The Link between Thai EFL Students' Multiple Intelligences and Use of Vocabulary Learning Strategies

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Abstract

The roles of multiple intelligences (MIs) in language learning have attracted extensive consideration from previous researchers. MI reflects the learner's personality contrasts which were used as a device for individual learning. The studies related to the link between students' MIs and vocabulary learning strategy (VLS) employment has been carried out in other countries; however, they seem scarce in the Thai context. The study purposed to examine the link between Thai EFL students' multiple intelligences and the use of vocabulary learning strategies, and discover the VLS predictors. The 381 tertiary-level students in Nakhon Ratchasima Province took part in the study. MI questionnaire and vocabulary learning strategy questionnaire were used as tools. The results showed a low positive correlation between students' MI profiles and their VLS employment. Furthermore, among diverse sorts of MI, verbal/linguistic intelligence was found to be a critical predictor of all VLS employment (cognitive, determination, memory, social, metacognitive, and affective strategies). The present

study suggested EFL teachers strengthen their linguistic intelligence through learning activities and provide active vocabulary learning in a classroom.

Keywords: Thai EFL students, multiple intelligences, vocabulary learning

Introduction

The hypothesis of different intelligences (MI) was created in 1983 by Howard Gardner. The part of MI in language learning has pulled in impressive consideration from numerous researchers. According to Gardner (2011), the term intelligence is "the ability to solve problems or to create products that are valued within one or more cultural settings" (p. xxviii). According to this hypothesis, each person has a mixture of different intelligences which are free of each other. (Gardner, 1983, 2011). In 1983, Gardner initially proposed a list of seven intelligences which were verbal/linguistic, musical/rhythmic, logical/mathematical, visual/spatial, bodily/kinesthetic, intrapersonal, and interpersonal intelligences. Later, the two more 'naturalist' and 'existentialist' were added to the list. Apart from Gardner, Armstrong (2003), a well-known educator, captures the value of MI and argues that MI "opens the door to a wide range of teaching strategies" (p. 72). He recognizes the diverse capabilities of the learners as well as the strategies they employ to learn. MI also reflects the learners' individual differences particularly in recognizing the factors facilitating the L2 learners' strategy use in Second Language (L2) (2003). Armstrong (1999) suggests that the theory of MI facilitates innovative teaching strategies which the teachers can apply to direct the learners in different domains. Thus, it seems to be useful to know the individual factors that encourage L2 learners' strategy use.

Vocabulary learning is "one of the major challenges that foreign language learners face during the process of learning a language" (Ghazal, 2010, p. 84). It may be a continual procedure of experiencing new vocabulary in language contexts which are comprehensible (Harmon, Wood, & Kiser, 2009). In addition, it could be a more complex procedure than basically memorizing the words since it is related to seeing, hearing and utilizing words in important settings (Bintz, 2011). Mastery of vocabulary items in a language does not take place in a short time. This process has to be accumulated over time and requires considerable efforts. The language learners may use different methods or vocabulary learning strategies (VLS) to facilitate their lexical learning.

The term 'vocabulary learning strategies' (VLSs) has been given by different researchers. For instance, Catalán (2003, p. 56) proposed the definition of VLSs based on the ideas of different researchers, such as Rubin (1987), Wenden (1987), Oxford (1990) and Schmitt (1997). It has been defined as "knowledge about the mechanisms (processes, strategies) used in order to learn vocabulary as well as steps or actions taken by students to (a) find out the meaning of unknown words; (b) to retain them in long-term memory; (c) to recall them at will; and (d) to use them in oral or written mode." VLSs play a vital role to learners' vocabulary learning. Learners have been found to vary in using VLSs due to many factors. Research work on VLSs reveal a number of factors believed to constitute a source of variations of the learners' VLS use. Factors affecting VLSs are grouped under Ellis's framework (1994) which proposes a range of factors affecting learning strategies, including individual learner difference factors, situational and social factors, and learners' learning outcomes. These factors should not be neglected as they play an important role to learners' vocabulary learning. Although many factors that L2 learners use differ, intelligence is often considered as one of the significant predictors of L2 learning success (Ellis, 1985).

Multiple intelligences are connected to L2 learning. Conferring to MI hypothesis, individuals are distinctive in aspects of intelligence. MI creates differences in individuals' performance on different tasks particularly, vocabulary learning.

On the link between students' vocabulary learning and their MI, several studies have been carried out in other countries. For example, Razmjoo, Sahragard, and Sadri (2009) examined the connection between MI and vocabulary knowledge among Iranian L2 learners. They discovered that linguistic and natural intelligences contributed significantly to the prediction of vocabulary learning knowledge. Panahi (2012) examined the link between spatial intelligence and vocabulary learning. The findings discovered that the students associated with picture-based instruction and with high and moderate spatial intelligence had high performance on vocabulary tests. Skourdi, Damavand, Viyani, and Kashef (2012) studied the connection between linguistic intelligence and vocabulary knowledge among L2 learners. The results demonstrated the contribution of linguistic intelligence to vocabulary size. A more recent study, Farahani, and Kalkhoran (2014) explored the connection between Iranian L2 learners' MI and incidental vocabulary learning. The results showed significant relationship between them.

No previous works within the field of vocabulary learning strategies (VLSs) have scrutinized the link between the students' VLS use and their MI. This study fills out this gab by investigating the connection between them. Also, it aims to examine types of MI that can significantly predict students' VLS employment. Specifically, the objectives of the study are:

1) To examine the link between the students' MI profiles and their VLS employment

2) To find out the significant predictor of all vocabulary learning strategies which are cognitive, determination, memory, social, meta-cognitive and affective strategies

Research Methodology

Operational Definition

Vocabulary Learning Strategies (VLSs). VLSs are separated into two main groups: direct and indirect strategies. Each group is subdivided into three subgroups. The definitions are presented.

Direct and Indirect Strategies. The definitions of direct and indirect strategies are adapted from Oxford (1990, as cited in Taghinezhad, Azizi, Shahmohammadi & Azadikhah, 2016). Direct VLSs focus on the use of tools like dictionaries and word lists and they are concerned with explicit instruction of meanings and forms of the vocabulary items. Direct VLSs include cognitive strategies (COG), memory strategies (MEM) and determination strategies (DET). Whereas indirect strategies improve learning in an indirect way, indirect VLSs provide indirect support for students for their vocabulary leaning. Indirect VLSs include metacognitive strategies (MET), social strategies (SOC) and affective strategies (AFECT). The working definitions of each term are presented.

1) Cognitive Strategies (COG): are dealing with problem-solving that involves direct analysis, conversion, or synthesis of learning materials (Rubin,1987).

2) Memory strategies (MEM): adapted from Schmitt (1997) are dealing with linking new words to mental processing by connecting background knowledge with the new words.

3) Determination strategies (DET): adapted from Schmitt (2000) are dealing with individual learning strategies that help learners identify the meaning of new words without the other's help. In other words, the strategies learners use to determine the meaning by using dictionaries, guessing the meaning from the context and identifying the parts of speech and constituent elements.

4) Metacognitive Strategies (MET): adapted from Schmitt (1997), are dealing with monitoring, decision-making, and evaluation

of one's progress. Metacognitive strategies go beyond the cognitive mechanism and provide learners the opportunity to coordinate their learning. These help them to plan language learning efficiently.

5) Social strategies (SOC): adapted from Schmitt (1997) are dealing learning new words in connection with others.

6) Affective strategies (AFECT): Affective strategies adapted from Oxford (2003) are individual learning strategies. Learners manage their emotion or feelings when learning vocabulary. They reward themselves for good performance and positive self-talk.

Multiple Intelligence. The operational definitions of multiple intelligences of the present study are adopted from Inventory of McKenzie (1999) that consists of (1) naturalist students whose learning are accommodated by outdoor activities; (2) musical (rhythmic) students who learn well through musical expression; (3) logical (mathematical) students who have an aptitude for numbers, reasoning, and problem solving, and learn well in traditional classrooms; (4) existentialist students who learn well through a perspective related to humankind and philosophy; (5) interpersonal students who are other-oriented and learn well in groups; (6) bodily/kinesthetic students who learn best through active activities; (7) verbal (linguistic) students who have language arts and do well in traditional classroom; (8) intrapersonal students who learn through being in touch with their own feelings, values, and ideas; and (9) visual (spatial) students who learn best through visual materials.

Research Sample

The population of the study consisted of the students studying at the tertiary level in Nakhon Ratchasima. Simple random sampling was employed to select five institutions shown in Table 1. The students from the five educational institutions were randomly selected based on the proportions of these subgroups of the population. In determining the sample size, the relationship between the sample size and total

population proposed by Krejcie and Morgan (1970) was considered. The target samples were 381 students: 133 students were from Suranaree University of Technology, 17 students from Nakhon Ratchasima College, 18 students from Vongchavalitkul University, 139 students from Nakhon Ratchasima Rajabhat University and 74 students from Rajamangala University of Technology Isan. The participants had a homogeneous educational background. They were second-year students of higher education institutions who were learning English as a foreign language (EFL). They had no experience in studying or living in any English-speaking country. They had never been trained in a course with a specialty in vocabulary learning.

Table 1

Sampled Institutes and Number of Research Participants

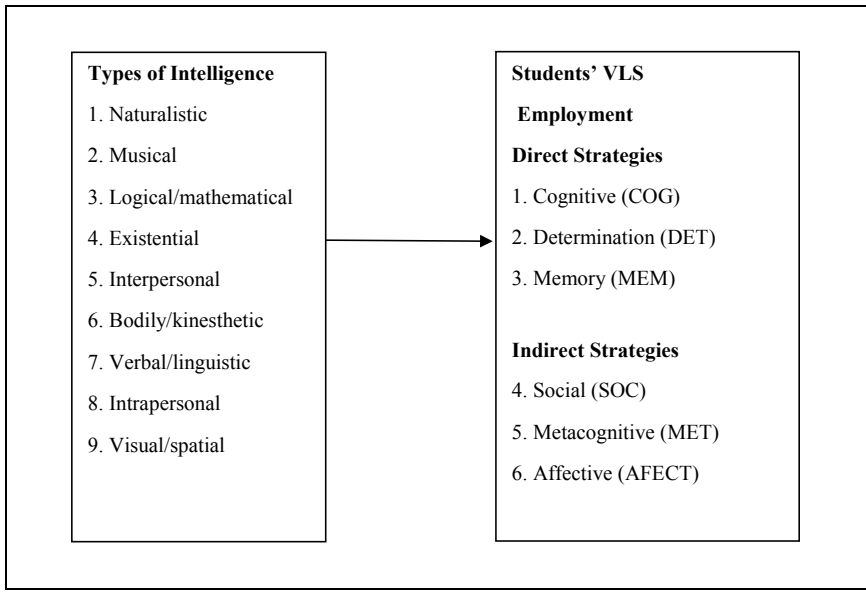
Institution	Number of Population	Number of Participants
1. Suranaree University of Technology	16,459	133
2. Nakhon Ratchasima College	2,138	17
3. Vongchavalitkul University	2,267	18
4. Nakhon Ratchasima Rajabhat University	17,225	139
5. Rajamangala University of Technology Isan	9,218	74
Total	47,307	381

The Conceptual Framework of the Study

The conceptual framework shows that the students' types of intelligence have been hypothesized to link with the students' VLS employment which consists of two main categories, which are direct and indirect strategies, and six subcategories, namely, cognitive (COG), determination (DET), memory (MEM), social (SOC), metacognitive

(MET), and affective (AFFECT). The conceptual framework of the study is shown in Figure 1.

Figure 1
Conceptual Framework of the Present Study



Instrument and Data Collection

Two instruments were employed. The first instrument consists of a vocabulary learning questionnaire based on the framework adapted from Schmitt (1997). The strategies are divided into six groups: cognitive strategies (COG), determination strategies (DET), memory strategies (MEM), social strategies (SOC), metacognitive strategies (MET), and affective strategies (AFFECT). The VLS items were adapted from Schmitt (1997), Siriwan (2007), and Boonkongsean

(2014). The VLS questionnaire has two parts. The first part is the background information of the participants. The second part is 42 VLS items (see Appendix). The second instrument is the multiple intelligence survey developed by McKenzie (1999) to examine the different types of intelligences to which the participants belonged. The survey contains nine major sections regarding intelligence types. Each section has ten (10) statements that the participants have to mark true for each true part regarding their personality as presented. The MI survey was attached to the VLS questionnaire and distributed to the participants. In relation to quality of the two research instruments, the following steps are presented:

Step 1: Translating the MI survey and the VLS questionnaire from the original language (English) into the target language (Thai) using symmetrical translation approach.

Step 2: Reviewing the Thai translated versions by language experts was done to check the accuracy of the language. To do this, the researcher sent the Thai translated MI survey and VLS questionnaire (No. 1) to the language experts. The researcher adjusted the questionnaire according to the experts' suggestions. Therefore, the second Thai translated version of the MI survey and the VLS questionnaire was obtained (No. 2).

Step 3: Translating backward has been done from Thai into English. To do this, the researcher sent the MI survey and the VLS questionnaire (No. 2) to two language experts who had never seen the original questionnaires before. The two experts translated the Thai version of the MI survey and the VLS questionnaire (No. 2) back into English. In this step, two copies of the English version of the MI survey and the VLS questionnaire were obtained.

Step 4: Comparing the similarities and differences of the original and back-translated versions of the MI survey and the VLS questionnaire was undertaken to consider the suitability of both

languages and cultures. It was found that both experts mostly used the same meaning with a little difference in formulating the sentences. The researcher adjusted the sentences by choosing words that were most appropriate for the Thai context. These were sent back to the two experts again. Upon approval the latest translation became version 3 of the MI survey and the VLS questionnaire. The researcher therefore agreed that the original questionnaire and the reverse translated version have the same meaning.

Step 5: The researcher examined the quality of the instruments by using Item-Objective Congruence (IOC) evaluated by five experts. The items with scores lower than 0.5 were corrected. On the other hand, the items with scores higher than or equal to 0.5 were kept. The IOC score range of the MI survey and the VLS questionnaire was within the range of 0.6-1.00.

After revision, the pilot testing was carried out in September 2019 with 40 students who were not in the sample group. Alpha Coefficient (α) or Cronbach alpha was used to check the internal consistency of the questionnaire. The reliability of the questionnaire was .90.

Data Analysis

Pearson's correlation was used to represent the linear link between the students' type of intelligence and their VLS employment. Next, multiple regression was used to examine the significant predictor of the students' VLSs employment.

Results and Discussions

The Link between Students' MI Profiles and VLS Employment

Table 2

Correlation between MI profiles and VLS Employment

	Overall VLS employment
Overall MI's Profiles	.309**

*** Correlation is significant at the .01 level (2-tailed).*

The results of the Correlation Analysis between students' MI profiles and their overall VLS employment demonstrate very low positive correlation ($r = .31$, $p < .01$). The findings of the present study are consistent with Razmjoo et al. (2009), Azadi, Abu Saeedi, and Zarafshan (2014), Ahourand and Abdi (2015), and Mahdavi Zafarghdi and Amini (2019). These previous researchers found the link between the students' MI profiles and their VLS employment. The results of this study indicate that the more the students MI scores increase, the more VLSs they employ. MI seems to be related to students' achievement. The students will grow to be more developed and efficient when teachers inspire them through methods that meet the character values, needs, or wishes of the learner. Consequently, it also mirrors the teachers' practices and beliefs about multiple intelligences which they optimize to improve these intelligences among students. According to Arnold and Fonseca (2004), awareness of students' different types of intelligences could be "a teacher-friendly tool for lesson planning that can increase the attractiveness of language learning tasks and therefore create favorable motivational conditions" (p.120). The results also revealed that among different domains of intelligence, verbal/ linguistic intelligence seems to have strongest positive correlation with

both direct and indirect strategies, respectively ($r = .46$, $p < .01$; $r = .41$, $p < .01$). as revealed in Table 3.

Table 3

Correlation between the Students' MI Profiles and the Two Main Categories of VLSs

Students' MI Profiles	Direct VLSs	Indirect VLS
1) Naturalistic	.162**	.201**
2) Musical	.197**	.252**
3) Logical/mathematical	.191**	.134**
4) Existential	.177**	.199**
5) Interpersonal	.036	.068
6) Bodily/kinesthetic	.074	.064
7) Verbal/linguistic	.459**	.413**
8) Intrapersonal	.211**	.196**
9) Visual/ spatial	.263**	.264**

** *Correlation is significant at the .01 level (2-tailed).*

Table 3 shows that the students' verbal/linguistic intelligence scores increase the more direct and indirect VLSs they tend to employ. That is to say, those who demonstrate strength in the language tend to be capable of using cognitive, memory, determination, metacognitive, social and affective strategies. The results of this study are partly consistent with Sistani and Hashemian (2016). Their study found a link between Iranian L2 learners' vocabulary strategies (VLSs) and their multiple intelligences (MI) types as well as the link between linguistic intelligence and determination strategies. These findings

were also true in Gardner's study (2011) that revealed the ability of the students to learn and use new words because they possess linguistic intelligence. They were also good in languages and like reading and writing.

It is imperative to support and develop students' linguistic intelligence by encouraging students to enjoy real communication through the four skills. To keep the interest of the students in language learning, Thai EFL teachers may utilize exercises such as keeping everyday English diary, perusing a assortment of books, magazines, and articles, having discussions on a assortment of themes, playing word diversions, solving crosswords and other word puzzles, and composing letters to improve the students' verbal-linguistic intelligence. It is also important for EFL teachers to strengthen linguistic intelligence through learning activities as linguistic intelligence and VLS strategies have a bidirectional link.

The Predictor of the VLS Employment

Regression analysis revealed that among different type of intelligences, only verbal/linguistic intelligence was the significant predictor of the students' VLS employment ($R^2 = .21$, $p < .01$) (see Table 4). The regression equation can be written as $Y = 1.866 + 0.100$ D7. This means that if the students' verbal/linguistic intelligence scores increase, their VLS employment (cognitive, determination, memory, social, metacognitive and affective strategies) tend to increase as well. The results of the study appear to be different from Azadi et al. (2014) who found that spatial intelligence could be a good predictor of VLS, while musical intelligence could not act as a good predictor and was the weakest one.

Table 4

The Significant Predictor of the VLS Employment

Variable	b	SE_b	β	t	p-value
(Constant)	1.866	0.045		41.504	.000**
D_7	0.100	0.010	0.458	10.070	.000**
SE_{est} = 0.4067; R = .458; R^2 = .209; F = 101.395; p-value = .000**					

D_7: Verbal/linguistic

The results of this study were also different from Ahour and Abdi (2015) who examined the link between Iranian EFL male and female learners' MI types and their vocabulary learning strategies (VLSs) use. In the Ahour and Abdi study, the bodily and naturalist intelligences contributed significantly to the prediction of VLS employment of female learners. However, the results of the present study are partly compatible with those of Sistani and Hashemian (2016) and Mahdavi Zafarghandi and Amini (2019) who found that verbal/linguistic intelligence is one of among other MI types that could predict a specific and significant VLSs employment. In the context of the present study, only verbal/linguistic intelligence can predict all strategies, i.e. cognitive, memory, determination, metacognitive, social and affective strategies. It is possible that Thai tertiary-level students studying in Nakhon Ratchasima Province who do not reveal strength in the language arts might be able to employ VLSs strategies properly to master vocabulary items of a foreign language. They might face problems in vocabulary learning. Some Thai EFL learners have difficulties in pronouncing the words or do not know how to write and spell them correctly due to the English inflection. Some students also confused in choosing the appropriate meaning of the words based on the context. Only verbal and linguistic intelligence significantly affect

vocabulary learning. This indicates that those without a dominance in verbal and linguistic intelligence might not be able to deal with the vocabulary item they have found. In an ordinary classroom, each student possesses intelligence, but there is also a primary or more dominant intelligence that a Thai EFL teacher should consider. Therefore, active vocabulary learning activities should be provided by Thai EFL teachers to empower the students' vocabulary knowledge. Active learning, according to Felder and Brent (2009), is that all students are called upon to do more than just observe, listen and take notes in a class session. A teacher can ask students to complete outside class assignments and projects, conduct laboratory experiments, or something other than sitting passively in a classroom, giving them a way to shine in the way they learn best. For those with a dominance in naturalistic intelligence, teachers may organize trip for observing natural surroundings as well as learning new vocabulary; for those with a dominance in musical intelligence, teachers may incorporate music that match the target vocabulary; for those with a dominance in logical/mathematical intelligence, teachers may provide math games in classroom; and for those with a dominance in intrapersonal intelligence, teachers may assign them to interview a non-Thai speaker. According to Wongyai and Patphol (2019), teachers need to have the ideas and beliefs that learners are able to learn and be successful with different learning processes. Students have the potential to develop themselves to succeed by themselves. Furthermore, students with an awareness of their MI profiles may provide themselves and teachers with a more robust and acceptable incorporation of language activities within the room.

Conclusions and Suggestions for Future Research

The study was conducted in a systemic and non-judgmental descriptive manner supported by data. It is an important contribution

on the tertiary-level learning in Nakhon Ratchasima. The main focuses are to examine the link between the students' MI profiles and their VLS employment and find out the significant predictors of the all vocabulary learning strategies. One of the major findings demonstrate low positive correlation between students' MI profiles and their VLS employment. Lastly, among different type of intelligences, only verbal and linguistic intelligence can predict all strategies. i.e. cognitive, determination, memory, social, metacognitive and affective strategies. The areas of this study were restricted to tertiary level institutions in Nakhon Ratchasima. Future research and studies may include primary and secondary institutions in Nakhon Ratchasima and other provinces as well. In addition, future studies may find the link between students' multiple intelligence types, their learning styles, and reading strategies.

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Appendix

Instructions: There are two main parts of this questionnaire:
Part 1: The Students' Personal Information
Part 2: Use of Vocabulary Learning Strategies

<u>Part 1</u> The Students' Personal Information

Instructions:

Please provide your information by selecting the choices given with a "✓"or write down the information on spaces provided.

1. Your gender: ☐ Male ☐ Female
2. You are studying at
   - ☐ Suranaree University of Technology
   - ☐ Nakhon Ratchasima College
   - ☐ Vongchavalitkul University
   - ☐ Nakhon Ratchasima Rajabhat University
   - ☐ Rajamangala University of Technology Isan
3. Do you have any experience in studying or living in any English-speaking countries?
   - ☐ No, I don't have.
   - ☐ Yes, I do. Please specify _____
4. Have you ever been trained in a course with a specialty in vocabulary learning?
   - ☐ No, I haven't.
   - ☐ Yes, I have. Please specify the course _____

<u>Part 2</u> Use of Vocabulary Learning Strategies

Instructions:

Please read each statement carefully, and then mark your response with a "✓"in the corresponding spaces provided that tell how frequently you employ the given vocabulary learning strategies.

Statements	Frequency of Your Own Vocabulary Learning Strategies Use			
	Always/ Almost always	Often	Sometimes	Never
Cognitive Strategies				
1. Say the word with its meaning repeatedly				
2. Write the word with its meaning repeatedly				
3. Write vocabulary items with meanings on papers and stick them on the wall in your room				
4. Use flash card/ word list to retain knowledge of newly learn words				
5. keep a vocabulary notebook				
6. Put English label on physical objects				
7. Study vocabulary section in your textbooks				
Metacognitive Strategies				
1. Use English language media (song, movie, advertisement, magazine) to learn new words				
2. Do extra English exercises or tests from different sources, such as texts, magazines, internets, etc.				
3. Play English games, such as Scrabble, crossword puzzles				
4. Study vocabulary items from advertisements, public relations, notices, traffic signs, etc.				
5. Learn words through literature, poems and traditional culture				

Statements	Frequency of Your Own Vocabulary Learning Strategies Use			
	Always/ Almost always	Often	Sometimes	Never
6. Take an extra job or get trained by the companies where you can use English, such as tour offices, hotels, etc.				
7. Continue to study words over time				
Memory Strategies				
1. Remember affixes and roots				
2. Connect newly-learned vocabulary items to your previous learning experience				
3. Associate newly-learned vocabulary items with previously-learned ones				
4. Draw images of words				
5. Connect words to their synonyms & antonyms				
6. Group words together into categories				
7. Use new words in sentences				
Determination Strategies				
1. Guess the meaning by analyzing the structure of words (prefixes, roots and suffixes)				
2. Guess the meaning from contexts, such as a single vocabulary, grammatical structure of a sentence				
3. Guess the meaning from contexts, such as pronunciation and real situation				
4. Use a monolingual dictionary to discover meaning or other aspects of vocabulary items				

Statements	Frequency of Your Own Vocabulary Learning Strategies Use			
	Always/ Almost always	Often	Sometimes	Never
5. Use a bilingual dictionary to discover meaning or other aspects of vocabulary items				
6. Analyse any available pictures or gestures				
7. Analyze the parts of speech of a word				
Social Strategies				
1. Ask friends for the meaning or other aspects of vocabulary items				
2. Ask teachers for the meaning or other aspects of vocabulary items				
3. Ask other people or native speakers of English for the meaning or other aspects of vocabulary items				
4. Use vocabulary items to converse with friends				
5. Use vocabulary items to converse with teachers of English or native speakers of English				
6. Study and practice the meaning of new words during group work activity				
7. Find chance to interact with native speakers				
Affective Strategies				
1. Take a deep breath or do mediation while learning vocabulary				
2. Think of the benefits of vocabulary learning to encourage one's self				

Statements	Frequency of Your Own Vocabulary Learning Strategies Use			
	Always/ Almost always	Often	Sometimes	Never
3. Give oneself a reward when learning a new vocabulary successfully				
4. Say positive statement to oneself to encourage one's self- vocabulary learning				
5. Use music to relaxed while learning vocabulary				
6. Arrange the environment to be relaxed while learning vocabulary				
7. Try to be relaxed when being afraid of learning new vocabulary				

Note. The scale was adapted from Schmitt (1997), Siriwan (2007) , and Boonkongsean (2014).