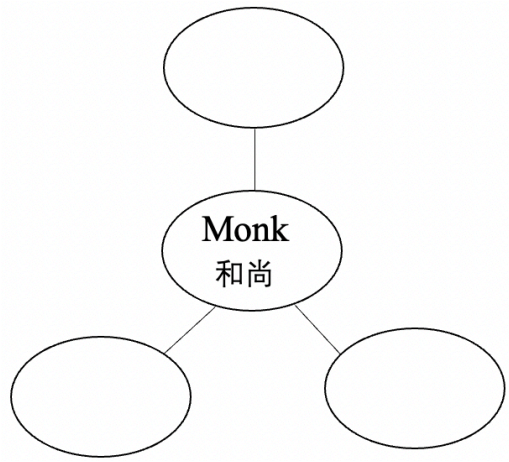
Learning materials in the experiment with immediate posttest included (Group 2)

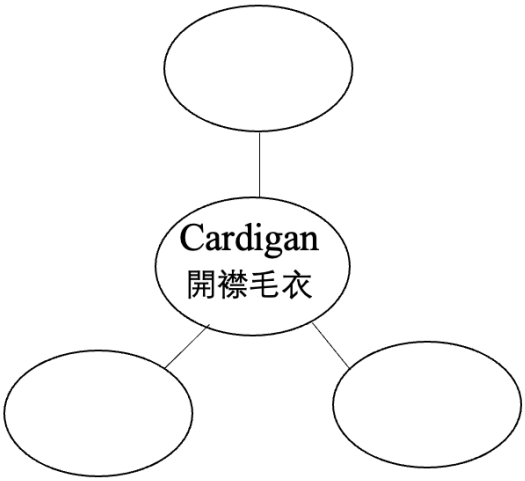












Please write down the Chinese of the words.

請寫出以下單字的中文翻譯

1. Trolley:
2. Pram:
3. Crutch:
4. Tulip:
5. Monk:
6. Cardigan:

Pollen 花粉

Taro 芋頭

Aloe 蘆薈

Plum 李子 / 布冧

Yacht 遊艇

Kennel 狗窩

Please write down the Chinese of the words.
請寫出以下單字的中文翻譯

1. Pollen:
2. Taro:
3. Aloe:
4. Plum:
5. Yacht:
6. Kennel:

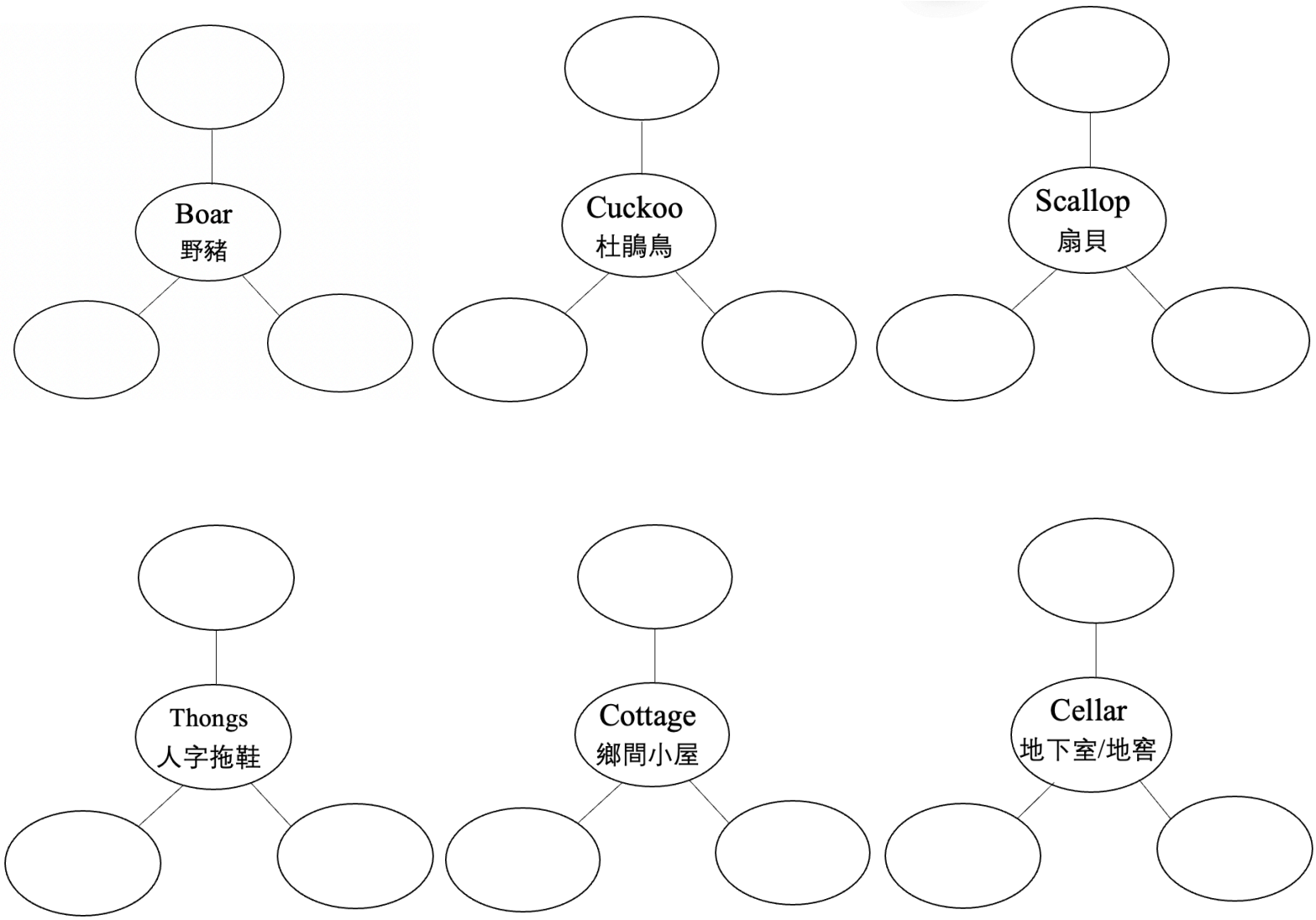
Boar 野豬　　Cuckoo 杜鵑鳥　　Scallop 扇貝

Thongs 人字拖鞋 Cottage 鄉間小屋 Cellar 地下室 / 地窖

Please write down the Chinese of the words.
請寫出以下單字的中文翻譯

1. Boar:
2. Cuckoo:
3. Scallop:
4. Thongs:
5. Cottage:
6. Cellar:

Learning materials in the experiment with immediate posttest included (Group 3)



Please write down the Chinese of the words.

請寫出以下單字的中文翻譯

1. Boar:
2. Cuckoo:
3. Scallop:
4. Thongs:
5. Cottage:
6. Cellar:

Trolley 手推車

Pram 嬰兒車

Crutch 拐杖

Tulip 鬱金香

Monk 和尚

Cardigan 開胸衫

Please write down the Chinese of the words.

請寫出以下單字的中文翻譯

1. Trolley:
2. Pram:
3. Crutch:
4. Tulip:
5. Monk:
6. Cardigan:

Pollen 花粉　Taro 芋頭　Aloe 蘆薈

Plum 李子 / 布秣　Yacht 遊艇　Kennel 狗窩

Please write down the Chinese of the words.
請寫出以下單字的中文翻譯

1. Pollen:
2. Taro:
3. Aloe:
4. Plum:
5. Yacht:
6. Kennel:

Appendix 5: Delayed posttest

翻譯練習

中文姓名: _____ 班級: _____

翻譯配對

請從下列 24 個中文詞彙中，選出適當答案配對以下英文詞彙，並將中文翻譯寫在對應的英文詞彙後。

芋頭	榛子	蘆薈	李子 / 布冧
和尚	花粉	藏羚羊	開襟毛衣
鮑魚	拐杖	人字拖鞋	鬱金香
杜鵑鳥	消防車	野豬	遊艇
鄉間小屋	扇貝	莊園	狗窩
手推車	地下室 / 地窖	嬰兒車	背帶褲

1. Trolley: _____
2. Thongs: _____
3. Yacht: _____
4. Scallop: _____
5. Cardigan: _____
6. Cellar: _____
7. Pram: _____
8. Pollen: _____
9. Tulip: _____
10. Cuckoo: _____
11. Plum: _____
12. Kennel: _____
13. Cottage: _____
14. Monk: _____
15. Boar: _____
16. Taro: _____
17. Crutch: _____
18. Aloe: _____

Appendix 6: Interview questions in both Chinese and English

1. 在使用三種詞彙記憶法記單詞時，你最喜歡哪一種方法，原因是什麼？

(Which method do you like the most when you memorized the words? Why?)

2. 回想記憶單詞的過程，在使用每一種記憶法時，你腦海里進行了什麼活動？比如在使用語義圖加中文翻譯時，你是如何記憶中心詞的？

(What mental activity did you experience when you used each method to memorize words? For example, how did you memorize the central word when using the semantic maps together with L1 translation?)

3. 回想剛剛測試的過程，你認為三種詞彙記憶法能夠幫助你想起詞的意思嗎？哪一種方法最有效？你是如何利用該種方法回憶詞義的？

(Do you think the three methods helped you recall the word meanings during the posttest? Which method is the most effective? How did that method help you recall the word meanings?)

4. 你認為引入語義圖和圖片比單純依賴中文記憶單詞更高效嗎？

(Do you think semantic mapping and imagery are more effective than L1 rehearsal when memorizing new vocabulary?)

5. 你認為你將來會採取哪一種詞彙記憶法記單詞？原因是什麼？

(Which method will you use to learn new words in the future? Why?)

Appendix 7: Original and translated transcripts

Interviewee 1: Fai

Chinese transcript (original version)	English version (translated version)
Doris：我地之前係實驗嘅過程中用咗三種唔同嘅方式記憶單字，你最鐘意邊種方式？點解？	Doris: We used three different methods to memorize vocabulary in the experiment. Which method do you like the most? Why?
Fai：語義圖。	Fai: Semantic mapping.
Doris：語義圖。點解？	Doris: Semantic mapping. Why?
Fai：因為比較有印象啲。	Fai: Because it is more impressive.
Doris：比較有印象。點樣有印象？你寫左咗個相關嘅概念，跟住呢？	Doris: More impressive. How? You wrote three concepts relevant to the target word, and then?
Fai：跟住可以聯想到。	Fai: And then they could be associated.
Doris：可以聯想到中間嗰個中心嘅概念，係咪？	Doris: They could be associated with the central concept, right?
Fai：係。因為可以用自己曾經發生過啲野或者...總之係用自己嘅經歷來聯想...唔係好似圖片咁係求其 send 啲圖俾你。求其 send 啲圖唔係自己之前經歷過嗰啲野，效果係有啲唔同。	Fai: Yes. Because I can use the things that happened to me. Anyway, I can use my personal experiences to make associations. This is different from using an image randomly chosen by others. What is depicted in the picture chosen by others is not your personal experience, so it does not have the same effect.
Doris：即係你覺得用語義圖嘅時候你有一個主動權，即係用自己嘅經歷去加強記憶。	Doris: What you meant is that you have high autonomy when using semantic mapping, and you can use your personal experiences to strengthen the memory.
Fai：係。	Fai: Yes
Doris：好。使用圖片嘅時候，你嘅腦海入邊進行咗咩活動？	Doris: OK. Then what mental activity did you experience when you used images to memorize words?
Fai：就記住嗰張圖嗰啲輪廓嗰。因為嗰張圖唔係自己經歷過，冇嗰種親切感係度。	Fai: Just memorized the contour of the picture. But you haven't experienced what is depicted in the picture, so you don't have a sense of familiarity.
Doris：但係 compared to 中英文翻譯，你覺得圖片有冇更加高效？	Doris: Compared to Chinese-English translation, do you think that using images is more effective?

Fai：中英文翻譯？	Fai: Chinese-English translation?
Doris：即係用純粹中英文翻譯反復記憶，冇圖片嘅嗰啲。	Doris: I mean L1 rehearsal without any images.
Fai：圖片高過中英文。	Fai: I think using imagery is more effective than L1 rehearsal.
Doris：點解？	Doris: Why?
Fail：因為圖片嘅話更加印象深刻啲。	Fai: Because images are more impressive.
Doris：即係有個視覺嘅刺激？	Doris: Do you mean they provide visual stimulation?
Fai：係。	Fai: Yes.
Doris：好。下一個問題。你用三種方式記憶詞彙之後，做咗一個測驗。你覺得呢三種方式有冇幫助你記起呢啲詞嘅意思？	Doris: Ok. Let's move to the next question. After memorizing words with three methods, you did a posttest. Did the three methods help you recall the words' meanings?
Fai：有。	Fai. Yes.
Doris：真係有？點樣幫助你？就譬如你用語義圖記咗一個單字，跟住你見到呢個單字會點樣？	Doris: Really? How? If you used semantic mapping to memorize a word in the experiment, what happened when you saw the word in the posttest?
Fai：見到呢啲單字就會諗到到嗰三個相關嘅概念，或者嗰個詞嘅意思。	Fai: When I saw the word, I would think of the three related concepts that I wrote or the meaning of the word.
Doris：如果你係用圖片記嘅單字，係測試中見到單字時你會唔會記起嗰張圖片？	Doris: If you used imagery to memorize a word, could you recall the picture when seeing the word in the posttest?
Fai：有機會但係唔係記得好清楚。	Fai: Sometimes, but I couldn't remember the images very clearly.
Doris：如果你用中英文翻譯記憶某個詞彙，見到呢個英文單字，會唔會聯想到中文翻譯？	Doris: If you used only L1 rehearsal to memorize a word, could you recall the Chinese translation when seeing the word in the posttest?
Fai：唔會。	Fai: I couldn't.
Doris：Ok, 好。	Doris: Ok.
Fai：但係死背就會。	Fai: But I can recall the Chinese translation if I recite the words mechanically.

Doris：死背咩意思？	Doris: What does “recite mechanically” mean?
Fai：死背就係要花時間背好耐。	Fai: It means that you need to recite for a long time.
Doris：你覺得引入語義圖同圖片比單純依賴中文翻譯更加高效，係咪？	Doris: You think semantic mapping and imagery are more effective than L1 rehearsal when memorizing new vocabulary, right?
Fai：係。	Fai: Yes.
Doris：仲有一個問題。你將來會採取邊一仲詞彙記憶嘅方法？	Doris: One more question. Which method will you use to learn new words in the future?
Fai：語義圖。	Fai: Semantic mapping.
Doris：點解？	Doris: Why?
Fai：都係嗰個解釋。即係自己親身經歷去聯想。	Fai: Just like what I said before. I can use my personal experience to make associations.
Doris：你可唔可以俾一個例子？	Doris: Can you give an example?
Fai：譬如嗰個鄉間小屋。如果你經常睇電視，你就會諗起啲電視嘅場景。跟住如果係你成日出街，你見到鄉間小屋就會聯想到啲樹。同埋你返鄉下嗰啲，你都會諗起自己鄉下啲小屋。所以語義圖就係有自己嘅經歷，唔會好似圖片咁樣上網求其搵一個。	Fai: I remember that there is a word “cottage.” If you often watch TV, you will associate the word with some sceneries on TV. If you often go outdoors, you may think of trees when you see the word “cottage.” . If you visit your hometown, you will also associate “cottage” with the small houses in your hometown. Therefore, you can utilize your experience in the semantic map, unlike randomly searching an image online.
Doris：即係圖片好似全部人在實驗中都望住同一張圖片，但語義圖有自主權，可以寫低自己嘅經歷係入邊。	Doris: You mean that all people have to look at the same pictures in the experiment, but semantic mapping gives you the autonomy to include your own experiences.
Fai：係。	Fai: Yes.
Doris：好，唔該曬。	Doris: Ok, thanks.

Interviewee 2: Rooney

Chinese transcript (original version)	English version (translated version)
Doris：我地之前用咗三種唔同嘅方式去記憶單字，咁你最鐘意邊種方式？	Doris: We used three different methods to memorize words? Which method do you like the most?
Rooney：用相關嘅概念。	Rooney: Using related concepts.
Doris：即係語義圖？	Doris: You mean semantic mapping?
Rooney：即係寫三個概念去記。	Rooney: I mean using three related concepts to memorize the word.
Doris：你最鐘意依種方法。點解？	Doris: You like this method the most. Why?
Rooney：因為呢個方法易記啲。	Rooney: Because it helps me memorize the words more easily.
Doris：記憶方便啲？	Doris: Is it more convenient?
Rooney：唔係，唔方便但係易記。	Rooney: No. It is not convenient but helps me memorize the words more easily.
Doris：咁用依種方法記單字嘅時候，你腦中進行咗咩活動？譬如你見到某一個單字中文係鄉間小屋，跟住呢？	Doris: When you used this method to memorize the words, what mental activity did you experience? For example, when you saw the word “cottage” and its Chinese translation, what mental activity did you have?
Rooney：聯想起其他野。	Rooney: I would think of other related things.
Doris：譬如呢？	Doris: For example?
Rooney：溫暖的家。	Rooney: A warm home.
Doris：溫暖的家，好，即係聯想到一啲相關嘅概念。	Doris: A warm home. So, you would think of a related concept.
Rooney：係。	Rooney: Yes.
Doris：如果使用圖片去記單字嘅時候，你會見到圖片，呢個單字，同埋中文翻譯。你會點樣聯繫呢三者來記呢個單字？	Doris: When you used imagery to memorize the word, you would see the image, the English word, and its Chinese translation. How could you associate these three elements to memorize the word?
Rooney：唔知點講。	Rooney: I don’t know how to say.
Doris：你會唔會一直望住張圖片？	Doris: Would you stare at the image?

Rooney：會嘅，不過望住個翻譯好啲。	Rooney: Yes, but I preferred to look at the Chinese translation.
Doris：望住個翻譯好啲。即係你覺得圖片唔係咁重要？Compared to 翻譯。	Doris: You preferred to look at the Chinese translation. Do you think that the image is not as important as the Chinese translation?
Rooney：都 ok。	Rooney: I think the image is acceptable as well.
Doris：你覺得圖片會唔會幫助你記單字？	Doris: Did the images help you memorize the words?
Rooney：小小幫助，但係覺得翻譯好啲。	Rooney: A little bit. But I think the translation is more helpful.
Doris：點解？	Doris: Why?
Rooney：翻譯易記入腦。	Rooney: It is easier for me to memorize the translation.
Doris：你唔覺得圖片有個視覺嘅刺激嗎？	Doris: Don't you think that the images can provide you with visual stimulation?
Rooney：唔會。	Rooney: No.
Doris：Ok。咁你有一個 posttest，叫你揀返呢啲字嘅中文。咁你見到單字嘅時候，會唔會諗起對應嘅圖片？	Doris: Ok. You did a posttest and you needed to choose the Chinese translation of the English words. When you saw the words in the posttest, could you recall corresponding images?
Rooney：有機會。有時記得有時唔記得。	Rooney: Sometimes I could recall, but sometimes I couldn't.
Doris：如果你當時係用咗語義圖去記某個單字，見到呢個單字你會唔會諗起嗰幅圖中嘅元素？	Doris: If you used a semantic map to memorize a word, could you recall the elements in the map when you saw the word in the posttest?
Rooney：記得一個或者兩個起碼。	Rooney: I could remember at least one or two concepts.
Doris：都係有記得嘅係咪？	Doris: So, you could at least recall something about the map?
Rooney：係。	Rooney: Yes.
Doris：如果你當時係用純粹中英文翻譯反復去記呢個單字，你會覺得比較高效定係低效？	Doris: Do you think L1 rehearsal is more effective or less effective?
Rooney：高效。	Rooney: More effective.

Doris：高效？即係你最鐘意係純粹中英文翻譯？但係你頭先講最鐘意語義圖加埋中英文翻譯嗰個？	Doris: More effective? So, you like L1 rehearsal the most? But you just said you liked semantic mapping with L1 translation the most.
Rooney：呢兩個都得。做語義圖易記但係唔方便。最後中英文翻譯嗰個方便但我都易記入腦。	Rooney: These two are both acceptable. I think drawing a semantic map is helpful to memorize the words, but it is not convenient. The final one, L1 rehearsal, is convenient and easy to memorize.
Doris：咁你覺得語義圖有冇加強你對中文翻譯嘅印象？	Doris: Then do you think the semantic maps can strengthen your memorization on the L1 translation?
Rooney：有。	Rooney: Yes.
Doris：點樣加強？	Doris: How?
Rooney: 即係可以聯繫嗰三個相關概念去記中間嗰個字嘅意思。	Rooney: You can memorize the central word by associating it with the three related concepts.
Doris: 咁你覺得圖片有冇加強？	Doris: Do you think the images strengthened the effects of L1 translation?
Rooney：圖片冇加強。因為我會撈亂啲圖片，唔記得邊個對應邊個。如果淨係俾下面嗰啲字我會記得，但係有上面啲圖片我會撈亂。例如拐杖嗰個英文我會同遊艇張相撈亂，記成遊艇張相。	Rooney: I don't think so because I may mix up the images, which means I may forget which image corresponds to which word. If you simply provide me with the word and its L1 translation, I can match them. But the involvement of images can confuse me. For example, I may match the word "crutch" with the image of "yacht."
Doris：好，咁你將來會採取邊種方式去記單字？	Doris: Ok, so which method will you use to learn new words in the future?
Rooney：都係淨係會用中英翻譯。	Rooney: I think I will still choose L1 rehearsal.
Doris：點解？	Doris: Why?
Rooney：方便。平時有好多嘢做。	Rooney: It is more convenient. I have many things to do.
Doris：好，即係你覺得語義圖唔方便但係有幫助，但係圖片係冇幫助因為你會撈亂。係咪？	Doris: Ok, so you think semantic mapping is not convenient but helpful. Using imagery is not helpful because you may match the image to the wrong word. Right?
Rooney：係。	Rooney: Yes.
Doris：好，多謝。	Doris: OK, thanks.

Interviewee 3: Abbie

Chinese transcript (original version)	English version (translated version)
Doris：我地用咗三種唔同嘅方式去學習詞彙。第一種就係有英文有中文，跟住有三個圈圈俾你去填一啲相關嘅概念，依個係語義圖。第二種就係有中英文翻譯同埋圖片，幫助你去記憶呢個單字嘅意思。第三種就係純粹嘅中英文反復記憶，冇咩其他輔助。呢三種單字記憶方法當中你最鐘意邊種方法？	Doris: We used three methods to memorize vocabulary. The first one is the combination of semantic mapping and L1 translation, which includes three circles for you to write some related concepts. The second one includes L1 translation and an image, aiming to help you memorize the word's meaning. The third one is just L1 rehearsal, with no extra assistance. Which method do you like the most when you memorized the words?
Abbie：我覺得我最鐘意有圖同埋有字嗰個。	Abbie: I think I like the one with images and words the most.
Doris：即係有圖片，中文同埋英文字嗰種？	Doris: You mean the one with images, Chinese translation, and the English word?
Abbie：係。	Abbie: Yes.
Doris：點解？	Doris: Why?
Abbie：因為我覺得有字仲有相就會記的清楚啲，你諗到嗰個物件係咩樣你就會諗到嗰個字嘅意思。	Abbie: Because I think combining the word and the image can help me remember more clearly. If you remember what the object looks like, you can think of the meaning of the word.
Doris：即係你覺得圖片刺激咗記憶，幫助你記呢個單字嘅意思？	Doris: So, you think that images stimulated your memory and helped you memorize the word's meaning?
Abbie：係。	Abbie: Yes.
Doris：你鐘唔鐘意語義圖？	Doris: Do you like semantic mapping?
Abbie：都可以。	Abbie: It's ok.
Doris：你用語義圖記單字嘅時候腦海中進行咗咩活動？	Doris: When you used the semantic maps to memorize words, what mental activity did you experience?
Abbie：就係諗同寫其他同呢個字相關嘅字，跟住就會諗返呢個字。	Abbie: I just thought of other relevant concepts and wrote them down in the semantic maps. Then these concepts would link me back to the central word.
Doris：例如遊艇你寫咗邊三個字？	Doris: Let's discuss an example. What are the three related concepts you wrote when learning the word

	"yacht"?
Abbie：我好似寫咗海同埋衝浪，另外一個唔記得咗。	Abbie: I think I wrote "sea" and "surfing", but I forgot the third one.
Doris: 你會唔會覺得如果純粹中英文翻譯就一個中文幫助你記憶呢個單字，但係依家有四個中文幫你記憶呢個單字？	Doris: Do you agree that you could only make use of one Chinese word to memorize the English word when using L1 rehearsal, but now you have four Chinese words to help you?
Abbie：會，幫手記憶嘅字變多咗。	Abbie: I agree. There are more concepts to help with memorization now.
Doris：你覺得咁樣嘅效率會唔會高過中英文反復記憶？	Doris: Do you think it is more effective to memorize words in this way compared to L1 rehearsal?
Abbie：會。	Abbie: Yes.
Doris：我地最後有一張翻譯嘅練習，你回憶呢啲單字嘅過程中你腦海中進行咗咩活動？譬如你當時係用語義圖記呢個單字，咁你見到依個英文單字會唔會諗起幅圖？	Doris: We did a translation exercise in the end. What mental activity did you experience when recalling the meanings of the words? For example, if you used a semantic map to memorize a word, could you recall the map when you saw the word in the posttest?
Abbie：我會，但係有機會諗唔起中間嗰個字。有時會記起我寫嘅嗰三個字但係諗唔起中間嗰個詞嘅意思。	Abbie: Yes, but sometimes I couldn't remember the central word. Sometimes I could recall the three words I wrote but couldn't remember what the central word meant.
Doris：例如依個詞 yatch，你會唔會記起你寫嘅「海」？	Doris: When you saw the word "yacht", could you remember the concept "sea" you wrote?
Abbie：會。	Abbie: Yes.
Doris：但係記得「海」不會就諗起「遊艇」了嗎？	Doris: If you think of "sea", can't you think of the meaning of "yacht"?
Abbie：有時諗起「海」我就會諗起我下面寫嗰個「衝浪」唔知點解。	Abbie: When I think of "sea", I may think of another concept "surfing", which was also written by me. I don't know the reason.
Doris：你記起你自己寫嘅概念嘅機會大過記起中間呢個我俾你嘅？	Doris: Is it more likely for you to recall the concepts written by you than the central concept provided by me?
Abbie：嗯。	Abbie: Yes.

Doris：好，如果當時你利用圖片記憶單字，你係測試中見到呢個單字，冇中文翻譯，你會唔會諗起張圖片？	Doris: OK. If you used imagery to memorize a word, would you recall the picture when seeing the word in the posttest?
Abbie：會。	Abbie: Yes.
Doris：所以對於你來講圖片係最有效嘅？	Doris: So, using imagery to learn vocabulary is the most effective method to you?
Abbie：係。	Abbie: Yes.
Doris：如果當時你係用中英文反復記憶，你見到英文單字嘅時候會唔會諗起個中文？	Doris: If you used L1 rehearsal to memorize a word, would you recall the Chinese when seeing the word in the posttest?
Abbie：諗唔起。	Abbie: No.
Doris：完全諗唔起？	Doris: Totally couldn't recall anything?
Abbie：完全諗唔起。	Abbie: Totally couldn't.
Doris：好，即係你覺得純粹嘅中英文反復記憶對你來講效率好低？	Doris: Ok. You think L1 rehearsal is not effective at all to you, right?
Abbie：係。	Abbie: Yes.
Doris：平時你記單字嘅時候會唔會用呢種方式（中英文反復記憶）？	Doris: Do you use L1 rehearsal to memorize words in your daily life?
Abbie：唔會。	Abbie: No.
Doris：你會用咩方法？	Doris: What method do you use?
Abbie：我係將每一個單詞變作一個故事去記。例如將每一個單詞變作一個人物或者放入一件事去記。	Abbie: I like making each word a story. For example, I may consider a word as a character or put a word into a story.
Doris：呢啲事係咪同你親身經歷有關？	Doris: Are these stories relevant to your personal experiences?
Abbie：係，有。	Abbie: Yes, they are relevant.
Doris：你做語義圖嘅時候，你會唔會都填一啲與自己經歷相關嘅概念？	Doris: When you did the semantic maps, did you write down some concepts relevant to your personal experiences?
Abbie：會。	Abbie: Yes.

Doris：你頭先話最鐘意圖片。實驗中嘅圖片係我俾你嘅，你會唔會有時對單字嘅理解與圖片上嘅內容唔同？	Doris: You mentioned that you liked using imagery the most. The images used in the experiment were provided by me. Did you hold any different interpretations of the words?
Abbie：冇，我覺得啲圖片 OK。但係可能有陣時張圖包括咗第二樣野，你會唔知佢講緊邊樣野。即係如果呢張圖有好多種元素，如果佢唔寫中文字出來我就會唔清楚佢講緊啲乜嘢。	Abbie: No, I think the images were ok. But I had another problem. Sometimes an image includes more than one thing, and you may not know which thing is referring to. If the Chinese is not written in this case, I may be confused.
Doris：但係當時有寫中文字俾你。	Doris: But I provided the Chinese translation to you in the experiment.
Abbie：係，所以實驗中冇呢個顧慮。	Abbie: Yes, so I didn't encounter this problem in the experiment.
Doris：將來你覺得你會採取邊種方式記單字？	Doris: Which method will you use to learn new words in the future?
Abbie：應該係圖片。	Abbie: I think I will use imagery.
Doris：係實驗中係老師俾全部人一樣嘅圖片，你會唔會想自己搵圖片？	Doris: All the students received the same images in the experiment. Do you want to choose the images by yourself in the future?
Abbie：會。	Abbie: Yes.
Doris：點解？	Doris: Why?
Abbie：因為有陣時有啲圖片唔會令到你記得好清楚，但係有啲圖片會好明顯指嘅係呢樣野，嗰陣時記呢個詞就會更加記得住。	Abbie: Because some images are not that effective to me. I can remember the words better if I think the picture is clearly referring to that thing.
Doris：你覺得有啲圖片會更加符合個詞嘅意思？你會傾向於自己搵一張更加符合呢個詞嘅圖片去記憶呢個單字？	Doris: You mean that some pictures can describe a word's meaning better, right? And you tend to choose some images that better correspond to the word's meaning, right?
Abbie：係。	Abbie: Yes.
Doris：好，唔該。	Doris: Ok, thanks.

Interviewee 4 (Chloe) & Interviewee 5 (Daisy)

Chinese transcript (original version)	English version (translated version)
Doris：我地之前用咗三種唔同嘅方式記憶單字，第一種係結合中文翻譯同埋語義圖，跟住係記中心嘅英文單字嘅意思。第二種係有中文翻譯同圖片，去睇圖片可唔可以加深中文翻譯係記憶單字當中嘅作用。最後一個係純粹嘅中英文反復記憶。第一個問題就係，使用呢三種方法記單字嘅時候，你最鐘意邊一种？	Doris: We used three methods to memorize vocabulary. The first one is the combination of semantic mapping and L1 translation, and you should memorize the meaning of the central word. The second one includes L1 translation and an image, aiming to investigate whether the image can strengthen the effect of L1 translation in vocabulary learning. The third one is the L1 rehearsal. Which method do you like the most when you memorized the words?
Chloe: 圖片。	Chloe: Using imagery.
Doris：點解？	Doris: Why?
Chloe: 因為好記啲。因為睇到個圖片啲字就好似會飄出來。	Chloe: Because it is easier to memorize. When I see an image, the corresponding word will appear in my mind.
Doris：最後做測驗嘅時候，係冇嗰張圖片同埋中文翻譯。如果你見到一個當時用圖片記嘅單字，啲中文翻譯唔會會飄出來？	Doris: When you did the posttest, you couldn't see the images and L1 translation. When you saw a word memorized by imagery, would the Chinese translation appear in your mind?
Chloe：會。	Chloe: Yes.
Doris: 真係啊？知唔知點解？	Doris: Really? Do you know the reason?
Chloe：即係張圖片解釋解釋咗嗰單字嘅意思，然之後就記到個英文單字。	Chloe: The images explained the words, which helped me memorize the words' meanings.
Doris：好，咁你呢？	Doris: Ok, what about you?
Daisy：都係圖片。	Daisy: I also like using imagery.
Doris：點解？	Doris: Why?
Daisy：因為有張相印象深刻啲。即係例如個英文係鄉下嘅一間屋，然後有埋張屋企嘅相，然後嗰個屋企又係豪宅，個豪宅就會令到你記得好清楚。	Daisy: Because it helps with memorization. For example, there was an English word that means a type of house in the countryside, and we were shown the image of the house. It was a luxurious house, so I could remember it clearly.
Doris：即係你地比較鐘意視覺嘅刺激？	Doris: So, you prefer visual stimulation, right?

Daisy：係呀。	Daisy: Yes.
Doris：嗰個語義圖你鐘唔鐘意？有三個相關概念嗰個。	Doris: Do you like semantic mapping? The one with three related concepts.
Daisy：都 Ok。	Daisy: It's also ok.
Chloe：唔係太鐘意。	Chloe: I don't like it very much.
Doris：點解嘅？	Doris: Why?
Chloe: 因為我都係覺得用圖片記最好記，我見到嗰張相嘅時候自然就會諗起個中文，跟住又會記起英文。但係呢個寫三個詞嘅方法我好容易撈亂啲詞，時間長咗會唔記得個英文字究竟指嘅係邊個詞。如果用圖片你淨係需要記得嗰個英文字嘅意思，咁對於我來講就容易好多。	Chloe: Because I still think using imagery is the most helpful. When I saw the image, I would naturally think of the Chinese word, and then I could recall the English. However, when I used the semantic maps to learn new words, I would mix up the concepts in the semantic maps. After a long time, I couldn't tell which concept that the English word referred to. When you use imagery to learn the word, you just need to memorize the meaning of the English word. It is much easier for me.
Doris：Ok. 用語義圖記單字嘅時候，你（Daisy）腦海中進行咗咩活動？	Doris: Ok. When you used the semantic maps to memorize the words, what mental activity did you experience?
Daisy：諗緊同佢相關嘅詞。	Daisy: I would think of the concepts related to the central word.
Doris：例如見到「人字拖鞋」，你會寫啲咩	Doris: When you saw "thongs", what would you write?
Daisy：就「去沙灘」。	Daisy: "Go to the beach."
Doris：Chloe 你會點樣寫？	Doris: What would you write, Chloe?
Chloe：「出街」「方便」「快捷」	Chloe: "Go outside", "convenient", and "easy to wear."
Doris：用圖片記單字嘅時候，你會點樣利用圖片？	Doris: When you used the image to memorize the words, how did you make use of the images?
Chloe：有陣時你望到嗰幅圖，就更加清楚嗰字係咩來嘅，同時又有個中文單字，就記得清楚啲。	Chloe: Sometimes when you looked at the images, you would understand the words' meanings more clearly. Meanwhile, there were the Chinese translations, so you could memorize the meanings well.
Doris：係咪可以聯繫呢三樣野，英文，中文，同圖片。	Doris: Does it mean that you can associate the

	English word, the Chinese translation, and the image?
Daisy & Chloe：係。	Daisy & Chloe: Yes.
Doris：你地覺得最尾嗰個中英文反復記憶點？	Doris: What do you think of L1 rehearsal?
Daisy：好難嗰個。	Daisy: It is hard to memorize.
Doris：平時係咪用開依個？	Doris: Do you use this method in your daily study?
Daisy & Chloe：係呀。	Daisy & Chloe: Yes.
Chloe：不過我平時就會將一個英文單字分成幾部分來記意思。	Chloe: But I often divide an English word into several parts to memorize.
Doris：好。最後我地有一個測驗，一個翻譯練習，你覺得呢三種方法可唔可以幫助你記起呢啲詞嘅意思？首先語義圖有冇幫到你？	Doris: Ok. In the end, we had a posttest, which was a translation exercise. Do you think the three methods helped you recall the word meanings during the posttest? First of all, do you think semantic mapping is helpful?
Daisy：有。我特別記得嗰個「狗窩」。	Daisy: Yes. I particularly remember the word “kennel".”
Doris：當時測試係俾咗「狗窩」英文 “kennel”。你見到 “kennel”會諗到「狗住嘅地方」？	Doris: In the posttest, you saw the English word “kennel".” When you saw it, could you think of “the place where a dog lives”?
Daisy：係呀。	Daisy: Yes.
Doris：你見到 “kennel” 會唔會諗起你當時寫嘅相關概念？	Doris: When you saw “kennel”, would you think of the related concepts you wrote in the experiment?
Daisy：會呀。	Daisy: Yes.
Doris：你當時寫咗啲咩？	Doris: What did you write?
Daisy：就係寫我朋友嘅名因為佢有養隻狗跟住隻狗嘅屋係點樣。	Daisy: I wrote the name of my friend who has a dog. And then I described how the house of the dog looks like.
Doris：即係無中文俾你，純粹見到個英文，你都會記得起？	Doris: When you saw the English word with no Chinese translation, could you still recall these concepts?
Daisy：係呀，記到。	Daisy: Yes, I could.

Doris：Chloe 記唔記到？自己當時寫嘅三個概念。	Doris: What about you, Chloe? Could you remember the three concepts you wrote when doing the posttest?
Chloe：都可以記到差唔多兩個。	Chloe: I could remember around two.
Doris：好，Daisy 當時見到 “kennel”諗起咗啲咩？	Doris: Ok. Daisy, when you saw “kennel” in the posttest, what could you think of?
Daisy：我諗起我朋友個名同埋佢嘅意思「狗居」。	Daisy: I could think of my friend (who has a dog)’s name and the word’s meaning “the place where a dog lives. ”
Doris：如果當時係用圖片記一個單字，做測試嘅時候見到依個英文單字，會唔會諗起張圖片？	Doris: If you used an image to memorize a word in the experiment, could you recall the image when you saw the English word in the posttest?
Chloe：會。	Chloe: Yes.
Daisy：會。	Daisy: Yes.
Doris：記起嘅幾率同語義圖比？	Doris: Which one was more likely for you to recall, images or semantic maps?
Daisy：圖片大。我記得嗰個 BB 車嘅單字同埋嗰張圖畫，當時見到個英文就會諗起張圖。但係依家唔記得咗個英文。	Daisy: Images. I remembered the English word “a carriage for a baby” and its image. When I saw the word in the posttest, I could recall the image. But now I forget the English word.
Doris：Chloe 呢？係測試中覺得圖片與語義圖相比點呀？	Doris: What about Chloe? What do you think of the effectiveness of the images and the semantic maps after doing the posttest?
Chloe：諗起圖片嘅幾率大啲，圖片嘅幫助比較大。	Chloe: It was more likely for me to recall the images, so I think using imagery is more helpful.
Doris：好，如果當時係用咗中英文反復記憶，你係測試中見到個英文會唔會諗起佢嘅中文意思？	Doris: Ok, if you used L1 rehearsal to memorize the words, would you recall the Chinese meaning of the words when you saw them in the posttest?
Chloe：都記得幾個。	Chloe: I could recall some.
Daisy：我可能淨係記得小小。我諗呢個係記得最少嘅。	Daisy: I could only recall a little bit. I think this one is the least effective among the three methods.
Doris：所以你地覺得最多係圖片，其次係語義圖，最尾係中英文翻譯？	Doris: So, you think using imagery helped you recall the most words, and the next one is semantic mapping. L1 rehearsal helped you recall the least words. Right?

Daisy & Chloe：係。	Daisy & Chloe: Yes.
Doris：你地覺得引入呢兩樣野比純粹嘅中英文反復記憶更加好?	Doris: You think the involvement of these two elements is better than L1 rehearsal, right?
Chloe：係呀，最好係有圖片，然之後到嗰個類似腦圖嘅野。	Chloe: Yes. The best one is the one with images, and the second one is the one with mind maps (semantic maps).
Doris：最後一個問題。兩位同學你地將來會採取邊一種詞彙記憶嘅方法?	Doris: The last question. Which method will you use to learn new words in the future?
Chloe：圖片。比較直接又方便記。	Chloe: Using imagery. It's more direct and convenient.
Daisy：我都係圖。	Daisy: I also prefer to use imagery.
Doris：你地會唔會覺得老師求其俾張圖俾你同你自己嘅理解有小小唔同?	Doris: Do you think the images provided by the teacher are different from your interpretation of the words?
Chloe：唔會，都係嗰樣野。	Chloe: No. They both referred to the same thing.
Doris：好，唔該。	Doris: Ok, thanks.