



**THE USE OF THAI EFL POSTGRADUATES' LEXICAL
INFERENCE STRATEGIES THROUGH
THE THINK-ALOUD METHOD**

BY

MS. KAMKHOM KANGWANPRADIT

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
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LANGUAGE INSTITUTE
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ACADEMIC YEAR 2016
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ENTITLED

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was approved as partial fulfillment of the requirements for
the degree of Master of Arts in English for Careers


on June 24, 2017

Chairman



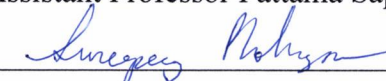
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Thesis Title	THE USE OF THAI EFL POSTGRADUATES' LEXICAL INFERCING STRATEGIES THROUGH THE THINK-ALLOUD METHOD
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Degree	Master of Arts
Major Field/Faculty/University	English for Careers Language Institute Thammasat University
Thesis Advisor	Assistant Professor Pattama Sappapan, Ph.D.
Academic Years	2016

ABSTRACT

The study aims at investigating the lexical inferencing strategies and frequency of each strategy that Thai EFL postgraduates employed when encountering with unknown or unfamiliar words while reading. Moreover, it proposes to explore the differences in lexical inferencing strategy use and the rate of success between two groups of participants with different English proficiency levels.

Twelve postgraduates participating in this study were asked to read and verbalize their thoughts in order to guess the unknown word meanings while reading. The collected data were qualitatively classified into lexical inferencing strategies framework according to Nylander (2014). In addition, the frequencies of each lexical inferencing strategies use and inferential success were quantitatively counted.

The research findings revealed that Thai EFL postgraduates dealt with unknown words while reading using their linguistic, non-linguistic knowledge sources, and some of additional types of responses. The most frequently used strategy by all participants was *sentence meaning* under intralingual knowledge sources. Comparing the use between the two groups of participants with different proficiency levels, it was found that the low proficiency group mostly relied on sentence meaning while the high proficiency group preferred addressing additional types of responses. However, there was a significant difference with respect to the frequency of using intralingual knowledge sources between the low and the high proficiency level groups ($p = 0.038$). With regard to

inferencing success, the findings showed that participants failed to obtain the meaning of unknown words more than half of the time.

Keywords: lexical inferencing strategy, inferencing success, Thai EFL postgraduates, think-aloud protocols, knowledge sources



ACKNOWLEDGEMENTS

Throughout the long journey of the process of researching and writing this thesis, there are the people who I would like to express my profound gratitude for their kind assistance and support.

First of all, I would like to express my deep gratitude and greatest appreciation to my advisor, Asst. Prof. Dr. Pattama Sappapan, for her valuable time, guidance, advice and feedback on my study from the beginning to the end.

Secondly, I would like to acknowledge and thank Asst. Prof. Dr. Nuchada Dumrongsiri and Assoc. Prof. Dr. Supong Tangkiengsirisin for their cooperation and assistance in helping to assess the accuracy and reliability of the researcher's data analysis. In addition, I would like to thank Ajarn Mark Zentz for being my thesis editor.

I also wish to express my thanks to my MEC17 colleagues for both their involvement as participants in my study and the enjoyable time spent together inside and outside the classroom during the study years. Moreover, my sincere gratitude also goes to the LITU staff for their assistance on various occasions.

Lastly, I would like to wholeheartedly thank my parents, my family, and my close friends for providing me with endless support and continuous encouragement throughout my years of study.

Ms. Kamkhom Kangwanpradit

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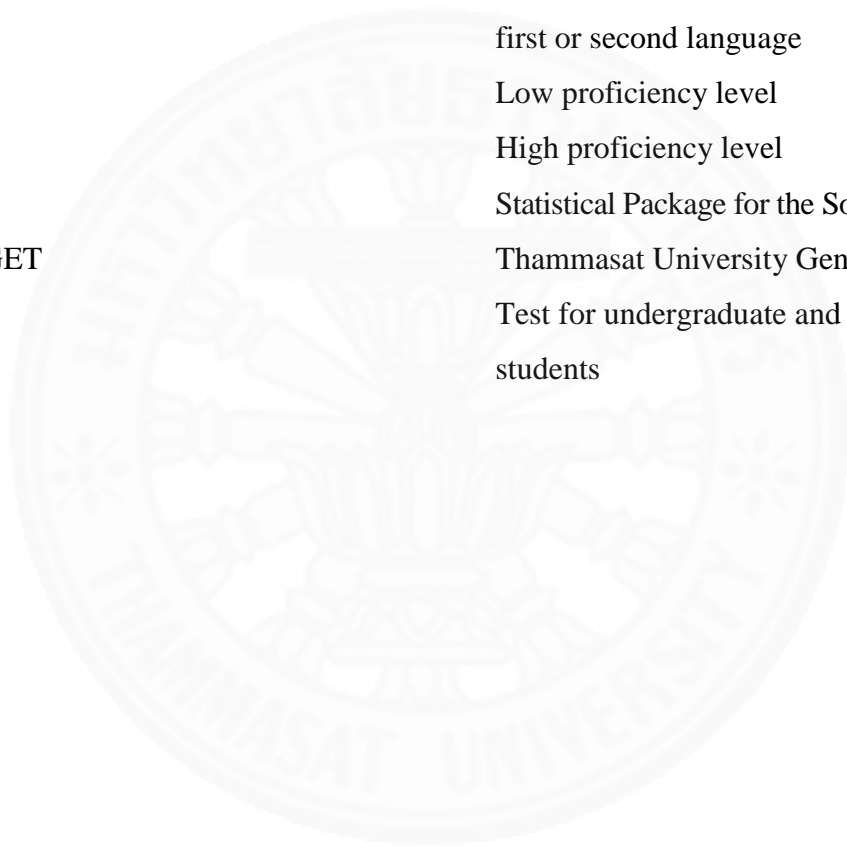
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LIST OF ABBREVIATIONS

Abbreviations	Terms
EFL	English as foreign language
L1	Learner's first language
L2	Learner's second language
Ln	Other language knowledge than learner's first or second language
LPL	Low proficiency level
HPL	High proficiency level
SPSS	Statistical Package for the Social Sciences
TU-GET	Thammasat University General English Test for undergraduate and graduate students



CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND STATEMENT OF THE PROBLEM

It is inarguable that vocabulary is one of the significant elements in learning foreign languages. According to Nation (2001), there is a relationship between vocabulary knowledge and language use. These two components support each other as knowledge of vocabulary enables language use and language use leads to an increase of vocabulary knowledge. It thus can be said that learners who have a large amount of vocabulary knowledge would be able to effectively perform the four basic language skills: reading, writing, speaking and listening. In other words, in relation to reading skill, lacking vocabulary knowledge could impede learners' reading comprehension and interfere language learning. As Laufer (1997) states, the most significant obstacle L2 readers encounter in reading is not their deficient reading strategies but inadequate vocabulary.

In Thailand, a number of studies have reported that most Thai EFL learners have a problem with vocabulary knowledge which further hinders learners' reading comprehension (Wongsuwan, 1992; Songsiri, 1999, Saengpakdeejit, 2014; Kaewklom, 2002). It can be assumed that learners have little reading exposure outside the classroom. Also, since learners have limited vocabulary knowledge, Thai EFL students mostly prefer looking up word meanings from a bilingual dictionary to trying to guess from context when they encounter unknown words while reading (Srimanee and Laohawiriyanon, 2010). This is contrast with the findings of Fraser (1999) who found that learners used inferencing as the basic strategy in reading rather than ignoring, and Deschambault (2012) who reported that L2 learners employed lexical inferencing as a common technique.

Lexical inferencing ability is known as an approach for making proper inferences in regard to the meaning of unknown words or, shortly, inferring unknown word meanings. Linguistics and non-linguistics knowledge have been used in inferencing processes as cues. Furthermore, in acquiring the meaning of unknown words, learners do not use only their guessing ability but also various strategies systematically. According to Clarke and Nation (1980, p. 218), "To guess a meaning the reader must consider and

interpret the available evidence, predict what should occur, and seek confirmation of the prediction.” Additionally, utilizing various sources of knowledge such as grammar knowledge, punctuation rules, morphology, word association, phonology, world knowledge, and cognates enable learners to achieve word-meaning inference (De Bot, Paribakht & Wesche, 1997). However, the findings of Hu and Nassaji (2014) suggested that “it is not the quantity but rather the quality of strategy use that distinguishes successful from unsuccessful lexical inferencers” (p. 35). Learners thus should “pay attention to not only what strategies they could use but also how to use them appropriately and effectively” (p. 38).

Research findings have also shown that learners’ inferencing success relies on how learners employ the strategies and on what knowledge sources are used during the inferencing process. Haastrup’s study (1991) showed that a combination of different strategies, especially wider context and syntactical cues, were used by experienced learners. At the same time, Bengelil and Paribakht (2004) found that both intermediate and advanced participants tend to use the same kinds of knowledge sources and contextual cues. In addition, advanced participants used less multiple knowledge sources with combinations than intermediate groups.

Different language proficiency levels are also used to prove learners’ effectiveness of lexical inference. Haastrup (1990) found that readers’ proficiency is one of the factors affecting successful lexical inferencing, including readers’ world knowledge, available contextual clues, and the parallel processing of word meanings. Kanatlar and Peker (2009) investigated the use of inferencing strategies by beginner and upper-intermediate level EFL students. The results showed that both groups use contextual clues and translation as strategies in guessing word meaning, whereas beginner level participants tend to use them more extensively.

The think-aloud method has gained increasing prominence in the study of lexical inferencing. This is a version of a verbal report relating to cognitive processing which is useful in exploring the relationship between working memory and inferences and also in the investigations of individual differences. Informants are able to state and describe their thoughts and behaviours while performing a given task. According to Long and Bourg (1996), the think-aloud method offers a unique view of individual differences in readers’ comprehension and the representation of narrative texts.

While a great number of studies have paid attention to the strategies used in lexical inferencing as well as frequency, inferencing success, and the relationship between the two levels of language proficiency of EFL learners (Hu & Nassaji, 2014; Teng & He, 2015; Bengelil, 2001; Matsumura, 2010; Qian, 2005; Hamada, 2009; Kaivanpanah & Alavi, 2008; Kanatlar & Peker, 2009), most research about English study in the Thai context has mainly focused on English vocabulary learning strategies (Riankamol, 2008; U-Pitak, 2011, Saengpakdeejit, 2014; Srimanee and Laohawiriyanon, 2010). Typically, to know how Thai EFL learners actually cope with unknown words and how successful learners can be should be the initial step to consider.

Since postgraduate learners have more experiences in reading, that is to say they have faced with a lot of vocabulary, both familiar and unfamiliar words. Focusing on how they cope with unknown words and the techniques they perform in order to infer a meaning is interesting. Therefore it is worthwhile to delve into how Thai EFL postgraduates deal with unknown words by using knowledge source as a strategy including an investigation of the frequency and inferencing success. The taxonomy used for data analysis was based on Nylander's (2014) taxonomy. Furthermore, this study aimed to find out the differences of lexical inferencing strategies use between two groups of English proficiency levels.

1.2 OBJECTIVE OF THE STUDY

The objectives of the study are as follows:

1.2.1 To investigate the lexical inferencing strategies and frequency of each inferencing strategy that Thai EFL postgraduates employ to infer the meaning of unknown words.

1.2.2 To explore the frequency of the success rate of each lexical inferencing strategies used by Thai EFL postgraduates.

1.2.3 To find out the differences of lexical inferencing strategies use between two groups of participants with different English proficiency levels.

1.2.4 To compare inferencing success between two groups of participants with different English proficiency levels.

1.3 RESEARCH QUESTIONS

The research questions of the study are as follows:

1.3.1 What inferencing strategies do Thai EFL postgraduates use in attempting to infer the meaning of unknown words while reading?

1.3.2 What is the rate of success in lexical inferencing that Thai postgraduates employ through the think-aloud method?

1.3.3 What are the differences in the employment of inferencing strategies between two groups of participants with different English proficiency levels?

1.3.4 What is the difference regarding the success rate between low and high proficiency participants?

1.4 SIGNIFICANCE OF THE STUDY

The findings obtained from this study will be evidence that Thai EFL learners use a variety of lexical inferencing strategies in order to guess the meaning of unknown words while reading, not only rely on consulting a dictionary or friends/teachers. It can also be implied that making use of lexical inferencing strategies could be an initial step leading to successful reading comprehension. Moreover, the results of this study may persuade English teachers to focus not only on teaching grammar or vocabulary memorization but also on introducing various lexical inference techniques. Furthermore, this study can help students in various grade levels to learn more about useful inferential behavior and techniques, so they need not memorize word-forms and word-by-word meanings. This will enable them to know how to use words more productively in the future. Additionally, other researchers who are interested in further study in the inferencing strategy field may apply this current study in their research.

1.5 SCOPE OF THE STUDY

This study focuses on the use of Thai EFL postgraduates' lexical inferencing strategies concerning students' knowledge sources and their responses in lexical inferencing through the think-aloud method. The data was collected while participants were performing in individual think-aloud sessions. However, the overall purpose of the present study is specifically to explore the lexical inferencing strategies that Thai EFL postgraduates employ, and not to focus on students' vocabulary acquisition.

1.6 DEFINITION OF TERMS

The definitions of terms in this study are as follows:

1.6.1 Lexical Inferencing

Lexical inferencing refers to an approach for getting a proper or possible meaning of an unknown word or shortly as word-meaning guessing.

1.6.2 Thai EFL Postgraduates

Thai EFL postgraduates in this study refer to Thai students studying English as a foreign language and studying in a Master of Arts in English for Careers (MEC) at a public university in Bangkok.

1.6.3 Low and High English Proficiency Participants

To answer the last two research questions, the participants were divided into two groups using their submitted TU-GET score as the measurement. Those participants whose score ranges 400-600 were grouped as 'low proficiency level', while those with the score ranges 620-800 were grouped as 'high proficiency level'. The researcher divided the range in reference to the mean of TU-GET scores all students submitted when entering the program. The average of TU-GET score of a Master of Arts in English for Careers students in academic year of 2015 was 590.

1.6.4 TU-GET

TU-GET is the test measuring undergraduate and graduate students' English proficiency level mostly used in Thammasat University. The test is composed of three main parts which are structure, vocabulary and reading comprehension. The total score is 1,000.

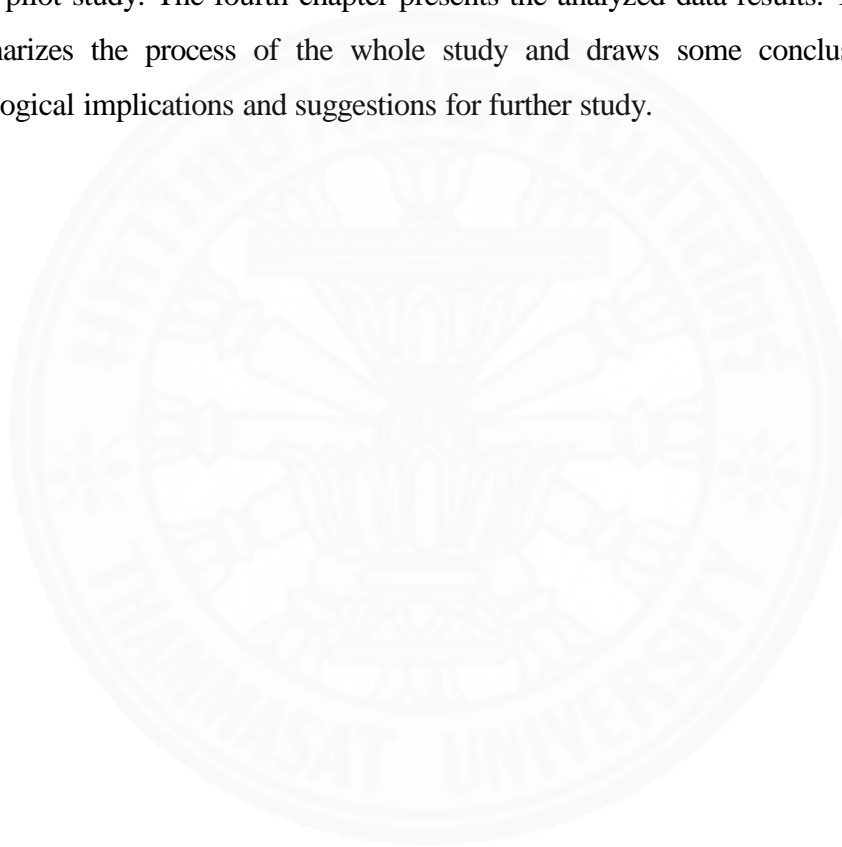
1.6.5 Think-aloud Protocols

The think-aloud protocols or verbal reports refer to the technique through which informants are able to state their thought and behavior while performing a given task. In this study, the participants were asked to verbalize their thoughts while attempting to infer the unknown word meanings in a reading passage.

1.7 ORGANIZATION OF THE STUDY

The study of "The Use of Thai EFL Postgraduates' Lexical Inferencing Strategies through the Think-Aloud Method" is organized into five chapters. The first chapter is an introduction stating the background and statement of problem, objectives of

the study, research questions, significance of the study, scope of the study, definition of terms, and organization of the study. The second chapter involves a review of literature in seven main parts which are language learning strategies, reading strategies, the definition and classification of lexical inferencing strategies, the factors affecting the success of lexical inferencing, think-aloud protocols, think-aloud protocols in lexical inferencing and related studies. The third chapter categorizes the empirical methodology about the participants, data collection procedure, research instruments, data analysis, and the think-aloud pilot study. The fourth chapter presents the analyzed data results. The last chapter summarizes the process of the whole study and draws some conclusions including pedagogical implications and suggestions for further study.



CHAPTER 2

REVIEW OF LITERATURE

This chapter reviews the related literature in seven main parts:

- (2.1) language learning strategies;
- (2.2) reading strategies;
- (2.3) lexical inferencing with the classifications;
- (2.4) factors affecting the success of lexical inferencing;
- (2.5) think-aloud protocols;
- (2.6) think-aloud protocols in lexical inferencing; and
- (2.7) related studies on learners' strategy use in lexical inferencing.

2.1 LANGUAGE LEARNING STRATEGIES

Language learning strategies (LLS) are known as techniques or methods that assist a learner to acquire and even improve his/her knowledge in target language. According to Oxford (1990), language learning strategies are defined as “specific actions taken the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations” (p.8, as cited in Griffiths and Oxford, 2014). Language learning strategies have been categorized into various taxonomies depending on the individual researcher's perspective. For instance, O'Malley et al. (1985) classified language learning strategies into metacognitive, cognitive and socioaffective, while Wenden and Rubin (1987) divided them into two main strategies: direct and indirect strategies. Similar to the well-known classification of Oxford (1990), language learning strategies are grouped as direct and indirect strategies with three sub-strategies in each main strategy. Direct strategies comprised memory, cognitive and compensation; indirect strategies included metacognitive, affective and social (Vlčková et al., 2013). It can be said that the use of language learning strategies to accomplish target language learning can enhance learner's four basic language skills: listening, speaking, reading and writing.

2.2 READING STRATEGIES

As reading is accepted as a complicated cognitive process in which readers need to attempt to get the overall meaning of a text they are reading, the use of reading strategies may assist language learners to improve their reading process. According to Diffy (1993), reading strategies were identified as “plans for solving problems encountered in constructing meaning” (p. 232, as cited in Janzen, 1996). It has been widely claimed that when reading strategies are taught in the classroom, it helps learners to have a better understanding in their reading process for both L1 and L2 learners (Janzen, 1996). With reference to the study of Olshavsky (1976 - 1977), he found 10 reading strategies used by students which are:

- Use of context
- Synonym substitution
- Stated failure to understand word
- Re-reading
- Inference
- Addition of information
- Personal identification
- Hypothesis
- Stated failure to understand clause
- Use of information about the story

Olshavsky later identified two main types of reading strategies as *problem identification strategies* and *problem solving strategies*. He also mentions that two main types of reading strategies “play a central role in the reading process” (p. 671). This means that readers might first state fail to infer the meaning but later employ another strategy to interpret the meaning of a text. Therefore, reading strategies are important tools to lead the readers to succeed in reading comprehension. To be a successful reader, learners should pay attention to strategies as well as observe his/her learning process while reading.

2.3 LEXICAL INFERCING

Inference as one of the reading strategies is also a cognitive process that readers utilize to obtain text comprehension. Inference can be used to infer the meaning of various parts in a text whether it be a lexical item, clause, or sentence. In order to accomplish inference, readers need to apply textual information and their prior knowledge such as linguistic knowledge, content, and formal (background knowledge) as each of them are related to the writer, the text, and the reader (Carrell, 1983, as cited in Soria, 2001).

Lexical inferencing manifests as a sub type of the general inferencing process that operates at all levels of text comprehension, involving the “connections people make when attempting to reach an interpretation of what they read or hear” (Brown & Yule, 1983, p. 265). It is widely known as various titles such as guessing the meaning of an unfamiliar or unknown word, word-meaning inferencing, or deriving unknown-word meanings from context (Schmitt, 2010; Kanatlar & Peker, 2009). A great number of researchers have paid increasing attention to how L1 and L2 learners acquire the meaning of words by examining their thoughts and knowledge sources used when dealing with unknown words. During the cognitive process of reading, some readers might ignore the words they do not know in the text while some tried to guess the proper meaning from surrounding clues. However, according to Fraser (1999), readers mostly used inferencing to cope with the unknown word-meanings, whereas the least used strategy was to ignore.

Although lexical inferencing is narrowly defined in the field of study, researchers who were initially interested in studying this topic have offered different definitions of lexical inferencing. For example, Carton (1971), who initially conducted research in this field, describes lexical inferencing as a process playing a critical role in “the acquisition of new morphemes and vocables in natural contexts” (p. 45) in a foreign language. Meanwhile, Haastrup (1991) argues that Carton’s (1971) definition suggested that lexical inferencing is just a general learning strategy. He then defines lexical inferencing in a more specific way as a process that “involves making informed guesses as to the meaning of a word in the light of all available linguistic cues in combination with the learner’s general knowledge of the world, her awareness of the co-text and her relevant linguistic knowledge” (p. 40). Furthermore, Oxford (1990) defines lexical inference as deriving the meaning of unknown words by guessing from the linguistic and nonlinguistic clues. Therefore, lexical inferencing is a process readers apply to acquire the

intended meaning of an unknown word as part of the aim to comprehend the overall context of a text. The way readers extract the meaning of unfamiliar words may be derived from their knowledge sources, world/background knowledge, or cues.

Since lexical inferencing manifests as operating at the core of the relationship between reading comprehension and vocabulary development and is also crucial to ‘incidental’ (non-intentional) word learning while reading, many researchers have tried to determine whether guessing the unknown-word meanings is effective as a way of learning or teaching vocabulary or not. Haastrup (1991) considers lexical inferencing as a central process both in language use and language learning. Meanwhile, Kanatlar and Peker (2009) point out that guessing word-meaning in context enables readers to be faster and better in reading comprehension than focusing on the use of learning and teaching vocabulary. Moreover, effective inferencing ability will enhance not only their reading fluency, but also support their academic learning.

2.3.1 Classification of Lexical Inferencing Strategies

As many researchers of previous studies have tried to figure out how L2 learners guess the meanings of unknown words, various classifications of lexical inferencing strategies use or even the types of knowledge sources and cues have been established.

Carton (1971) established a taxonomy of cues from three basic sources: *intralingual cues* relate to the target language, whereas *interlingual cues* arise from learners’ first language (L1) knowledge including other foreign language apart from the target language (Ln), and *contextual cues* can be obtained from learners’ world knowledge or from the context surrounding the target word. These three main sources of Carton (1971) inspired the latter researchers to adapt this framework and taxonomy (Haastrup, 1991 cited in Nylander, 2014).

Based on Carton’s (1971) three level framework, Haastrup (1991) analyzed and developed lexical inferencing taxonomy from the study of the lexical inferencing procedures of Danish secondary school students.

<u>Test (target) Word:</u>	<u>Syntax:</u>
Phonology/orthography	Definite articles
Morphology	Adjectives
Lexis	Prepositions
Word class	Number
Collocations	
Semantics	

Figure 2.1 Framework for Sources Used to Infer Lexical Inferencing (Haastrup, 1991, as cited in Bengelil, 2001, p. 34)

Paribakht and Wesche (1999) divided knowledge sources into two main groups: extralinguistic and linguistic sources. The extralinguistic source only include world knowledge whereas the linguistic sources comprise of seven sub knowledge sources; namely, sentence level grammar, word morphology, punctuation, discourse and text, homonymy, word associations, and cognates. They identified their use in the meanings of unknown words inference based on evidence from introspective verbal protocols of ten English as Second Language (ESL) learners. It can be said that although their taxonomy was organized in a different way, these knowledge sources generally correspond to the categories of Haastrup's (1991) taxonomy.

Extralinguistic source	Linguistic sources	
	Major	Minor
World Knowledge	Sentence level grammar	Discourse and text
	Word morphology	Homonyms
	Punctuation	Word associations
		Cognates

Figure 2.2 Knowledge Sources Divided by Paribakht and Wesche (1999)

Table 2.1

Knowledge Sources and Cues of Lexical Inference

Knowledge sources	Explanation
1. Sentence level grammar	Word class information and syntactic category of the word.
2. Word morphology	Knowledge of derivations and grammatical inflections.
3. Punctuation	Knowledge if punctuation and capitalization.
4. World knowledge	Familiarity of theme and topic of the text.
5. Discourse and text	Knowledge of cohesive devices and establishing semantic links.
6. Homonymy	Sound relationships of phonetic similarity between the target word and another word in the learner's mental lexicon.
7. Word associations	Paradigmatic relations (synonyms or antonyms), Syntactic relations (words in the same category), members of the same taxonomy (superordinates, subordinates, coordinates).
8. Cognates	Words in one language which is similar in form and meaning to a word in another language

(Paribakht & Wesche, 1999)

Another useful taxonomy developed by Kanatlar and Peker (2009) adapted the categorization of strategies proposed by Haynes (1984), Haasrupt (1987), and Clarke and Nation (1980). They expanded four more categories they found from their study, which are *self-questioning*, *interlingual phonological association*, *intralingual phonological association* and *interlingual collocation*. Each strategy type and its explanation are as presented in Table 2.2.

Table 2.2

Strategy Types and their Explanation

Strategies	Explanation
1. Contextual clues	Use of a word, a phrase, a group of words in the sentence with the test word.
2. Word analysis	Recognition or analyzing affixes in the test word.
3. Knowledge of the world	Use of world background knowledge to guess the test word.
4. Part of speech	Recognition of the parts of speech of the test word.
5. Intralingual phonological association	Phonological association if the test word with a word in English.
6. Interlingual phonological association	Phonological association if the test word with a word in the native language.
7. Interlingual collocation	Use of collocation word knowledge in the native language to guess the test word.
8. Translation	Translating some words in the sentence with the test word or the sentence itself with the test word into the native language.
9. Uncertainty of familiarity	Familiarity with the test word somehow, but difficulty in remembering where or when the word had been seen or learned.
10. Self-questioning	Questions asked by the participants themselves to guess the test word.

(Kanatlar and Peker, 2009, p. 440)

Furthermore, there is taxonomy from Hu and Nassaji's (2012) analysis. They identified lexical inferencing strategies, which are categorized based on participants' inferencing behaviors. These were categorized into four broader categories: *form-focused*, *meaning focused*, *evaluating*, and *monitoring strategies*. Each main category consists of three sub strategies as shown in Table 2.3.

Table 2.3

Lexical Inferencing Strategy Divided by Hu and Nassaji (2012, 2014)

Strategy	Sub-strategy	Definition
Form-focused strategies	Analyzing	Analyzing a word using knowledge of prefixes, suffixes, punctuation, or grammar
	Associating	Attempting to infer the meaning of the target word by associating the word with other similar words
	Repeating	Repeating the target word or part of the text containing the target word out aloud
Meaning-focused strategies	Using textual clues	Guessing the meaning of the target word by using the surrounding context clues
	Using prior knowledge	Using prior knowledge or experience to infer the word meaning
	Paraphrasing	Paraphrasing or translating part of the text that contains the target word
Evaluating strategies	Making inquiry	Questioning their own inferences
	Confirming/disconfirming	Confirming or disconfirming the inferences made by using the information in the text
	Commenting	Making evaluative comments about the target word
Monitoring strategies	Stating the failure/difficulty	Making statements about failure of inferencing or the difficulty of the target word
	Suspending judgment	Postponing the inference making and leaving it for a later time
	Reattempting	Discarding the old reference and attempting to make a new one

Another framework is from Nylander (2014), who adapted the taxonomy from the study of Bengeleil and Paribakht (2004). As Nylander found Bengeleil and Paribakht's framework more accessible, she implemented their framework for her main study. However, Nylander did not use all the sub-categories from the original framework. She adapted *world knowledge* under non-linguistic sources from Hastrup's (1991) taxonomy. Tables 2.4 - 2.7 present all of the four main categories that Nylander utilized in her study. The definitions of each sub strategy as well as examples of verbalizations are also shown.

Table 2.4

Intralingual Knowledge Sources

Knowledge source	Definition	Example
1. Word morphology	A knowledge source involving derivational knowledge, such as a notion of stems, prefixes and suffixes	P: “ <i>geno</i> means gene and generation, and <i>cide</i> means to kill. So genocide should probably mean (to kill a generation)”
2. Homonymy	This source includes knowledge of words in the participant’s L1, L2 or Ln that are spelt or pronounced similarly to the target word	P: “. . . I think I know the word refugees , it could mean refuses”
3. Word association	A knowledge source used when associating the target word with a word that the learner already knows	P: “[I]t says (opened) there must be closure . . . I: So you got to the meaning from the word (opened)? P: Yes, (opened) and (door) it is usually either opened or closed”
4. Sentence meaning	When employing this knowledge source, the learner makes use of the sentence that the target word is used in	P: “I didn’t know what craze meant, but with the rest of the sentence, I think . . . it’s (something that one believes deep down)”
5. Syntagmatic relations	When using this knowledge source, the learner draws on knowledge of the meaning one or two of the words closest to the target word	P: “Reads aloud: ‘It may be that people will want to help those outside their borders, especially when faced with . . . um . . . televised and . . . tangible . . . tangible . . . tangible need . . .’ P: I’m looking at the sentence from the beginning, it talks about the external help for these people, I think it is the essential things . . . because when there is a (disaster) this is what people think about and he mentions (needs) which comes after it . . .”
6. Paradigmatic relations	This knowledge source involves inferring the meaning of a target word by replacing it with a known word	P: “To tackle the problem means to solve the problem . . . [tackled] can be replaced with solved”
7. Grammar	A source including the use of grammatical knowledge, such as the characteristic endings of words belonging to a specific word class	P: “Of course tangible is an adjective . . . I know the adjective ends with these letters (ble) . . .”
8. Punctuation	This source involves knowledge of punctuation rules	P: “I stopped at frightening and I thought about the word, but then I glanced and saw that there was not a full stop so when I finished the sentence I found (people), so it must be describing the (people)”

Table 2.4 (Cont.)

Intralingual Knowledge Sources

Knowledge source	Definition	Example
9.Discourse meaning	When using this knowledge source, learners look at an entire paragraph or the whole reading passage in order to infer the meaning of a target word	P: "I want to see the whole paragraph, here (hysterical media) does not give a meaning like surely (media) here has another meaning "
10.Formal schemata	A knowledge source involving the use of knowledge of textual structure and different text types	P: "The sentence is long; it takes up three lines . . . plus you have a discourse connective, <i>however</i> . . ."

(Nylander, 2014)

Intralingual knowledge sources refer to the use of a reader's prior knowledge to infer the meaning of words in the target language. According to Nylander's (2014) framework, it consists of ten sub knowledge sources.

Table 2.5

Interlingual Knowledge Sources

Knowledge source	Definition	Example
11.Lexical knowledge (L1 or Ln)	This knowledge source includes knowledge of languages other than the target language (L2)	P: " journalist ... journalist comes from [journal] . . . I: What is 'journal'? You mean journal as a foreign word? P: No we use it [in Arabic], even the meaning we use "
12.Word collocation (L1)	This source involves knowledge of words that go together in the learner's first language	P: "I think [proactive] means (exact); exact measurements. With measurements often such adjectives are used"

(Nylander, 2014)

Interlingual knowledge sources initiate from the reader's first and other language knowledge, except the target language. The main knowledge sources are composed of two sub knowledge sources.

Table 2.6

Non-Linguistic Knowledge Sources

Knowledge source	Definition	Example
13. Knowledge of topic	A knowledge source involving the usage of topic familiarity when inferring word meanings	P: "Reads aloud: 'the people of Montserrat had to flee the Caribbean island' . . . an island in the Caribbean Sea, maybe . . . it could be a hurricane . . . I: OK, how did you know it's a hurricane? P: The topic is about (environmental refugees) so it is related to the environment), it's not political or something"
14. World knowledge	A knowledge source including the use of relevant prior knowledge and ideas of the world	P: "I've already seen the word elsewhere because I play video games and I have a video game with that name"

(Nylander, 2014)

Non-linguistic knowledge sources are comprised of knowledge of the topic and world knowledge that a reader may employ to infer the word meaning from their world or background knowledge relating to the topic of the text.

Table 2.7

Additional Types of Responses

Types of response	Definition	Example
15. Reported knowing word	The informant explicitly states that he or she knows the word	P: "[It's] very easy- one knows cure and then it fits the context [emphasis added]"
16. No inferencing verbalized	The informant is unable to verbalize an inferencing attempt	I: "The first word is indispensible [emphasis added]. Can you guess its meanings? P: No"
17. Miscellaneous category	All instances that do not fit categories 1-16	

(Nylander, 2014)

Additional types of responses are further sources that Nylander has added into her study framework as she noticed that participants made utterances when they were trying to interpret the unknown word meaning.

The framework of Nylander (2014) corresponds to the aim of the present study, which sought to investigate lexical inferencing strategies use. Hence, the researcher decided to adapt this framework as the model framework for the main study.

2.4 FACTORS AFFECTING THE SUCCESS OF LEXICAL INFERENCE

To be able to infer the correct meaning of unfamiliar words, there are two main factors that influence the success of lexical inferencing: learner factors and text factors (Mohebbi Z., & Mohebbi H., 2014; Yuko, 2010).

2.4.1 Learners' Factors

Whether the context is understood clearly or not, it can be said that this depends on learners' knowledge source. Learners' knowledge source can be divided into two main groups: linguistic knowledge source and extralinguistic knowledge source.

According to Yuko (2010), linguistic knowledge sources involve lexical knowledge, vocabulary size, collocation, syntactic knowledge, knowledge of the syntactic category of a word, sentence-level syntactic knowledge, discourse knowledge, conjunctions, pronoun reference, and predictive inferencing. However, the main component determining successful lexical inferencing for a great number of researchers is also learners' English proficiency level.

Apparently, the English proficiency of learners plays a significant role in a learner's inferencing. As Haastrup (1990, p. 130) mentions, L2 proficiency is "a decisive factor in lexical inferencing procedures and that there definitely seems to be a threshold level of L2 proficiency that learners have to reach first before they are able to use effectively inferencing procedures". Similarly, Kaivapanah and Moghaddam (2012) found that readers who have a higher proficiency level were able to correctly infer meaning of unknown words in context than those with lower proficiency.

Meanwhile, another important component is lexical knowledge both vocabulary size (known as breadth of lexical knowledge) and depth of vocabulary knowledge. The cue that helps and is a vital concern for learners are the words surrounding the target words, which learners know and access semantically. Teng and He (2015) delved into the use of lexical inferencing strategy, vocabulary size, and success in guessing word-meaning of a group of learners. They found that learners with a larger vocabulary size tend to perform more correct lexical guesses than those with a smaller one. In the study of Nassaji (2006), there was a significant relationship between the depth of vocabulary knowledge and the degree and the type of strategy use and success. He found that the students who had stronger depth of vocabulary knowledge used certain strategies more frequently than those who had weaker depth of vocabulary knowledge.

Apart from learners' linguistic knowledge sources, extralinguistic knowledge source refer to learners' general world knowledge as well as prior knowledge of a particular content area. Regarding the top-down process in second language reading and lexical inferencing, learners might be succeed in inferring an unknown-word meaning in context by incorporating the meaning into their background/world knowledge. However, using background knowledge may not be sufficient for successful lexical inferencing; it just increases the likelihood of successful inferencing (Jenkis & Dixon, 1983, as cited in Yuko, 2010).

2.4.2 Text Factors

It is not only learner or reader factors that determine the success or failure in lexical inferencing to some degree, but textual factors are also a main component. However, there is a sub-section for text factors that enable readers to achieve in inferring the meaning of an unknown or unfamiliar word. There are word characteristics, text characteristics, the presence of contextual clues, and topic familiarity.

According to Nation (2001, as cited in Schmitt, 2010), form, meaning, and use are involved as parts of knowing a word. In this case, form includes spoken, written, and word parts. Meaning refers to form and meaning concept and referents, and associations. Use covers grammatical functions, collocations, and constraints on use such as register and frequency. If learners or readers have knowledge about the respective lexical item as well as the ability to use it effectively, they are more likely to be successful in inferencing (Mohebbi Z., & Mohebbi H., 2014).

Furthermore, to obtain the accurate unknown-word meaning, the level of text difficulty is counted as an essential factor. As Kaivanpanah and Alavi (2008b) mentioned, some of the crucial factors that make texts difficult are the amount of embedding, sentence length and use of less frequent, specialized and abstract lexical items. Therefore, a balance between learners' English proficiency level and text's difficulty should be considered.

It is not only the difficulty of text that should be determined, but also the presence of clear linguistic and semantic clues in a text. Whether the readers will be able to guess or infer the meaning of word correctly depends on how clear and sufficient the surrounding cues are in context.

Topic familiarity is also one main factors influencing readers' success/failure in terms of inference. As Kaivanpanah and Alavi (2008b) states, if learners encounter an unfamiliar topic of a text that is abstract or too technical, L2 learners will have a lower chance of performing accurate lexical inferencing. On the other hand, L2 learners will feel it is much easier if they are familiar with the kind of text.

2.5 THINK-ALOUD PROTOCOLS

The think-aloud protocols are a version of “verbal reports” used to explore learners' thoughts and behaviors while performing a given task. The root of this method was originally from psychological research (Someren, Bernard and Sanberg, 1994, as cited in Seyedi, 2012). However, think-aloud protocols are nowadays used in various studies, for example, the study of reading comprehension, the study of translation, and the study of mathematical problem solving. In relation to reading comprehension, it is used to exhibit learners' strategic processes during text comprehension as well as the successful and unsuccessful strategies employed by learners at various proficiency levels (Bensoussan & Laufer, 1984; Haastrup, 1987, 1990, 1991; Morrison, 1996; Paribakht & Wesche, 1999; Soria, 2001). The procedure in performing think-aloud protocols involves three basic steps. First of all, participants will be trained or attend warm-up session. Then participants can process think aloud. Lastly, the verbal reports will be analyzed into the classifications (Sappapan, 2007).

As think aloud can be used as a way to reflect the participants' thought process, the researcher chose this technique to be used in the present study in order to explore how Thai EFL postgraduates infer unknown word meanings.

2.6 THINK-ALOUD PROTOCOLS IN LEXICAL INFERENCE

Many researchers that have looked at inferencing strategies used by L2 learners have collected data by using verbal report protocols or think-aloud methods. According to Soria (2001), think-aloud methods of data collection have gained increasing prominence in the study of cognitive processing, such as L2 text comprehension, and in the investigations of individual differences. Moreover, this method has several advantages over other types of verbal reporting. It could be said that think-aloud protocols are technically and particularly useful in task-oriented activities that allow some confirmation of what learners actually do.

Haastrup (1991) investigated the lexical inferencing procedures of Danish secondary school students learning English. Using pair think-aloud processes to infer word-meaning, and based on Carton's (1971) three level framework, she analyzed the clues her participants used from three main sources, and developed the taxonomy. According to her findings, participants mostly used contextual knowledge as the main inferencing source whereas interlingual knowledge source was the least source used by participants.

Hu and Nassaji (2014) explored inferencing strategies which 11 Chinese ESL used to attempt to infer word meaning from context as well as the characteristics distinguishing successful from less successful inferencers. Think-aloud protocols were used for data collection. Their findings suggested that successful inferencers tend to use a combined knowledge sources, including their linguistic, contextual and background knowledge. They also regularly monitored and checked their inferences. On the other hand, less successful inferencers stressed word-bound and likely ignored the context clues that would help them easily understand the word-meaning. This can imply that successful inferencers pay more attention to how they can infer the word meaning appropriately and effectively than the number of the strategies they use, which can also distinguish successful and less successful lexical inferencers.

Overall, to reveal learners' procedural knowledge, think-aloud protocols have proved to be a rich method to be utilized. As Haastrup (1987) states, "one stimulates informants to verbalize all their conscious thought processes because they need to explain and justify their hypotheses about word meaning to their fellow informant" (p. 202).

2.7 RELATED STUDIES ON EFL LEARNERS' LEXICAL INFERENCE STRATEGIES USE

There have been numerous previous studies that examined what lexical inferencing strategies L2 learners utilized when they dealt with unfamiliar words while reading, including finding out frequency and the rate of success of inferencing across different English language proficiency levels (Bensoussan & Laufer, 1984; Fraser, 1997; Haastrup, 1987, 1991; Bengelil & Paribakht, 2004; Liu & Nation, 1985; Bengelil, 2001; Qian, 2005; Wesche & Paribakht, 2010; Hu & Nassaji, 2012).

Haastrup's (1991) study examined how Danish secondary school learners at two grade levels determined the meanings of 25 unfamiliar words in a two-page English text by working in pairs. Her informants were asked to verbalize their thoughts aloud as they worked, producing introspective and subsequent retrospective verbal protocols for analysis. In her analysis of cue types, Haastrup built on Carton's (1971) work in her investigation of the types of cues her participants reported using in their efforts to infer the meanings of different types of words. These included linguistic cues from the target word itself and associates with linguistic knowledge of the L1, L2 or another language (Ln), cues found in the surrounding text ('co-text) and readers' world knowledge. She also studied the level of inferencing success achieved by the two informant groups.

Bensoussan and Laufer (1984) explored the strategies in guessing words-in-context of sixty first-year EFL students'. Students were divided into three groups based on reading comprehension scores: good, average, and weak. The study focused on whether more proficient students employ context more effectively than the less proficient students while guessing unknown words or not. The findings revealed that the more proficient students could not use context more effectively than the less proficient students. Furthermore, there was not a great difference between the strategies used by good, average and weak students; both good and weak students used almost the same strategies to guess the unknown words. However, their finding emphasizes the idea that "student level does not appear to have a significant effect on lexical guessing in context" (Bensoussan and Laufer, 1984, p. 25). Also, their findings were in line with Haynes's (1984) study, which found that the proficiency levels of learners do not influence the inferential strategy they chose to use. She examined what strategy 63 students at high and lower proficiency levels use when attempted to guess the meaning of unknown word in context.

Nassaji (2003) investigated the inferencing behavior of 21 intermediate EFL students by means of think-aloud process. He aimed to prove the use of students' knowledge sources in guessing unknown word meanings as well as to find out the inferencing success. The findings showed that the students failed to infer the meaning of unknown word. In addition, the findings revealed that word morphology and world knowledge were the most common knowledge sources that students employed.

Qian (2005) investigated what knowledge sources learners used when dealing with unknown words and also examined how vocabulary depth related to lexical inferencing. Twelve high-intermediated ESL learners in Canada were subjects in his study. His results showed that participants who have high depth of vocabulary knowledge performed better than those with less knowledge according to the significance of success rates. Qian found that contextual information was most frequently employed by the lexically skilled and successful learners when dealing with the inferencing task, whereas the learners with less lexical-depth mostly relied on clues, such as orthography or semantics. This lead Qian (2005) to sum up that “[t]he greater the depth of vocabulary knowledge, the better the learner can make use of context” (p. 49).

Kanatlar and Peker (2009) investigated how different EFL students in each of six beginning and upper-intermediate levels performed their lexical inferencing strategies when attempting to infer the meaning of unknown words. Their results revealed that guessing words-in-context strategies were used by the beginning level participants more frequently than the upper-intermediate level participants. However, both of them used contextual and translation at the highest rate.

Akpinar (2013) examined the relationship between Turkish EFL learners’ perceptions and actual practices in the use of knowledge sources while attempting to infer the meaning of unknown words. Forty intermediate level students were distributed a survey as two-fold vocabulary strategy and asked to state their perceptions when they dealt with unknown or unfamiliar words while reading an English text. Also, they had to take a lexical inferences test with think-aloud techniques. The results of the correlation analyses found that for the contextual and intralingual knowledge sources, there was an insignificant correlation between the perceptions and actual practices from the think-aloud method of the Turkish EFL students.

In a Thai context, few studies have investigated the lexical inferencing strategies use of Thai EFL learners. Most research seems to have surveyed vocabulary learning strategies (Srimanee and Laohawiriyanon, 2010; Saengpakdeejit, 2014; Nirattisai, 2014). However, in one notable study, Attaprechakul (2013) explored the inferencing strategies Thai graduate students employed in reading target texts on education and economic growth. The findings revealed that participants used the bottom-up approach for reading and comprehending the meaning of texts. They skipped to infer

technical information and occasionally consulted friends to enhance their understanding of a text. In Attaprechakul's study, in terms of lexical items inference, it was found that participants mostly had problems with technical terms or abbreviations.

As no researcher has studied the use of lexical inferencing strategies in a Thai context, this study aimed to investigate what lexical inferencing strategies Thai EFL postgraduates employed and how frequently they were employed when they try to guess the meaning of target words. Furthermore, the present study sought to find out the differences regarding the ability of two English proficiency levels in terms of the use of lexical inferences while reading. Finally, the success rate of lexical inferencing strategies used by postgraduates was explored.

This chapter has reviewed the literature which include language learning strategies, reading strategies, the definitions of lexical inferencing and the classification of lexical inferencing strategies use, the factors affecting the success of lexical inferencing, the think-aloud method, the think-aloud protocols in lexical inferencing, and related studies. The next chapter will describe the research methodology consisting of participants, research instruments, framework to be used for the main study, data collection procedure, data analysis, and the think-aloud pilot study.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter discusses the research design and methodology in relation to the research questions of 1) what lexical inferencing strategies Thai EFL postgraduates employed, 2) the success rate of Thai EFL postgraduates when they encountered target words while reading, 3) the differences between two groups of participants regarding lexical inferencing strategies use, and 4) the difference regarding inferencing success between two groups with different proficiency levels. Prior to the main study, a pilot study was conducted. The findings of the pilot study are also described and discussed in this chapter.

3.1 PARTICIPANTS

The participants in this study were twelve Thai EFL postgraduates. They were selected by purposive sampling based on convenience of data collection. All participants were studying in the Master of Arts in English for Careers (MEC) program in academic year 2015 in a government university in Bangkok. They were native speakers of Thai. Out of twelve persons, ten of them were female (83.3%). Most of them (66.67%) were in the range of age 25-29 years old while the rest of them (33.33%) were 30 years old or above.

3.2 RESEARCH INSTRUMENTS

The following instruments were used for data collection.

3.2.1 Questionnaire

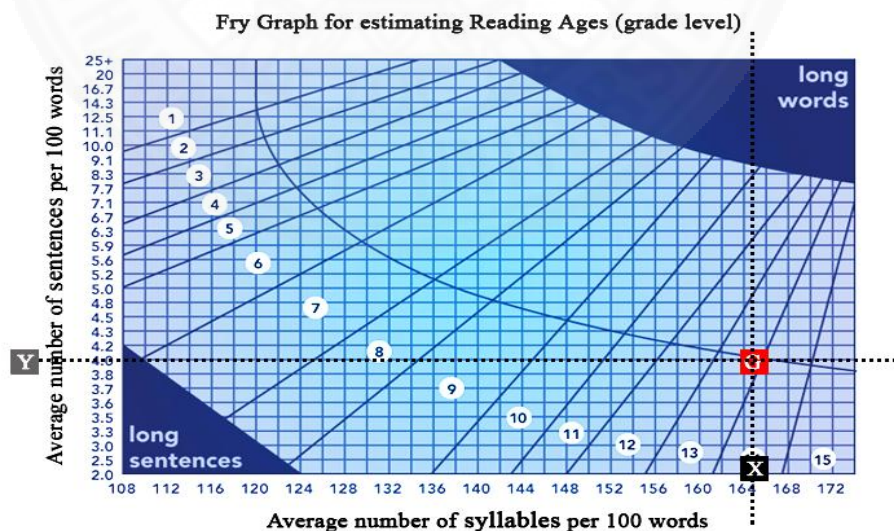
The questionnaire (refer to Appendix A) was divided into two main parts: participant's background information and general information regarding reading habit exposure. The purpose of the questionnaire was to generally examine participant's gender, education, and occupation. The most important part was about participants' reading habits. The researcher aimed to survey participant's self-evaluation regarding the method they used when they have to deal with unfamiliar or unknown words while reading.

3.2.2 Reading Passage

The passage used in this study was news publicized on the VOA website (<http://www.voanews.com/content/el-nino-subject-sixty-million-health-risks/3158970.html>). The 358-word passage was “WHO: El Nino Will Subject 60 Million to Health Risks” which discussed the El Nino weather phenomenon that affected populations’ health in 2016 (refer to Appendix B).

As the topic of the passage was about the weather and the phenomenon of the El Nino which the postgraduates might probably have heard about before, the familiarity of the passage’s topic would help the participants to accomplish the unknown word meaning inferencing as stated by Kaivanpanah and Alavi (2008b).

Furthermore, the researcher estimated the readability index of the passage regarding the difficulty of the passage in terms of whether it was suitable for the level of the participants. The Fry’s Readability Formula created by Edward Fry (<http://www.readabilityformulas.com/free-fry-graph-test.php>) is used for evaluating the grade level of selected reading passages. The results of Fry’s Readability Graph indicated the grade level of this passage was at the thirteenth grade, as shown on the graph, with the dot falling in the region labeled “13”. This meant that this passage was suitable for readers at the college level.



Average # of syllables per 100 words: **164**
 Average # of sentences per 100 words: **4**

Figure 3.1 Fry’s Readability Graph Assessing Passage’s Complexity

To confirm that the selected passage was suitable for participants' reading grade level, the Flesh-Kincaid readability was also calculated (<http://www.joeswebtools.com/text/readability-tests/>). The Flesh-Kincaid reading ease score was 45.3; the score range is 0 to 100 which higher is best. The Flesch-Kincaid grade level was the 13.2th grade, which was proper for the college level.

Therefore, the researcher was assured that the selected reading passage used in this study was proper and effective for use as the main research instrument since all participants were still studying at the college level at the period of data collection.

3.2.3 Target Words and Students' Word Knowing Assessment

Thirteen target words composing of seven nouns, two verbs and four adjectives were initially selected by the researcher according to the criteria described below and listed in the table for surveying whether or not each participant was familiar with or previously knew the meaning of each word (refer to Appendix C). Table 3.1 shows each target word and its part of speech (refer to Appendix D for each word meaning in both English and Thai).

Table 3.1

Target Words to be Used in the Main Study

Target word	Part of speech
1. subject	verb
2. equatorial	adjective
3. drought	noun
4. acute	adjective
5. malnutrition	noun
6. disruptions	noun
7. vulnerable	adjective
8. associate with	verb
9. sanitation	noun
10. scabies	noun
11. malnourished	adjective
12. measles	noun
13. surveillance	noun

The criteria for selecting the target words were as follows:

Firstly, according to Haastrup (1991), the participants should be able to guess the meaning of the words used as target words using knowledge sources. It was assumed each selected word could be guessed using linguistic and/or non-linguistics knowledge.

Secondly, according to Haastrup (1991), the selected words should be from varied word classes. The thirteen words the researcher selected were from three word classes, which were nouns, verbs and adjectives with seven, two, and four items respectively.

Lastly, none of the selected words were from the Coxhead's (2000) Academic Word List (AWL) – containing 570 word families found frequently in academic texts. This suggests that each selected word was a low-frequency word.

3.2.4 Think-Aloud Protocols as Research Tool

Think-aloud protocols were utilized as the research tool in the main study. As the researcher intended to investigate the use of lexical inferencing of the postgraduates, observation using only a questionnaire might not be enough to reveal the participant's actual behavior in predicting the meaning of unknown words. Therefore, using think-aloud protocols could disclose participant's thought during performing a task.

Before starting the think-aloud process for data collection, the researcher performed a warm-up session and think-aloud training for each participant. In the warm-up session, the researcher prepared problems in mathematics, letter puzzles, and a picture for description to the participants for practicing before beginning the actual think-aloud process. For the part of think-aloud training, the researcher firstly distributed the directions of the think-aloud process to the participants and also prepared one short paragraph about health with three low-frequency words underlined. Each participant then read the paragraph and attempted to guess the meaning of each underlined word.

3.3 FRAMEWORK TO BE USED FOR THE MAIN STUDY

The framework used for the main study was based on Nylander's (2014) framework. As the researcher found that Nylander's framework was easily understandable and accessible, the researcher decided to utilize this Nylander's framework as the model framework for the present study. The framework is comprised of four main categories with sub-categories as follows:

1. Intralingual knowledge sources
 - Word morphology
 - Homonymy
 - Word association
 - Sentence meaning
 - Syntagmatic relations
 - Paradigmatic relations
 - Grammar
 - Punctuation
 - Discourse meaning
 - Formal schemata
2. Interlingual knowledge sources
 - Lexical knowledge (L1 or Ln)
 - Word collocation (L1)
3. Non-linguistic knowledge sources
 - Knowledge of topic
 - World knowledge
4. Additional types of responses
 - Reported knowing word
 - No inferencing verbalized
 - Miscellaneous category

More details about each strategy definition and verbalization examples can be found in Table 2.4 - 2.7 in Section 2.1.2 in Chapter 2.

3.4 DATA COLLECTION PROCEDURE

In this study, the data were collected in the following steps as adapted from the study of Sappapan (2007) in which think-aloud protocols were also used.

Step 1: Questionnaire was distributed to participants.

Step 2: Brief information regarding background, purpose and procedure of the study was given to participants so they could understand the process of think-aloud protocols. An appointment was made with each participant individually at his/her convenience.

Step 3: A warm-up session and the think-aloud training process were set up for each participant.

Step 4: A words assessment survey was distributed to ask each participant for self-evaluating whether they knew the meaning of each listed word or not. The words participants marked as unknown were then highlighted in the prepared reading passage.

Step 5: The prepared reading passage was handed to the participants so they could start reading and verbalizing the meaning of the highlighted words either in English or Thai. Participants' verbalizations were recorded with an audio tape recorder.

Step 6: Verbalizations were transcribed and analyzed.

3.5 DATA ANALYSIS

In this study, both qualitative and quantitative analysis was carried out as follows:

3.5.1 Qualitative Analysis

Based on the data collected through think-aloud protocols, the qualitative analysis mostly relied on the participants' verbalizations. After the audio-recorded think-aloud protocols were transcribed, each transcription was used in different aspects as follow:

The first aspect was that each transcription was carefully reviewed to determine what strategies each students employed to infer the meaning of unknown words. The researcher cautiously listed the inferencing strategies found and put them into Nylander's (2014) framework. It can be said that identifying, coding, and categorizing the data was involved in the process of qualitative analysis (Patton, 1990, as cited in Akpınar, 2013).

After categorizing each protocol, the researcher then described what inferencing strategies participants employed in order to answer the first research question.

Also the differences concerning inferencing strategies used between the low and high proficiency students were determined to answer the third research question.

The second aspect was about the success rates of participant's inferencing. The meaning of each word that each participant verbalized was determined based on three categories with a three-point scale (Nylander, 2014) as follows:

- 0 represented unsuccessful or incorrect inferencing which meant that the meaning did not correspond to the exact meaning at all or participant was unable to infer the word meaning,
- 1 represented partially successful inferencing in which the meaning was acceptably understood, and
- 2 represented successful or correct inferencing in which a suitable synonym either in English or Thai was provided.

After scoring the success in lexical inferencing, the researcher then compared the outcome between two groups with different proficiency levels.

Prior to reporting the whole findings concerning all the research questions in chapter 4, 30% of the transcribed data in English that was already classified into the model framework and 30% of inferred responses that had already been given scores of inferencing success were selected. The data then was put in the form of IOC (Items Objective Congruence Index) and submitted to three Thai EFL lecturers as inter-coders to check the accuracy and reliability of the researcher's classification in relation to the inference responses' categorization and success rate (Hu & Nassaji, 2012). The result of the IOC assessment of transcribed data category was at 0.90 and the level of inferencing success was at 1.00, with both being higher than the acceptable coefficient of reliability at 0.81. This meant that the transcribed data could be creditably used for analysis and discussion in the present study.

3.5.2 Quantitative Analysis

The data to be used for quantitative analysis were from 1) the questionnaire and 2) verbally reported data. The frequency and descriptive statistics of both data sources were calculated using the SPSS 24.0 program.

Regarding the data from the questionnaire, the researcher focused on the last question in the part of respondents' reading habits, which examined the approach that participants employed to cope with unknown or unfamiliar words while reading.

For the verbally reported data, the researcher divided the data into two parts: lexical inferencing strategy used and inferencing success. The frequency of each strategy used by the participants will be presented. With reference to inferencing success, the frequency of each success rate will be shown. Furthermore, the frequency of success in using each inferencing strategy will be revealed. As to answer the research questions with regard to the differences of inferencing strategy used between the low and high proficiency level groups, the non-parametric Mann - Whitney *U* test was utilized. The Mann – Whitney *U* test is used when two variables are not normally distributed to determine the difference of population medians of two groups. It is suitable for a study having a small sample size.

3.6 THE THINK-ALOUD PILOT STUDY

A pilot study was carried out prior to the main study. The purpose was to check whether all instruments and data collection procedures utilized in the main study were sufficient and effective or not. Also, the researcher could become familiarized with each procedure and be able to determine the flaws that might occur in the main study.

3.6.1 Participants

Two students in the Master of Arts in English for Careers participated in the pilot study. One male was at the low proficiency level and one female was at the high proficiency level.

3.6.2 Pilot Study Procedure

Both participants were asked to meet with the researcher one by one in a quiet room. Brief information regarding the study and procedure for data collection was introduced. The definition and brief details of the think-aloud verbal reports were also explained to each participant prior to the warm-up session and think-aloud training.

Prior to the think-aloud session, the students' word assessment form was given to participant to self-evaluate whether he/she knew the meaning of each listed word. The participants would then be asked the meaning of words marked as known.

Meanwhile, the words that participants marked as unknown would later be highlighted in the reading passage, so participant needed to verbalize each of the words during think-aloud stage. Participants' verbalizations were recorded by audio tape recorder and later transcribed for analysis by the researcher.

3.6.3 Findings

With reference to the students' word-knowing assessment, out of 13 listed words, the low proficiency participant specified eight unknown words; subject, equatorial, acute, disruption, sanitation, scabies, measles, and surveillance. Meanwhile, the high proficiency participant indicated three unknown words; equatorial, scabies, and surveillance. Regarding the inferencing success scoring, the score 0 represented an unsuccessful or incorrect word meaning; 1 represented acceptably understanding the word meaning; and 2 represented a successful and correct word meaning. The findings of the pilot study were presented in Table 3.2 and Table 3.3.

Table 3.2

Lexical Inferencing Strategies Used and Rate of Success of Low Proficiency Level Participant

Unknown words informed by participant	Lexical Inferencing Strategies Used by Participant				Rate of success
	Intralingual knowledge source	Interlingual knowledge source	Non-linguistic knowledge source	Additional responses types	
1. Subject	Formal schema, Word association	-	-	-	0
2. Equatorial	Grammar	-	-	Miscellaneous category (Skipping the word)	0
3. Acute	Grammar, Syntagmatic relations	-	-	Miscellaneous category (Skipping the word)	0

Table 3.2 (Cont.)

Lexical Inferencing Strategies Used and Rate of Success of Low Proficiency Level Participant

Unknown words informed by participant	Lexical Inferencing Strategies Used by Participant				Rate of success
	Intralingual knowledge source	Interlingual knowledge source	Non-linguistic knowledge source	Additional responses types	
4. Disruption	Word morphology	-	-	-	1
5. Sanitation	Syntagmatic relations	-	-	-	2
6. Scabies	Sentence meaning	-	-	-	1
7. Measles	Sentence meaning	-	-	-	1
8. Surveillance	Sentence meaning	-	World knowledge	-	2

As can be seen from Table 3.2, the low proficiency level participant used various sub knowledge sources under intralingual knowledge sources as strategies when inferring unknown word meanings. In addition, *world knowledge* under non-linguistic knowledge source was utilized to guess the meaning of target words only one time. Meanwhile, there was no use of interlingual knowledge sources by this participant. Concerning additional types of responses, it was found that the participant skipped guessing the meaning of unknown word twice while reading. As the strategy of skipping the word was not related to any type of response in the original framework, the researcher then categorized this into the miscellaneous category.

With reference to inferential success, the low proficiency level participant could infer the meaning of two words correctly (sanitation, surveillance), three words were partially correct (disruption, scabies, measles), and three words were incorrect (subject, equatorial, acute).

Table 3.3

Lexical Inferencing Strategies Used and Rate of Success of High Proficiency Level Participant

Target words	Lexical Inferencing Strategies Used by Participant				Rate of success
	Intralingual knowledge source	Interlingual knowledge source	Non-linguistic knowledge source	Additional types of responses	
1. Equatorial	Grammar, Word morphology	-	-	-	1
2. Scabies	Sentence meaning, Syntagmatic relations	-	Knowledge of topic	-	1
3. Surveillance	Homonymy, Sentence meaning	-	-	-	0

Table 3.3 shows that high proficiency level participant informed that there were three unknown words out of thirteen target words. It was found that she utilized only two knowledge sources in word-meaning prediction, which were intralingual knowledge sources and non-linguistic knowledge sources.

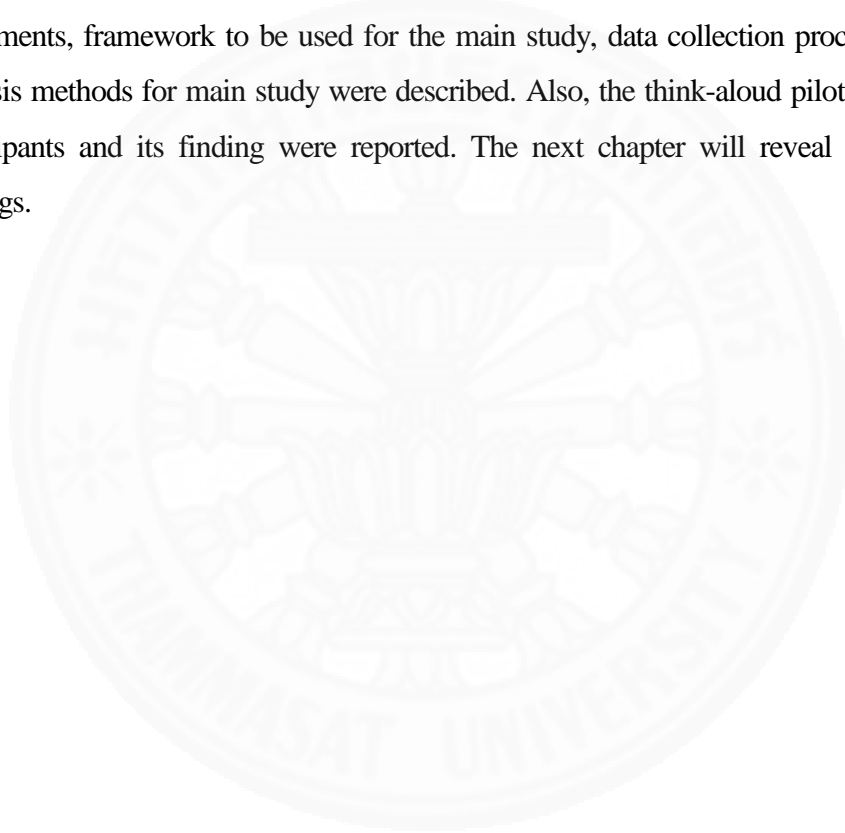
Regarding the success of inferencing, the participant could partially correctly guess the meaning of two words: equatorial and scabies. Meanwhile, the word surveillance was incorrectly guessed.

Based on the pilot study, *sentence meaning* as a sub-category in intralingual knowledge sources was found to be the most frequently used by participants. In the meantime, there was no use of interlingual knowledge sources while non-linguistic knowledge sources were found to be employed a few times. The findings in the pilot study also revealed another strategy a participant used which was skipping to deduce the meaning of an unknown word. The researcher then categorized the additional type of responses in the miscellaneous category under additional types of responses. What's more, the researcher noticed from the pilot study that participants attempted to infer the word meaning by using a variety strategies or combining strategies in guessing one word's

meaning. It should be noted that not all inferencing strategies categories were used. Furthermore, using various strategies in inferencing did not guarantee inferencing success.

Processing the pilot study prior to the main study ensured the researcher that the instruments and data collection procedures could actually be employed. It was believed that the findings in the main study could address the research questions.

In conclusion, this chapter described all the aspects in relation to the research design and methodology. The information of the participants of the study, research instruments, framework to be used for the main study, data collection procedure, and data analysis methods for main study were described. Also, the think-aloud pilot study with two participants and its finding were reported. The next chapter will reveal the main study findings.



CHAPTER 4

RESULTS

The previous chapter clarified the research methodology. This chapter provides an explanation of the findings of the current study. The collected data obtained from questionnaires and the think-aloud process were analyzed and described. The results in terms of frequency, percentage, mean, and standard deviation were analyzed by the program SPSS version 24.0. The descriptive findings in this chapter are divided into five main parts as follows:

The first part presents the results of the general background information and participants' reading habit exposure from the questionnaires.

The second part reveals the findings on the lexical inferencing strategies employed by the Thai EFL postgraduates. This part presents the results in response to the first research questions. Lexical inferencing strategy and the frequency of using each strategy were reported.

The third part reveals the frequency regarding participants' inferential success when using inferencing strategy in dealing with unknown words.

The fourth part compares the differences of inferencing strategy use between the two groups of participants at different proficiency levels.

The last part presents the difference of inferencing success between the two groups of participants at different proficiency levels.

4.1 THE FINDINGS FROM THE QUESTIONNAIRE

4.1.1 Participants' General Background Information

Twelve questionnaires were distributed to participants studying in the Master of Arts in English for Careers in academic year 2015. There were two main parts that participants needed to complete. The first part was regarding the participants' general background information. The second part was to survey participants' reading behavior. Tables 4.1 – 4.9 show the findings from each question in the questionnaire.

Table 4.1

Gender of Participants

Gender	Frequency	Percentage
Male	2	16.7
Female	10	83.3
Total	12	100

Regarding the gender of participants in this study, as shown in Table 4.1, most of participants were female (10, 83.3%). Only two or 16.7% were male.

Table 4.2

Age of Participants

Age	Frequency	Percentage
25-29	8	66.67
30 or above	4	33.33
Total	12	100

Table 4.2 shows that most of participants were in the range of age 25-29 as 66.67%, whereas four participants were 30 or above at 33.33%.

Table 4.3

Participants' Occupation

Occupation	Frequency	Percentage
Freelance	1	8.33
Teacher	2	16.67
Officer	3	25
Manager	2	16.67
Tour guide	1	8.33
Self employed	1	8.33
Entrepreneur	1	8.33
Pharmacist	1	8.33
Total	12	100

Table 4.3 presents that the majority of participants were working as officers (3, 25%), followed by teacher and manager in the same amount (2, 16.67%). None of them was unemployed.

Table 4.4

Participants' TU-GET Score

TU-GET score	Frequency	Percentage
400-600	6	50
620-800	6	50
Total	12	100

As shown in Table 4.4, the same amount of participants got a TU-GET score of 400-600 and 620-800 with 6 (50.00%) in each range.

Table 4.5

Participants' Period of English Study

Period of time	Frequency	Percentage
15-20 years	6	50
More than 20 years	6	50
Total	12	100

Table 4.5 shows that the same amount of participants had studied English for 15-20 years (6, 50.00%) and for more than 20 years (6, 50.00%).

Table 4.6

Participants' Experience Abroad

Visit country using English as L1	Frequency	Percentage
Yes	6	50
No	6	50
Total	12	100

Table 4.6 indicates that half of participants (50.00%) had been in a country using English as the native language, whereas the other half (50.00%) had

never been abroad before. The longest period of time visiting a country using English as the native language was one year.

4.1.2 Participants' Reading Habits Exposure

In the second part of the questionnaire, participants were required to give information about their reading exposure. The findings are shown in Tables 4.7 – 4.9.

Table 4.7

Participants' Frequency of Reading outside Classroom

Reading Frequency	Frequency	Percentage
Everyday	4	33.33
1-2 days/week	4	33.33
3-4 days/week	4	33.33
Total	12	100

Regarding the frequency of reading habits outside the classroom, the findings revealed that four participants (33.33%) read every day while another four of them (33.33%) read 1 - 2 days per week. The rest of them (4, 33.33%) read 3 - 4 days per week.

Table 4.8

The Topic Area of English Articles Participants Like to Read

Reading Topic	Frequency	Percentage
News	5	16.67
Literature	2	6.67
Technology/Scientific	3	10
Fashion	5	16.67
Travel	7	23.33
Culture	6	20
Health	1	3.33
Games/Animation	1	3.33
Total	30	100

Table 4.8 displays the area of reading topics that participants reported they liked to read. Reading topic regarding *travel* ranked on top (7, 23.33%),

following by *culture* topic at 6 or 20%. Meanwhile, a few participants informed they liked to read article about *health* and *games/animation* at only 1 (3.33%) of each.

Table 4.9

Methods Used to Cope with Unknown Words

Method	The most used		The second used		The third used		The least used	
	F	%	F	%	F	%	F	%
Consult with dictionary	3	25	4	33.33	5	41.67	0	0
Consult with friends/teacher	0	0	0	0	3	25	9	75
Skip the unknown word	2	16.67	4	33.33	3	25	3	25
Try to guess the word-meaning	7	58.33	4	33.33	1	8.33	0	0
Total	12	100	12	100	12	100	12	100

Table 4.9 shows that when dealing with unknown words while reading, the most used method participants preferred was to *attempt to guess the word-meaning* as 7 (58.33%). This method allowed participants to use strategies such as guessing from context, looking at prefixes/suffixes, etc. in order to deduce the possible meaning of unknown words. In the meantime, *consulting with friends and teacher* was the least used method that participants would employ.

4.2 THE FINDINGS OF LEXICAL INFERENCING STRATEGIES EMPLOYED BY THAI EFL POSTGRADUATES

To find out the strategies that participants employed to obtain the meaning of unknown words, the researcher commenced with the survey of students' word-knowing assessment. Participants were asked to tell the meaning of known words initially while unknown words would later be highlighted in the reading passage. This is to emphasize that the researcher selected only the target words informed as unknown by each participant for analyzing the data in the main study. However, it should be noted that due to the qualitative nature of the researcher's interpretation plus the dictionary meaning in

strategy classification and inferencing success might somehow affect the findings of this study.

The sub section 4.2.1 and 4.2.2 reveals the findings regarding strategy use and frequency of each strategy used, respectively, to answer the first research question.

4.2.1 Lexical Inferencing Strategies Used

After examining the inferencing strategy used, the researcher classified each participant's verbalized statement into the corresponding sub strategy in Nylander's (2014) framework. As there were only twelve participants in this study, each verbalization as an example was encoded for easy understanding as follows:

P1 refers to the verbalization of *participant 1*,

P2 refers to the verbalization of *participant 2*,

P3 refers to the verbalization of *participant 3*, and so on.

Table 4.10 presents the lexical inferencing strategies employed by Thai EFL postgraduates in the main study. An example of each strategy used by participants in this study is also shown in the same table. The words in **boldface** refer to the target word and utterances in *italic* refer to the inferred meaning. The sign X means that the strategy was not found to be used by any participant in the current study, so there was no example of verbalization.

Table 4.10

Lexical Inferencing Strategies Used by Thai EFL Postgraduates

Types of source	Sub strategy	Definition	Examples of participant's verbalizations
Intralingual knowledge sources	1. Word morphology	A source of using derivative knowledge, such as root words	P10: " Equatorial , I guess it is the prefix from 'equal' plus '-torial'. The meaning may refer to <i>the same</i> like the same area of pacific."
	2. Homonymy	Using knowledge of words that resemble the pronunciation or written like the target word whether it be in L1, L2, or Ln	P12: " Measles . . . <i>Missile</i> , isn't it?"
	3. Word association	A knowledge source that reader links the target word to his/her familiar or a network of words	P5: " Malnutrition I think it is <i>a sickness that causes by a lack of nutrition</i> . I knew the word 'nutrition'."
	4. Sentence meaning	This source involves the meaning of the whole sentence the target word is used in	P6: " Measles it should mean about <i>a disease</i> . I guess from the sentence 'These include disease control measures'."
	5. Syntagmatic relations	The use of one or two closest words with similar meaning in the same sentence the target word is used in as cue	P9: " Equatorial . . . does it means <i>peninsula</i> ? I guess from the word 'Pacific,' so I think it relates to the ocean"
	6. Paradigmatic relations	Using the reader's known word to replace a target word in order to infer the meaning	P4: "I think subjected to means <i>the effect</i> like 60 million people will be <i>affected</i> to it."

Table 4.10 (Cont.)

Lexical Inferencing Strategies Used by Thai EFL Postgraduates

Types of source	Sub strategy	Definition	Examples of participant's verbalizations
Intralingual knowledge sources	7. Grammar	The reader makes use of part of speech's syntactic properties or even word order constraints	P12: " Surveillance . . . it is an adjective, some kind of adjective. Surveillance is like <i>the kind of system.</i> "
	8. Punctuation	The use of punctuation rules as a cue	Not found
	9. Discourse meaning	A source involving the meaning of an entire paragraph or the whole reading passage in order to trace the target word's meaning	P8: " Malnourished means <i>people who are lacking of nutrition.</i> I guess from the context."
	10. Formal schema	The use of textual structure and text type knowledge	Not found
Interlingual knowledge sources	11. Lexical knowledge (L1 or Ln)	The use of other language knowledge apart from target language (L2)	P7: "Does measles means โรคหัด?"
	12. Word collocation (L1)	The use of word knowledge collocated with reader's first language (L1)	Not found

Table 4.10 (Cont.)

Lexical Inferencing Strategies Used by Thai EFL Postgraduates

Types of source	Sub strategy	Definition	Examples of participant's verbalizations
Non-linguistic knowledge sources	13. Knowledge of topic	The knowledge involving reader's familiarity with the topic of the passage or article he/she is reading	P8: "... and also, the article related to the environment change and the impact on people's health."
	14. World knowledge	The use of reader's general background knowledge	P2: " Associate with means <i>come from with</i> . I understand that the drought come from the El Nino like the natural disaster."
Additional types of responses	15. Reported knowing word	The informant explicitly states that he/she remembers or knows the meaning of target word while reading	P2: " Drought means <i>lack of water</i> . I just recognize this word."
	16. No inferencing verbalized	The informant explicitly uttered that he/she could not deduce the meaning of the unknown word	P11: " Acute . . . I do not know this word, seriously."
	17. Miscellaneous categories	All instances that do not fit categories 1 - 16	P5: " Equatorial . . . I think if I skip this word, it would remain in 'the central and eastern Pacific'. I think the meaning of the sentence will be understandable." P6: "... the word malnourished . . . Is it lack of nutrition?" P3: "For equatorial , I guess that it means like <i>proportion of the Pacific</i> ."

As shown in Table 4.11, the findings present that Thai EFL postgraduates applied lexical inferencing strategies in various knowledge sources; intralingual, interlingual, and non-linguistic knowledge sources, or even gave additional responses when they dealt with unknown words while reading. When comparing the results of lexical strategies use found in the present study with the findings of Nylander's (2014) study, some knowledge sources were not used by participants in this study.

Referring to Nylander's (2014) study, participants in this study did not use two intralingual knowledge sources, which were *punctuation* and *formal schema*, as a strategy to interpret the unknown word meaning. *Word collation*, in which participants can use knowledge related to his/her first language, in the interlingual knowledge sources category also was not employed by any of them.

However, of the participants' verbalizations in the main study, the researcher further noticed that there were other types of responses that participants uttered apart from reported known words and no inferencing verbalized in the category of additional types of responses. The researcher categorized this into skipping the word, questioning, and no mention of strategies use, referring to the example of verbalization in Table 4.10, in the *miscellaneous category* in additional types of responses, respectively. Nevertheless, as three additional types were later found and they did not fit the existing categories, the researcher thus put these three types of responses into a miscellaneous category in the taxonomy.

4.2.2 Frequency of Lexical Inferencing Strategy Used

As the researcher found that Thai EFL postgraduates utilized inferencing strategies when they encountered unknown words, the frequency of each inferencing strategy used was explored. Table 4.11 presents the frequency of each strategy used by all twelve postgraduates. The total of the mean score and standard deviation of each strategy is also shown.

Table 4.11

Frequency of Individual Strategy Used

Types of knowledge source	Sub strategy	F	(%)	Mean	SD
1. Intra-lingual knowledge sources	1.1 Word morphology	10	7.94	0.83	0.94
	1.2 Homonymy	6	4.76	0.42	0.52
	1.3 Word association	7	5.56	0.58	0.80
	1.4 Sentence meaning	26	20.63	2.17	1.70
	1.5 Syntagmatic relations	25	19.84	2.08	1.68
	1.6 Paradigmatic relations	3	2.38	0.25	0.45
	1.7 Grammar	5	3.97	0.42	0.67
	1.8 Discourse meaning	6	4.76	0.50	0.80
2. Inter-lingual knowledge sources	2.1 Lexical knowledge	2	1.59	0.17	0.39
3. Non-linguistic knowledge sources	3.1 Knowledge of topic	1	0.79	0.08	0.29
	3.2 World knowledge	4	3.17	0.33	0.49
4. Additional types of responses	4.1 Reported knowing word	2	1.59	0.17	0.39
	4.2 No inferencing verbalized	11	8.73	0.92	1.38
	4.3 Miscellaneous category	17	13.50	1.50	0.80
Total		125	100.00		

As can be seen in Table 4.11, the most frequently used strategy was *sentence meaning* at 26 times or 20.63% (mean = 2.17, SD = 1.70), followed by *syntagmatic relations*, which was used 25 times (19.84%). The first two ranks were under intralingual knowledge sources while the third most frequently used strategy was in the *miscellaneous category* in additional types of responses, which was found to be used 17 times (13.50%). The least frequently used strategy was *knowledge of topic* (1, 0.79%) in non-linguistic knowledge sources.

Regarding the frequency of strategy use compared in separate categories to consider the most and least frequently used strategy, to begin with intralingual knowledge sources *sentence meaning* was found to be employed the most frequently while *paradigmatic relations* was the least frequently employed. In interlingual knowledge source, *lexical knowledge* was used 2 times (1.59%) and it was the only strategy in this category. As for non-linguistic knowledge sources, *world*

knowledge (4, 3.17%) was utilized more frequently than *knowledge of topic* (1, 0.79%). Lastly, in the category of additional types of responses, *miscellaneous category*, for example, no mention of strategy used, questioning, and skipping the word were found to be used a total of 17 times, followed by *no inferencing verbalized* at 11 times (8.73%) and *reported knowing word* only 2 times (1.59%).

In conclusion, Thai EFL postgraduates employed all types of strategies divided into four main categories to predict the meaning of unfamiliar words in the passage. Regarding the frequency of strategy used, most participants preferred using interlingual knowledge sources as cues. In the meantime, intralingual knowledge sources and non-linguistic knowledge sources were less used by the participants in this study.

4.3 THE FINDINGS OF PARTICIPANTS' INFERENTIAL SUCCESS

After carefully examining the inferencing strategy employed by participants, the researcher also determined the accuracy of participants' inferred word-meaning. The determination of word-meaning accuracy rate was described in the Section 3.5.1 in Chapter 3. Table 4.12 presents examples of inferencing success scoring which the researcher adapted from Nylander (2014).

Table 4.12

Example of Success Rates Scoring as Adapted by the Researcher

Target Word	Successful inference (2)	Partially successful inference (1)	Unsuccessful inference (0)
Surveillance	P6: "Because nearby the word it is <i>to detect disease</i> , it is like the objective of this system to check . . . how the disease spread. So surveillance should mean <i>investigation, surveying, checking.</i> "	P7: " Surveillance , it means like <i>the system that protect or look at the condition of the disease of children</i> . It is like the system that always inspects something."	P12: " Surveillance . . . It is an adjective, some kind of adjective. I do not know. He said surveillance systems to detect disease. Surveillance is like <i>the kind of system.</i> "

The overall success rate was then counted and displayed in Table 4.13. In addition, the frequency of inferencing success in each inferencing strategy is shown in Table 4.14.

Table 4.13

Frequency of Inferencing Success of All Participants

Rate of success	Frequency	Percentage (%)
2 - Successful	25	28.09
1 - Partially successful	15	16.85
0 - Unsuccessful	49	55.06
Total	89	100.00

As clearly shown in Table 4.13, from the total of 89 valid responses, 49 inferences (55.06%) of participants were incorrect with respect to word meaning. In contrast, 25 responses (28.09%) were correct with respect to word meaning and 15 responses (16.85%) were partially correct. This finding suggests that participants in this study were mostly unsuccessful at inferring the meaning of unknown words.

Table 4.14

Frequency of Inferencing Success in Each Lexical Inferencing Strategy by All Participants

Types of knowledge source	Sub strategy	Successful		Partially successful		Unsuccessful		Total	
		F	%	F	%	F	%	F	%
1. Intra-lingual knowledge sources	1.1 Word morphology	5	50.00	0	0	5	50.00	10	100
	1.2 Homonymy	2	33.33	1	16.67	3	50.00	6	100
	1.3 Word association	4	57.14	1	14.29	2	28.57	7	100
	1.4 Sentence meaning	8	30.77	5	19.23	13	50.00	26	100
	1.5 Syntagmatic relations	10	40.00	5	20.00	10	40.00	25	100
	1.6 Paradigmatic relations	3	100.00	0	0	0	0	3	100
	1.7 Grammar	1	20.00	0	0	4	80.00	5	100
	1.8 Discourse meaning	3	50.00	1	16.67	2	33.33	6	100
2. Inter-lingual knowledge sources	2.1 Lexical knowledge	1	50.00	0	0	1	50.00	2	100

Table 4.14 (Cont.)

Frequency of Inferencing Success in Each Lexical Inferencing Strategy by All Participants

Types of knowledge sources	Sub strategy	Successful		Partially successful		Unsuccessful		Total	
		F	%	F	%	F	%	F	%
3.Non-linguistic knowledge sources	3.1 Knowledge of topic	1	100.00	0	0	0	0	1	100
	3.2 World knowledge	1	25.00	2	50.00	1	25.00	4	100
4.Additional types of responses	4.1 Reported knowing word	1	50.00	0	0	1	50.00	2	100
	4.2 No inferencing verbalized	0	0	0	0	11	100.0	11	100
	4.3 Miscellaneous category	3	17.65	4	23.53	10	58.82	17	100

Table 4.14 reveals that 30.77% and 19.23% of the times participants employed *sentence meaning* to guess the word meaning, participants could infer the meaning of target word successfully and partially successful, respectively. Meanwhile 50% of the guesses using *sentence meaning* were unsuccessful. In the meantime, using *syntagmatic relations* participants could guess the meaning successfully on 40% of the inferences and unsuccessfully on 40% of the guesses. In the case that participants employed *word morphology*, *lexical knowledge*, and *reported knowing word*, they were able to deduce the meaning of unknown words successfully and unsuccessfully by equal measure at a success rate of 50% of the inferences. However, there was no word guessed correctly or even partially correct when participants did not verbalize (*no inferencing verbalized*) or occasionally skipped verbalizing the meaning of a word (*miscellaneous category*). Furthermore, using *paradigmatic relations* and *knowledge of topic*, participants could infer the word meaning successfully though they employed those strategies only a few times in guessing word meanings.

To conclude, section 4.3 answered the second research question concerning the frequency of Thai EFL postgraduates' inferencing success.

4.4 THE DIFFERENCES OF USING LEXICAL INFERENCE STRATEGIES BETWEEN HIGH AND LOW PROFICIENCY LEVEL GROUPS

In order to find out the differences regarding the use of lexical inferencing strategy between the two groups with different English proficiency levels, the participants were later divided into two groups depending on their submitted TU-GET score prior to entering the master's degree program. Six participants with scores in the range of 400-600 were referred to as the 'low proficiency level' (LPL) group and the rest of six participants with the score in the range of 620-800 were referred to as the 'high proficiency level' (HPL) group. The entire previous data collection was then distributed into the two groups to compare the employment of lexical inferencing strategy between the two groups of participants.

In sum, there were 89 valid verbalized responses in the think-aloud session from all twelve participants. Table 4.15 displays the sum of unknown words informed by each participant's group. Then, Figure 4.1 shows each target word with the number of participants in each group indicating each target word as an unknown word.

Table 4.15

Number of Unknown Words Informed by Participants in Each Group

Group of Participants	Number of Unknown Words Informed	Percentage (%)	Mean	SD
Low proficiency group	58	65.17	9.67	1.97
High proficiency group	31	34.83	5.17	1.47
Total	89	100.00		

As shown in Table 4.15, the participants in the low proficiency group indicated their unknown words and processed verbalization for a total of 58 valid responses or 65.17%. Meanwhile, 31 valid responses (34.83%) were made by participants in the high proficiency group. This shows that the majority of responses were from the participants in the low proficiency group.

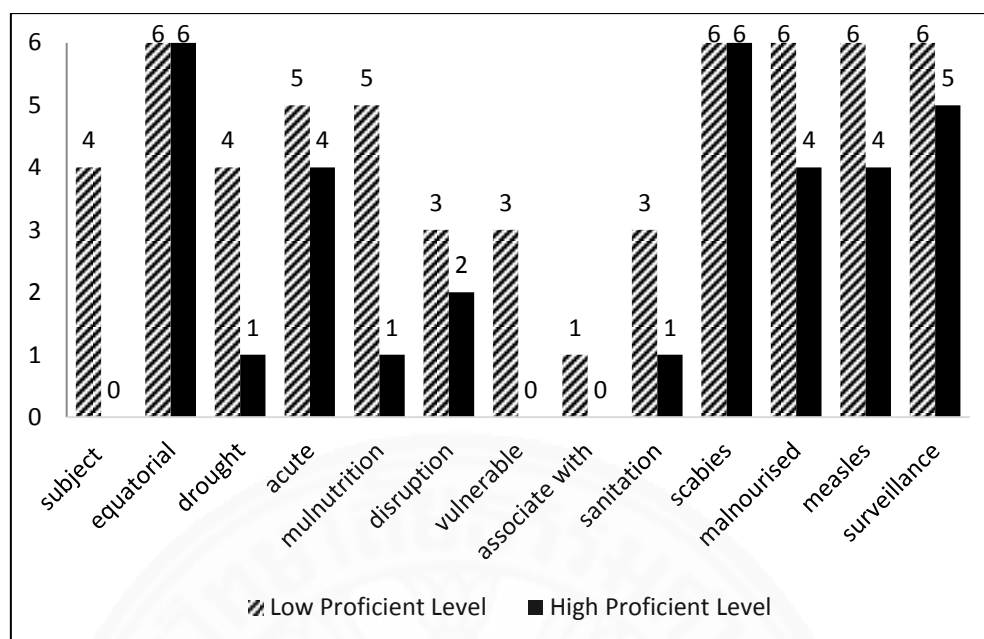


Figure 4.1 Comparison Chart Illustrating Unknown Words by Participants

As can be seen in Figure 4.1, according to data collected from students' word-knowing assessment, all thirteen target words were indicated as unfamiliar/unknown words by the participants in the low proficiency group. Meanwhile, the high proficiency level identified only 10 out of 13 target words as unfamiliar/unknown words. On top of that, the chart obviously shows that there are two target words, *equatorial* and *scabies*, which all participants in both groups stated as unknown.

Regarding the previous findings that already answered the first and second research questions, Thai EFL postgraduates were likely to employ various strategies, either knowledge sources or types of responses, in order to obtain the meanings of unknown word while reading. However, there were differences in strategy use between the two groups with dissimilar L2 proficiency levels. The researcher thus explored the differences in the lexical inferencing strategy use as well as the patterns of strategy use between the low and high proficiency level group. The findings are reported in sub-section 4.4.1 and 4.4.2.

4.4.1 Comparative Findings between Two Different Proficiency Levels Groups Regarding the Use of Lexical Inferencing Strategy

Beginning with the differences with respect to the frequency of strategy use between the two groups of participants, Table 4.16 presents the frequency of each strategy employed by the low and high proficiency level groups. It shows the most to

least lexical inferencing strategy utilized in each strategy category to find out which strategy the participants in each group mostly used.

Table 4.16

Comparison of Frequency of Each Strategy Used between Two Groups of Participants

Types of knowledge source	Sub strategy	LPL group		HPL group	
		F	(%)	F	(%)
1. Intralingual knowledge sources	1.1 Word morphology	5	5.81	5	12.82
	1.2 Homonymy	4	4.65	2	5.13
	1.3 Word association	6	6.98	1	2.56
	1.4 Sentence meaning	21	24.42	5	12.82
	1.5 Syntagmatic relations	20	23.26	5	12.82
	1.6 Paradigmatic relations	3	3.49	0	0.00
	1.7 Grammar	4	4.64	1	2.56
	1.8 Discourse meaning	5	5.81	1	2.56
2. Interlingual knowledge sources	2.1 Lexical knowledge	0	0.00	2	5.13
3. Non-linguistic knowledge sources	3.1 Knowledge of topic	0	0.00	1	2.56
	3.2 World knowledge	3	3.49	1	2.56
4. Additional types of responses	4.1 Reported knowing word	1	1.16	1	2.56
	4.2 No inferencing verbalized	4	4.65	7	17.95
	4.3 Miscellaneous category	10	11.63	7	17.95
Total		86	100.00	39	100.00

From Table 4.16, the most frequently employed strategy by the low proficiency participants was *sentence meaning* (21, 24.42%), followed by *syntagmatic relations* (20, 23.26%) under intralingual knowledge sources category. Meanwhile, *paradigmatic relations* were the least frequently employed (3, 3.49%) when comparing in the same knowledge sources. In the meantime, with regard to non-linguistic knowledge sources, *world knowledge* was employed 3 times (3.49%). However, there was no use of *lexical knowledge* and *knowledge of topic* by the low proficiency group. Apart from the linguistic and non-linguistic knowledge sources use, it was found that participants performed other types of responses such as skipping the word, making questions, and no

mention of strategy use categorized in *miscellaneous category* in a total of 10 times or equivalent to 11.63% which was ranked as the third frequently used strategy.

In contrast, the high proficiency group employed all four lexical inferencing strategy categories in obtaining the meaning of unfamiliar words. The most used strategy of the high proficiency level group was under the additional types of responses as they equally addressed *no inferencing verbalized* as well as various types of responses 7 times (17.95%) of each sub strategy. This was followed by intralingual knowledge sources, which participants employing *word morphology*, *sentence meaning* and *syntagmatic relations* 5 times each (5, 12.82%). However, there were no *paradigmatic relations* used by this group of participants. Furthermore, participants in this group employed *lexical knowledge* 2 times (5.13%) while there was no use of this strategy by the low proficiency group. Moreover, *knowledge of topic* and *world knowledge* under non-linguistics knowledge sources was also used by the high proficiency level participants 1 time (2.56%) each.

Concerning the differences of the frequency of lexical strategies use by each group of participants, the researcher conducted a non-parametric Mann-Whitney *U* test to find out the statistical differences regarding this matter. Table 4.17 presents the comparison of four main strategy categories use between the two groups of participants.

Table 4.17

Descriptive Statistics of the Four Main Strategy Categories Used By Low and High Proficiency Level Groups

Strategy categories	Group of informants	Mean	SD	Mean Rank	Mann-Whitney <i>U</i> test	P-value
1. Intralingual knowledge sources	LPL	8.50	7.46	11.00	12	0.038
	HPL	2.50	2.14	6.00		
2. Interlingual knowledge sources	LPL	0.00	0.00	2.00	1	0.667
	HPL	1.00	1.41	3.00		

Table 4.17 (Cont.)

Descriptive Statistics of the Four Main Strategy Categories Used By Low and High Proficiency Level Groups

Strategy categories	Group of informants	Mean	SD	Mean Rank	Mann-Whitney <i>U</i> test	P-value
3. Non-linguistic knowledge sources	LPL	1.50	2.12	2.50	2	1.000
	HPL	1.00	0.00	2.50		
4. Additional types of responses	LPL	3.00	1.87	5.80	11	0.841
	HPL	3.00	2.45	5.20		

The significance level is at 0.05

The findings from Table 4.17 indicate that there was a significant difference with regard to the frequency of using only one strategy category, which was intralingual knowledge sources ($U = 12$, $p = 0.038 < 0.05$) between the two groups of participants with different L2 proficiency levels. Meanwhile, there were no significant differences with regard to using the rest of the strategy categories, which were interlingual knowledge sources, non-linguistic knowledge sources and additional types of responses between the two groups.

4.4.2 Patterns of Inferencing Strategy Use

Apart from the frequency of lexical inferencing strategy used, one interesting point that could be noticed clearly during data analysis was that each participant sometimes did not employ only one strategy in unknown word-meaning guessing. The researcher found that some participants used only one strategy, whereas some employed a combination of strategies in guessing an unknown word meaning. Hence, the researcher grouped the patterns of strategy used into two groups which were *single strategy* and *multiple strategies*. An example of each pattern used is shown in (1) and (2):

(1) Single strategy use:

P12: “**Malnourished**, it is like *lack of nutrition*. Mal- is prefix which has a negative meaning.”

From example (1), as can be seen in the statement, participant guessed the meaning of the target word by only looking at the prefix. This strategy relates to the sub strategy *word morphology* under intralingual knowledge sources.

(2) Multiple Strategies use:

P6: “I guess from the suffix ‘nourish’, it is like the word nutrition. Mal- is to lack of something. Is it *lack of nutrition*? It should have the *same meaning like malnutrition*.”

The participant in example (2) first looked at the prefix and suffix of the word. Also, he associated the target word to his known word; nutrition and malnutrition. He then made use of self-inquiry or questioning about the meaning of target word. In this case, the participant employed three strategies; *word morphology*, *word association*, and *miscellaneous category*, in order to predict the possible meaning of the target word.

Table 4.18 shows the frequency of each pattern of strategy use that participants in both groups employed in guessing unknown word meanings.

Table 4.18

Frequency of Pattern Strategy Use between Two Groups

Pattern of strategy use	LPL		HPL	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Single strategy	37	63.79	23	74.19
Multiple strategies	21	36.21	8	25.81
Total	58	100.00	31	100.00

As shown in Table 4.18, participants in the low proficiency group tried to infer the meaning of words using only one strategy or a single strategy 37 times (63.79%) rather than using multiple strategies (21, 36.21%). Similarly, participants in the

high proficiency group employed a single strategy (23, 74.19%) for guessing the word meaning more than using multiple strategies (8, 25.81%). The data suggests that both groups of participants preferred using a single strategy in the lexical inferencing task.

4.5 COMPARATIVE FINDINGS BETWEEN LOW AND HIGH PROFICIENCY LEVEL GROUPS CONCERNING INFERENCING SUCCESS

The previous finding with reference to the success rate of all the participants in the main study showed that most inferences predicted incorrect meanings. To answer the last research question, the inferential success between the two groups of participants with different proficiency levels was then determined. Table 4.19 below presents the number of correct, partially correct and incorrect inferencing between the two groups at different L2 proficiency levels.

Table 4.19

Frequency of Inferencing Success of Both Groups of Participants

Rate of success	LPL		HPL	
	Frequency	Percentage (%)	Frequency	Percentage (%)
2 - Successful	20	34.48	5	16.13
1 – Partially successful	7	12.07	8	25.81
0 - Unsuccessful	31	53.45	18	58.06
Total	58	100.00	31	100

Table 4.19 shows that the participants in the low proficiency group could successfully or partially successfully infer the meaning of 27 target words or 46.55% out of a total of 58 valid responses. Meanwhile, the participants at the high proficiency level could guess the word-meaning successfully or partially successfully 13 times (41.94%) out of a total of 31 valid responses. Moreover, the percentage of unsuccessful attempts at unknown word-meaning guesses of the high proficiency group was higher than the low proficiency group at 58.06% and 53.45%, respectively. The data suggests that the high proficiency group tended to fail at predicting the meaning of unknown words more than the other group.

To sum up, this chapter reported the findings of the data collected through think-aloud protocols. The lexical inferencing strategy use, the frequency of each strategy use and of inferencing success as well as the differences in employing lexical inferencing strategy, the patterns of strategy use and the inferential success between the two groups of participants were reported. The next chapter will discuss the findings of this study, describe the limitations of this study, discuss the pedagogical implications and offer recommendations for further study.



CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter is organized into the following sections:

- (5.1) summary of the study;
- (5.2) summary of the findings;
- (5.3) discussion;
- (5.4) conclusion;
- (5.5) limitations of the study;
- (5.6) pedagogical implications; and
- (5.7) recommendations for further research.

5.1 SUMMARY OF THE STUDY

5.1.1 Objective of the Study

This research study aimed to firstly investigate the lexical inferencing strategies that Thai EFL postgraduates employ in an attempt to infer the meaning of unknown or even unfamiliar words. Furthermore, this study sought to explore the frequency of each strategy used as well as the inferencing success by each group of participants with the low and high English proficiency level. Lastly, this study endeavored to find out the differences of strategy use, patterns of strategy use and inferencing success between the two groups at different proficiency levels.

5.1.2 Participants, Materials and Procedures

5.1.2.1 Participants

Twelve postgraduates studying in a public university in academic year 2015 were purposively collected. Most of the participants were female. The range of the ages of most participants was between 25-29 years old. They worked in various kinds of occupations, such as officer, teacher, freelance writer, etc. In order to answer the first two research questions, the data from all the participants was analyzed. For the third and fourth research questions, the participants were divided into two groups depending on their previously submitted TU-GET score.

5.1.2.2 Materials

The data instrument used for data collection in this study were a questionnaire regarding participants' background information as well as their reading habits, a 358-word reading passage topic WHO: El Nino Will Subject 60 Million to Health Risks, thirteen target words and students' word-knowing assessment, and Nylander's (2014) lexical inferencing strategy framework.

5.1.2.3 Procedures

First of all, the questionnaire was distributed to participants. Then a brief information concerning the background, the purpose and procedure of the study was introduced. Each participant made an appointment for a one-on-one meeting in a quiet room.

On the appointment day, the warm-up session and think-aloud training were performed. The students' word assessments were later distributed to participants. The words that participants informed as known were requested for the meaning. The words addressed as unknown were highlighted in the reading passage before handing to participants. It is noted that each participant ended up with a different number of unknown words. During verbal reports, participants were able to verbalize either in Thai or English. The data was recorded by audio tape recorder.

The mixed-method was conducted in this study. For qualitative analysis, all of transcribed verbalizations were analyzed and then categorized in terms of strategy use based on the framework of Nylander's (2014) study. Also, the rate of success of each inferencing was scored. Then, 30% of selected transcribed verbalizations concerning participants' inferencing strategy use and inferencing success were submitted to three Thai-English lecturers for examining the accuracy as the cross-checkers and giving comments. Regarding the quantitative analysis, the descriptive statistic of the data from the questionnaire was reported. Moreover, the frequency of each strategy found to be used and the success rate for each group of participants was presented.

5.2 SUMMARY OF THE FINDINGS

The findings from this study can be summarized in five aspects as follows:

5.2.1 Participants' Background Information and Reading Exposure

Based on the results, the majority of participants were female (83.3%). Most participants were in the age range of 25 – 29 years (66.67%). Their areas of occupation were in various types of jobs such as teachers, officers, pharmacists, etc. Regarding the submitted TU-GET score which was later used for dividing participants into two groups, it was found that six of them had a TU-GET score in the range of 400-600, while the rest of them had a TU-GET score in the range of 620-800. Concerning how long they had studied English, half of them informed they had studied English for 15 – 20 years, whereas half of them had studied English for more than 20 years. Concerning the experience of visiting a country that uses English as the native language, half of participants informed that they had visited at least one while the rest of them not.

Referring to the results of participants' reading habit exposure, an equal number of participants informed that they read English passages or articles outside the classroom every day, 1 – 2 days/week, and 3 – 4 days/week. The topic area of the English articles that most of participants liked to read were about travel (23.33%) and culture (20%), while topics about health and games (3.33% of each) were the least interesting topic they read. Another interesting aspect regarding participants' reading exposure that related to the purpose of this study was the findings of the methods that participants employed when they encountered unknown/unfamiliar words while reading. The results showed that the most used method was attempting to infer the meaning of word (58.33%), whereas the least used method was to consult with friends/teacher (7%).

5.2.2 Lexical Inferencing Strategies Employed by Thai EFL Postgraduates

According to the findings, Thai EFL postgraduates as participants in the main study employed all of four main lexical inferencing strategy categories: intralingual knowledge sources, interlingual knowledge sources, non-linguistic knowledge sources, and additional types of responses based on Nylander's (2014) framework. Although all of lexical inferencing strategy categories were found to be used, not all of the sub strategies were utilized. In this study, *punctuation* and *formal schema* that were under intralingual knowledge sources were not found to be utilized by participants. Furthermore, there were another three types of responses discovered to be used; skipping the word, questioning, and no mention of strategy used. All these three additional types of responses were then grouped into the *miscellaneous category*.

When examining the frequency of individual strategy used by all participants, *sentence meaning* (20.63%), *syntagmatic relations* (19.84%) and *miscellaneous category* (13.50%) were the top three frequently used strategies. The least used strategy was *knowledge of topic* (0.79%) which was under non-linguistic knowledge sources.

5.2.3 The Rate of Success in Lexical Inferencing Used

Regarding the frequency of participants' inferential success, based on the results from 89 valid responses from all participants, the majority of participants made inferences incorrectly (55.06%). Meanwhile 28.09% of total responses were guessed successfully and 16.85% of total responses showed partial success in inferring the meanings. When examining the frequency of inferencing success in each strategy use, it was found that participants using *sentence meaning*, which was the most used strategy, could predict the word meaning successfully and unsuccessfully in half of the total numbers of uses. Meanwhile, using *syntagmatic relations*, participants could guess the meaning correctly more than incorrectly at 60% and 40%, respectively. Nevertheless, there was no word guessed successfully or even partially successful when participants used *no inferencing verbalized* or skipping the word in *miscellaneous category*.

5.2.4 The Differences on Lexical Inferencing Use between Low and High Proficiency Level Groups

As participants were divided into two groups according to their submitted TU-GET score, the data collection for analysis then was also divided to compare the results of two groups with different proficiency levels: low and high. Regarding the number of informed unknown words, it was found that the low proficiency groups addressed more unknown words than the high proficiency level group. There were the total of 58 valid responses for the low proficiency level group from the total of six participants, and 31 valid responses from the high proficiency level group. From thirteen target words, participants in the low proficiency level group informed all of the target words as unknown/unfamiliar words, while only 10 out of 13 words were indicated as unknown words by participants in the high proficiency level group.

Based on the findings of lexical inferencing strategy use compared between the two groups of participants, *sentence meaning* was the most frequently used strategy by the group with a low proficiency level. In contrast, *no inferencing verbalized*

and *miscellaneous category* was the most frequently used strategy by the high proficiency level group. Another point was that low proficiency level participants did not employ any strategy in interlingual knowledge sources as cues in order to predict the unknown word meanings in this study but the high proficiency level group did. To examine whether there were differences in terms of the frequency of strategy use in four main categories as well as the use of individual strategies between the two dissimilar proficiency level groups, Mann-Whitney U test was utilized due to the small number of participants in each group. It was found that there was a statistically significant difference with respect to the frequency of only using lexical inferencing strategy in the intralingual knowledge sources category ($U = 12, p = 0.038$).

As for the patterns of lexical inferencing strategy used in this study, the results demonstrated that participants in both groups did not employ only one strategy in inferring the word meaning, but sometimes also combined various strategies in different categories. The researcher thus divided the patterns of participants' strategy used into a single strategy use and multiple strategies use. Comparing the frequency of each pattern of strategy use between two groups, the findings revealed that the low proficiency level group preferred using a single strategy (63.79%) in order to guess the meaning of unknown words. Similarly, the high proficiency level group employed a single strategy (74.19%) more often than multiple strategies (25.81%) in guessing the unknown word meanings.

5.2.5 The Difference in Inferencing Success between Low and High Proficiency Level Groups

Concerning the difference on the success of inferencing, the results revealed that the participants in the low proficiency group could successfully or partially successfully infer the meaning of target words higher than the group with a high proficiency level. The findings in this study thus suggest that the high proficiency group tended to fail to predict the meaning of unknown words more than the low proficiency group.

5.3 DISCUSSION OF THE STUDY

According to the findings from the questionnaires in the part of reading habit exposure to investigate how participant cope with unknown word meanings while reading, the findings demonstrated that the first method participants chose to

employ was to attempt to infer an unknown word meaning, while the least used strategy was to consult with friends or a teacher. The finding confirms a number of previous studies (Akpınar, 2013; Qian, 2004; Gu & Johnson, 1996) stating that participants preferred identifying an unknown word meaning. It can be assumed that as participants in this study were postgraduates with experience reading a lot of passages both inside and outside the classroom, participants needed to primarily rely on themselves especially in examinations. Furthermore, postgraduates might have been trained or taught regarding inferencing techniques since their high school period.

As the research has met the objective of investigating the lexical inferencing strategy use and inferencing success, the discussion of the findings in two aspects are described as follows:

5.3.1 Thai EFL Postgraduates' Lexical Inferencing Strategy Used

The findings of the present study proved that Thai EFL postgraduates employed a number of strategies whether these were linguistic and non-linguistic knowledge sources as cues or varied responses in attempting to predict unknown word meanings in a reading passage. The findings revealed that almost all strategies based on Nylander's (2014) study were also found to be employed by participants in this study. It thus can be said that Nylander's (2014) taxonomy is a suitable framework for data analysis in the field of lexical inferencing studied as it is categorized methodically and easily understandable.

As to *sentence meaning* being the most frequently employed strategy, this is in line with the findings from several previous studies (Yin, 2013; Kaivanpanah & Moghaddam, 2012; Riazi & Babaei, 2008). Yin (2013) found that, of intra-lingual clues, *sentence meaning* referring to the use of part or whole sentence meaning target word was the first ranked strategy used in his study. In the present study, *sentence meaning* and *syntagmatic relations* were separately given the meaning but it was concluded as the same definition of the sentence meaning according to Yin's (2013) study. However, when examining the highest number of knowledge sources used by the two groups of participants divided into low and high proficiency groups, the most frequently used strategy by both groups was still *sentence meaning*. Meanwhile, the sources in interlingual and non-linguistic knowledge sources were rarely found to be performed by participants. Therefore, it is reasonable to conclude

that participants mostly relied on the surrounding clues of the unknown word as there was rich information that they could probably use to interpret the word meanings. Apart from linguistic and non-linguistic knowledge sources employed in order to guess the unknown word meanings, participants also gave other types of responses in verbalizations. For example, they made self-inquiry, such as question tags and kind of question setting, after uttering the possible meaning of an unknown word. This indicates that participants showed their uncertainty in the meaning they just inferred. Doing self-inquiry in a lexical inferencing task also relates to the evaluating strategy based on the study of Hu and Nassaji (2012, 2014). Therefore, performing self-inquiry can be considered one strategy in lexical inferencing.

Other than investigating the use of inferencing strategy and the frequency, the findings further revealed that both groups of participants performed several patterns of strategies use in the lexical inferencing task. It was found that in this study both groups employed a single strategy more than multiple strategies. In using a single strategy to attempt to infer the meaning of unknown words, the high proficiency group seemed to rely on the *word morphology* strategy the most, while the low proficiency group mainly relied on *sentence meaning* and *syntagmatic relations* equally. This suggests that participants paid attention to context clues as much as they could. In general, the percentage of using a single strategy of the high proficiency group (74.19%) was higher than the low proficiency group (63.79%). In reverse, the low proficiency group (36.21%) tended to use combined strategies more than the high proficiency group (25.81%). This data supports the results of Bengelil and Paribakht (2004) who found that an intermediate group used multiple knowledge sources with combinations more than advanced participants. However, it contrasts with the findings from Kaivanpanah & Moghaddam (2012), who found that the high proficiency participants used multiple sources more often than the low group.

5.3.2 Thai EFL Postgraduates' Lexical Inferencing Success

Regarding the matter of participants' inferential success, the results revealed that the most of total valid responses (55.06%) were incorrect or unsuccessful inferences of the meaning, followed by fully correct guesses and partially correct guesses, respectively. The findings are in accordance with a number of previous studies (Nylander, 2014; Nassaji, 2003). Nylander (2014) reported that

60% of inferential responses from the lexically skilled group and 82.4% from less lexically skilled group were unsuccessful. This suggests that unsuccessful inferences were generally found at a higher percentage than successful inferences.

Scrutinizing the words that all participants in the present study stated as unknown words, i.e., *equatorial* and *scabies*, it was found that no participant could generate the word meaning of *equatorial* correctly. Only one participant could partially successful infer the meaning of this word as relating to the line of the world that divided an area on the earth. It could be assumed that because *equatorial* is an adjective, participants did not attempt to deducing its meaning as it was not a keyword in the sentence. Most participants tended to employ word morphology strategy to generate the meaning of *equatorial* as they noticed the prefix of equal. In relation to the word *scabies* inferencing, half of the participants were unsuccessful in giving the correct word meaning, while half of them were partially successful in guessing the meaning of this word. It can be assumed that *scabies* is kind of technical term as it is a specific disease name, so this may have caused difficulty for participants' word meaning interpretation.

When comparing the success rates among two groups of participants at different proficiency levels, the results revealed that the high proficiency group failed to guess the meaning of unknown words more than the low proficiency group. The finding is in contrast with several previous studies (Bengeleil and Paribakht, 2004; Kaivapanah and Moghaddam, 2012). Bengeleil and Paribakht (2004) reported that more advanced readers could infer the meaning of words correctly or partially correctly more than intermediate level readers. Similarly, Kaivapanah and Moghaddam (2012) found that readers with a higher proficiency level were able to correctly infer the meaning of unknown words in context more than those with lower proficiency. When examining the data, the researcher noticed that participants in the high proficiency group did not seem to try to obtain the meaning of unknown words as much as the low group did. If participants in the high proficiency group found that the unknown word was unnecessary to be guessed such as an adjective, they then ignored it by stating that they were unable to guess or informing that they skipped the word. Thus, this might be the main reason why participants in the high proficiency level group in this study were unsuccessful at unknown word meaning inferences.

Concerning the factors affecting participants' inferential success, the findings of the current study could not prove that the English proficiency of learners affected the success in lexical inferencing. Furthermore, there was no specific strategy use that could guarantee success in inferencing. It should be noted that learners would be successful in lexical inferencing or not depending on learner's appropriate knowledge sources use plus their prior background knowledge.

5.4 CONCLUSION

As vocabulary is an essential element in every basic language skill, the use of lexical inferencing strategy could be an important tool to help EFL learners to find out the possible meanings when dealing with unknown words. The findings of the present study confirmed that Thai EFL postgraduates employed a number of lexical inferencing strategies to handle unknown words. According to the adapted taxonomy from Nylander's (2014) study, the most frequently used strategy was *sentence meaning*, followed by *syntagmatic relations*. Meanwhile, the least frequently used strategy was *knowledge of topic*, belonging to non-linguistic knowledge sources. This indicates that participants mainly made use of the possible access of clues surrounding the target word to obtain its meaning. Apart from knowledge sources and two types of responses initially presented in Nylander's (2014) taxonomy, in the study the researcher also found that there were some further types of responses addressed that were included in the miscellaneous category: *skipping the word*, *questioning*, and *no mention of strategy used*. Regarding the inferencing success, the findings showed that participants failed to infer the meaning of unknown words more than half of the time.

Based on the findings of this study as well as the researcher's observations during the data collection process, it can be said that the factor in lexical inferencing that helped learners guess the correct word meaning was not always the learner's proficiency level. Rather, it could be the individual learner's understanding of each sentence meaning where the target word was involved, the learner's previous knowledge about the topic, the learner's enthusiasm for doing the task and so on. Furthermore, it should be noted that the use of certain inferencing strategies does not lead learners to get the correct meaning of a word. It also relates to how learners employ knowledge sources in an inferencing task appropriately and effectively (Kaivapanah &

Moghaddam, 2012). However, each strategy in different knowledge sources or even in additional types or responses might not be able to help every EFL learner who has difficulties in guessing word meanings. Therefore, it is important to note that lexical inferencing could be a basic step for incidental vocabulary acquisition.

5.5 LIMITATIONS OF THE STUDY

Although the research has met its aims, there were some limitations that probably affected the findings of the study.

First, the TU-GET score that the researcher used to divide participants into two groups was the score for all three parts of the exam. The researcher did not specify the participant's reading score. Furthermore, the range of the scores between the two groups was not separated. This may have affected the results of this study.

Second, in the think-aloud session the researcher allowed participants to report their inferences either in Thai or English according to participants' preference. In this study, most participants selected to report their thoughts in English. However, the researcher noticed that participants' verbalization in English did not flow as they occasionally were concerned about grammar use during verbal reports. Furthermore, the meaning of words that participants actually inferred might not be the one they spoke out. Thus, this also may have influenced the results of the study.

Third, during verbalizations the researcher did not straightforwardly ask or talk to participants about how he/she inferred the word meaning of each target word. Thus some participants occasionally simply informed they did not know the word meaning and they did not attempt to deduce the meaning of the word. Therefore, no inferencing verbalized in additional types of responses was involved in the taxonomy.

Fourth, similar to the previously limitation, sometimes participants forgot that they needed to verbalize their actual thoughts while processing the inference task, so they informed only the meaning of word they guessed. It means that they omitted to address how they derived the word meaning. Thus, this caused another type of responses that the researcher summarized as *no mention of strategy use*, which was involved in the miscellaneous category.

Lastly, due to the time limit, 30% of analyzed data of inferencing strategy use and success rate were given to three Thai EFL lecturers in the form of IOC (Item

Objective Congruence) in order to cross check the categorized data and the accuracy of success rate given to each inference. In order to obtain a more reliable data, it is suggested to use inter-coders to evaluate each strategy used and the success rate of each inference. Then the evaluation from the inter-coders should be compared to the researcher's initial analyzed data to reach the same conclusion.

5.6 PEDAGOGICAL IMPLICATIONS

Although vocabulary is essential knowledge for language learning, it is impossible for learners to know every single word in a text they are reading. Also, it is implausible that learners can rely on a bilingual dictionary to find out the meaning of unknown words on every occasion. The results of this study have significant implications not only for learners but also teachers. The researcher thus divided these into two main implications: implications for EFL learners and implications for EFL teachers.

5.6.1 Implications for EFL Learners

When encountering unknown or unfamiliar words while reading, learners themselves should not be initially search for the meaning of word in a dictionary. It would be better if they try to deduce the meaning of the word using their prior knowledge either linguistic or non-linguistic knowledge sources.

5.6.2 Implications for EFL Teachers

On part of EFL teachers, it is important to pay attention to the effectiveness in using lexical inferencing strategies. Teachers thus should not only focus on teaching vocabulary learning strategies, but also on investigating how EFL learners in class deal with unknown or unfamiliar words while reading. Lexical inferencing observation prior to giving vocabulary learning strategies suggestion may help teachers to find some new strategy that learners use so that teachers can apply or suggest that new strategy to other learners as another technique they can employ. Furthermore, teachers should encourage their students to practice and employ lexical inferencing strategies rather than immediately providing the meaning of unknown words or allowing them to use a dictionary all the time.

5.7 RECOMMENDATIONS FOR FURTHER STUDY

The recommendations for further research based on the findings of the current study are as follows:

5.7.1 The participants in this study were only postgraduates with a small number of participants. Further study on similar topics may be conducted with another level of students, for instance, high-school students or undergraduates studying in different majors.

5.7.2 Further study may apply retrospective interviews so that the researcher can inquire about informants' inferencing strategy use for each unknown word. This would prevent missing necessary information when processing data.

5.7.3 In this study, the researcher investigated lexical inferencing strategy use, inferencing success as well as the difference in using inferencing strategy between two groups at different proficiency levels. There was no test result regarding reading comprehension in order to compare the strategy use and comprehension of participants' inferencing. Thus, it is also worthwhile to study whether using lexical inferencing strategy can help participants to have efficient reading comprehension.

5.7.4 Further study may compare the perceptions and actual behaviors of Thai EFL learners in lexical inferencing strategy use to find out whether there is a difference between Thai EFL learner's self-evaluation and their real behavior in guessing the meaning of unknown words.

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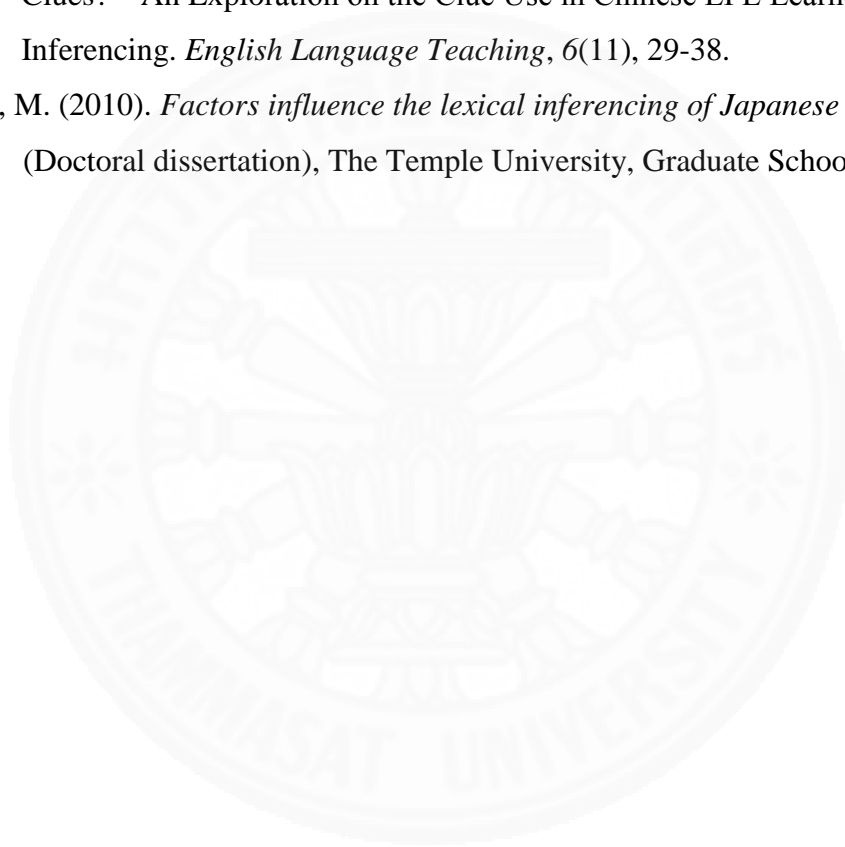
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APPENDICES

Other (please specify _____)

9. Please rank which method you use to cope with the unknown words while reading. (1 = the most used; 4 = the least used)

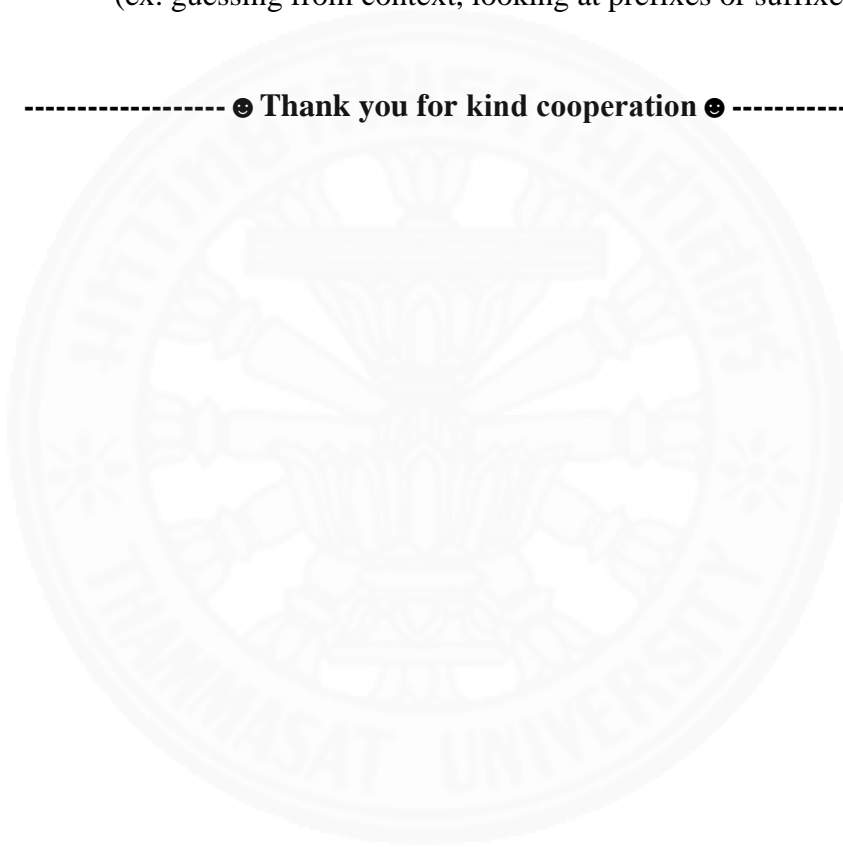
_____ Consult with dictionary

_____ Consult with friends /teacher

_____ Pass the unknown word and continue reading

_____ Try to guess the meaning of the unknown word by using any strategies
(ex. guessing from context, looking at prefixes or suffixes, etc.)

-----☺ Thank you for kind cooperation ☺-----



APPENDIX B

READING PASSAGE

Instruction: Read the passage below and verbalize the meaning of each underlined words using think-aloud technique as practiced in think-aloud training process.

WHO: El Nino Will Subject 60 Million to Health Risks

The El Nino weather phenomenon that emerged toward the end of last year is expected to peak this month and then begin to wind down through March and April, but the World Health Organization warns Friday that its health consequences would most likely worsen as an estimated 60 million people will be subjected to its full effects throughout 2016.

El Nino, defined by unusually warm ocean temperatures in the central and eastern equatorial Pacific, produces extreme drought and acute water shortages in some parts of the world and heavy rainfall and flooding in others.

People in the Horn of Africa, southern and eastern Africa, the South Pacific, Central America and South Asia are likely to suffer most from these extreme weather conditions. The WHO said seven countries — Tanzania, Kenya, Chad, Somalia, Nicaragua, Honduras, and Peru — would be at greatest risk.

Rick Brennan, the WHO's director of emergency risk management and humanitarian response, said an El Nino has "a broad range of potential impacts" on human health — "from malnutrition to infectious diseases to disruptions of health services. And, again, it is the most vulnerable, it is the poorest countries, it is the elderly, it is the children that are the most impacted."

Brennan said drought associated with El Nino can result in high levels of malnutrition and lead to child deaths. He said acute water shortages can disrupt sanitation and hygiene services, causing infections such as diarrhea disease and scabies.

On the other hand, he said, heavy rains can increase the risk of diseases such as malaria and dengue. He said flooding can kill and injure people as well as damage vital infrastructure.

Brennan said countries can take a number of steps to prepare for an El Nino and limit its health consequences. These include disease control measures, such as vaccinating malnourished children against measles.

He said countries should increase hygiene services to try to control infectious diseases and prevent the spread of malaria, dengue and others. He said surveillance systems to detect disease outbreaks early should be scaled up so quick action can be taken to contain them.

APPENDIX C

STUDENTS' WORD-KNOWING ASSESSMENT

This assessment aims to evaluate students' word-knowing before starting the think-aloud process.

Instruction: Please tick (✓) in the box 'YES' if you know the meaning of each word, or 'NO' if you do not know or familiar with the word.

NAME: _____ TU-GET SCORES: _____

Target word	Do you know the meaning of this word?	
	Yes	No
1. subject		
2. equatorial		
3. drought		
4. acute		
5. malnutrition		
6. disruption		
7. vulnerable		
8. associate with		
9. sanitation		
10. scabies		
11. malnourished		
12. measles		
13. surveillance		

APPENDIX D
MEANING OF TARGET WORDS

The Table shows the meaning of each selected word as target word in the study in English meaning according to Oxford Advanced Learner's Dictionary (9th ed.), Cobuild Advanced Learner's Dictionary (8th ed.), and in Thai meaning translated from <https://dict.longdo.com> and <http://www.translateland.com>.

Word	Meaning	
	English	Thai
1. Subject (v.)	To cause someone to undergo or experience something	ทำให้เกิด, ทำให้ได้รับ, ทำให้ถูกรบกวน
2. Equatorial (adj.)	Of or near the equator which is an imaginary line drawn round the world halfway between its most northern and southern parts	เกี่ยวกับเส้นศูนย์สูตรของโลก
3. Drought (n.)	A long period of time when there is little or no rain.	ความแห้งแล้ง
4. Acute (adj.)	Very serious or severe.	ฉับพลัน, รุนแรง
5. Malnutrition (n.)	(A poor condition of health resulting from) bad feeding, with food that is the wrong sort and /or too small in amount	ภาวะขาดสารอาหาร
6. Disruption (n.)	Forcible separation or division into parts	การขัดขวาง
7. Vulnerable (adj.)	(Of a place or thing) weak; not well protected; able to be easily attacked	เสี่ยง, เป็นภัย, ซึ่งถูกโจมตีได้ง่าย

8. Associate with (v.)	To make a connection between people or things. If one thing is associated with another, the two things are connected because they happen together or one thing causes the other; connected.	ร่วมมือกัน, ร่วมกับ
9. Sanitation (n.)	The process of keeping places clean and healthy, especially by providing a sewage system and a clean water supply.	สุขอนามัย, สุขาภิบาล, การกำจัดสิ่งโสโครก
10. Scabies (n.)	A skin disease that causes itching and small red raised spots.	โรคหิด
11. Malnourished (adj.)	In bad health because of a lack of food or a lack of the right type of food.	ขาดสารอาหาร
12. Measles (n.)	An infectious disease, especially of children, that causes fever and small red spots that cover the whole body.	โรคหัด
13. Surveillance (n.)	The act of carefully watching a person suspected of a crime or a place where a crime may be committed; observation.	การตรวจตรา, การควบคุมดูแล

APPENDIX E

IOC ASSESSMENT FORM FOR INFERENCING STRATEGIES

Item Objective Congruence Index (IOC) Assessment for data analysis of research title “The Use of Thai EFL Postgraduates’ Lexical Inferencing Strategies through the Think-Aloud Method” to evaluate the validity of data analysis for presenting in Chapter 4: Results. The criteria of assessment are as follows: +1 = Appropriate; 0 = Not Sure; -1 = Not Appropriate.

Instruction: Please consider the researcher’s analysis of each verbalized transcription whether each lexical inferencing strategy is suitable considered. Please mark \checkmark in the IOC assessment part as mentioned above please also write the strategies that you think it should be found if you disagree with the researcher’s analysis.

Note

- The number indicated in front of each strategy in researcher’s analysis part refers to the rank of each strategy in described taxonomy which reader can review its definition above.
- The transcription code is as follows:
 - The utterance in **boldface** type refers to the target word.
 - *Italic* message means the meaning of target word participants infer.
 - [] uses for the words spoken in Thai.
 - . . . symbols as pause.

Target Word	Participants' verbalization	Inferencing strategies analysis	IOC Assessment			Comment
			+1	0	-1	
Subject	<p>1. There are two subject to in this passage. The first one is on the topic. The second one is on the first paragraph. On the topic, it may infer that El Nino will <i>cause</i> 60 million health risks.</p> <p>In the first paragraph, WHO warns that its health consequences would most likely worsen as an estimated 60 million people will be subjected to its full effects throughout 2016.</p> <p>If I put . . . the word '<i>cause</i>' instead of 'subjected to', it's such likely to share the same meaning. I don't know. I think it is <i>to cause</i>. It is the cause that makes something bad happen. . . .</p> <p>El Nino would not cause something good.</p>	<p>(8) Discourse meaning</p> <p>(4) Sentence meaning</p> <p>(6) Paradigmatic relations</p> <p>(11) World knowledge</p>				
	<p>2. I guess this subject to may mean . . . <i>to cause</i>. I look at the sentence. WHO warns that its health consequences would cause to worsen health.</p> <p>. . . So the meaning of subject to maybe 60 million people will be <i>affected</i>.</p>	<p>(4) Sentence meaning</p> <p>(6) Paradigmatic relations</p>				
Equatorial	<p>3. Equatorial means <i>ocean</i>. I am not sure. I look at the context like 'Pacific' and 'warm ocean'.</p>	<p>(5) Syntagmatic relations</p>				

	<p>4. . . . If I look from the sentence, I guess it means . . . <i>equality</i>, isn't it?</p> <p>Because it said both 'central and eastern of Pacific' side.</p> <p>. . . I guess from the prefix 'equal-', equatorial.</p>	<p>(14) Miscellaneous category (Questioning)</p> <p>(5) Syntagmatic relations</p> <p>(1) Word morphology</p>				
	<p>5. Equatorial, does it means [<i>peninsula</i>]?</p> <p>I guess from the context that 'Pacific'. So I think this word should relate to <i>the ocean</i>.</p>	<p>(14) Miscellaneous category (Questioning)</p> <p>(5) Syntagmatic relations</p>				
Drought	<p>6. Drought . . . means like <i>the area that is lack of water</i>, right?</p> <p>I guess from the context and the phrase 'water shortage'.</p>	<p>(14) Miscellaneous category (Questioning)</p> <p>(5) Syntagmatic relations</p>				
	<p>7. Drought means <i>lack of water</i>. I recognize this word.</p> <p>Drought is like it is dry. They have no water.</p>	<p>(12) Reported knowing a word</p> <p>(11) World knowledge</p>				
Acute	<p>8. I think it means <i>problem</i>. I do not know why. . . . Because water shortage is problem.</p>	<p>(5) Syntagmatic relations</p>				
	<p>9. I think the meaning of acute should go the same direction of the word '<i>drought</i>'. The water is dry and 'acute water shortages' . . . the water is reduced?</p> <p>But the shortage means lacking. So acute, I guess its meaning is same as the word <i>drought</i>.</p>	<p>(14) Miscellaneous category (Questioning)</p> <p>(5) Syntagmatic relations</p>				

Malnutrition	10. Malnutrition maybe <i>the disease that occur from lacking of nutrition.</i>	(14) Miscellaneous category (No mention of strategies used)				
	11. . . . It is [<i>the state that people lacking of food</i>], something like that. I knew nutrition.	(3) Word association				
Disruption	12. Disruption means <i>decrease</i> in something. I do not know. I guess from sentence. The decrease in health service, something.	(4) Sentence meaning				
	13. From the sentence, I guess it means <i>to interrupt</i> the health service. disruption as I told before, if I read through this paragraph, I understand that it means [<i>to obstruct</i>]. To obstruct the work of the public health, sanitation and hygiene services.	(4) Sentence meaning (8) Discourse meaning				
Vulnerable	14. Vulnerable I guess that the meaning is <i>extremely effect for something</i> . I guess it from 'it is the most vulnerable , it is the poorest countries'. Also, I guess it from 'and, again'. For me, I think that the passage should refer to this meaning before, so I guess it means <i>extremely or heavy effect on something</i> .	(4) Sentence meaning (8) Discourse meaning				
	15. I guess this word . . . maybe it might come from it is the children that are the most impacted. I understand that it is, how to say, <i>the important issues</i> , something like that.	(4) Sentence meaning				
	16. Associate with . . . <i>come from with</i> . I understand that the drought that come from the El Nino like the . . . natural disaster. Drought, it maybe substance of El Nino, they come from the El Nino.	(4) Sentence meaning				

	El Nino is something happen with the nature. The drought can come from the association with El Nino.	(11) World knowledge				
Sanitation	17. Sanitation is <i>hygiene</i> . It should be because I think it follows by 'hygiene services'.	(5) Syntagmatic relations				
Scabies	18. For this word . . . maybe something that relate to the water shortages. Because it said that the 'water shortages can disrupt sanitation', so I guess it is about <i>some disease that occurs when you are lacking of good water</i> .	(4) Sentence meaning				
	19. I do not know this word and I could not guess.	(13) No inferencing verbalized				
Malnourished	20. Malnourished means <i>the people who are lacking of nutrition</i> , who are not healthy. From the context as well because they are talking about the disease, the vaccinating. And also, the article is related to the . . . the environment change and the impaction on people's health.	(5) Syntagmatic relations (10) Knowledge of topic				
	21. This might be something that . . . helps country to prevent the unhealthy conditions, the consequences, the big impact. So as they said they <i>include</i> the <i>control measures</i> . This one is like the example of how they handle with this problem. They offer the suggestion. But I do not know the exact meaning of this word. But I just know just the roughly idea about this one.	(4) Sentence Meaning (13) No inferencing verbalized				
	22. Measles should be <i>a disease, a kind of disease that can prevent by vaccinating</i> .	(4) Sentence meaning				

	<p>Because ‘these include disease control measures, such as vaccinating’</p> <p>. . . So ‘vaccinating’ is disease control and vaccinating is used for ‘against measles’. So measles should be <i>a disease</i>.</p>	(5) Syntagmatic relations				
	23. . . . does measles means [โรคหัด]?	(9) Lexical knowledge (14) Miscellaneous category (Questioning)				
	24. ‘Vaccinating . . . children against measles ’. . . I cannot guess this word. I do not know.	(13) No inferencing verbalized				
Surveillance	25. . . . It is an adjective, some kind of adjective. Surveillance is like <i>the kind of system</i> .	(7) Grammar (part of speech)				
	26. It means <i>system</i> . Is it like ‘survive’? This is the system to detect the disease. ‘To detect disease outbreaks . . . quick action’, that’s what I guess.	(2) Homonymy (14) Miscellaneous category (Questioning) (5) Syntagmatic relations				
	27. Surveillance system . . . what the system is. ‘Survive’ . . . surveillance . . . I think maybe the last word ‘ surveillance system’ maybe it means <i>the system for investigation and check</i> . I guess from the word ‘sur-’ like ‘survey’. It is like the investigating and checking system. Because nearby the word it is “to detect disease”, it is like the objective of this system to check . . . how the disease spread. So surveillance should mean <i>investigation, surveying, checking</i> .	(2) Homonymy (1) Word morphology (5) Syntagmatic relations				

APPENDIX F

IOC ASSESSMENT FORM FOR SUCCESS RATE

Item Objective Congruence Index (IOC) Assessment for data analysis of research title “The Use of Thai EFL Postgraduates’ Lexical Inferencing Strategies through the Think-Aloud Method” to evaluate the validity of data analysis for presenting in Chapter 4: Results. The criteria of assessment are as follows: +1 = Appropriate; 0 = Not Sure; -1 = Not Appropriate.

Instruction: Please consider the researcher’s analysis of each verbalized transcription whether the rate of success of each inferences that participant infers was scored properly. Please mark √ in the IOC assessment part as mentioned above and please comment/suggest in the case that you disagree with the researcher’s analysis.

An example of scoring the rate of success in meaning lexical inferencing

Target Word	Successful inference (2)	Partially successful inference (1)	Unsuccessful inference (0)
Surveillance	“Because nearby the word it is <i>to detect disease</i> , it is like the objective of this system to check . . . how the disease spread. So surveillance should mean <i>investigation, surveying, checking.</i> ”	“ Surveillance , it means like <i>the system that protect or look at the condition of the disease of children</i> . It is like the system that always inspects something.”	“ Surveillance . . . It is an adjective, some kind of adjective. I do not know. He said surveillance systems to detect disease. Surveillance is like <i>the kind of system.</i> ”

Scoring 2 means that inference is successful with appropriate meaning in context even guessing in Thai.

Scoring 1 means that inference is partially successful. The word meaning is acceptably understanding or semantically correct. Also, the given synonym that almost relates to the target word is considered as partially successful.

Scoring 0 means the inference is informed incorrectly as well as informants even being unable to verbalize the meaning.

Target Word	Participants' verbalization	Rate of Success	IOC Assessment			Comment
			+1	0	-1	
Subject	1. ... If I put the word 'cause' instead of 'subjected to', it's such likely to share the same meaning. I don't know. I think it is <i>to cause</i> . It is the cause that makes something bad happen.	2				
	2. ... So the meaning of subject to maybe 60 million people will be <i>affected</i> . I think that it is.	2				
Equatorial	3. Equatorial . . . means <i>ocean</i> . I am not sure. I look at the context like Pacific and warm ocean.	0				
	4. . . . If I look from the sentence, I guess it means . . . <i>equality</i> , isn't it?	0				
	5. Equatorial , does it means [<i>peninsula</i>]? I guess from the context that Pacific. So I think this word should relate to <i>the ocean</i> .	0				
Drought	6. Drought . . . means like <i>the area that is lack of water</i> , right?	2				
	7. Drought means <i>lack of water</i> . I recognize this word.	2				
Acute	8. But the shortage means lacking. So acute , I guess its meaning is same as the word <i>drought</i> .	0				
	9. . . . produces extreme drought and acute water shortages . . . I think the meaning of acute should go the same direction of the word 'drought'. The water is dry. and acute water shortages . . . the water is reduced? But the shortage means lacking. So acute , I guess its meaning is same as the word <i>drought</i> .	0				

Malnutrition	10. Malnutrition . . . like . . . maybe <i>the disease that occur from lacking of nutrition.</i>	2				
	11. . . . it is [<i>the state that people lacking of food</i>], something like that.	1				
Disruption	12. Disruption means <i>decrease</i> in something. I do not know. I guess from sentence. The decrease in health service, something.	0				
	13. I guess it means <i>to interrupt</i> the health service. . . . disruption as I told before, if I read through this paragraph, I understand that it means [<i>to obstruct</i>].	2				
Vulnerable	14. . . . I guess it means <i>extremely or heavy effect on something.</i>	0				
	15. . . . maybe it might come from it is the children that are the most impacted. I understand that it is the . . . the . . . how to say <i>the important issues</i> , something like that.	0				
Associate with	16. Associate with . . . <i>come from with.</i> I understand that the drought that come from the El Nino like the . . . natural disaster. Drought, it maybe substance of El Nino, they come from the El Nino. El Nino is something happen with the nature. The drought can come from the association with El Nino.	1				
Sanitation	17. Sanitation is <i>hygiene</i> . It should be because I think it follows by hygiene services.	2				
Scabies	18. I guess it is about <i>some disease that occurs when you are lacking of good water.</i>	1				
	19. Scabies I do not know this word and I could not guess.	0				
Malnourished	20. Malnourished means <i>the people who are lacking of nutrition</i> , who are not healthy.	2				
	21. This might be something that . . .	0				

	something that . . . helps country to . . . to prevent the unhealthy conditions, the consequences, the big impact. So as they said they <i>include</i> the <i>control measures</i> . This one is like the example of how they handle with this problem. They offer the suggestion. But I do not know the exact meaning of this word. But I just . . . I know just the roughly idea about this one.					
Measles	22. Measles should be <i>a disease, a kind of disease that can prevent by vaccinating</i> .	1				
	23. . . . does measles means [โรคหัด]?	2				
	24. . . . I cannot guess this word. I do not know. Is this word important?	0				
Surveillance	25. I do not know. . . Surveillance is like <i>the kind of system</i> .	0				
	26. Surveillance system it means <i>system</i> This is <i>the system to detect the disease</i> .	0				
	27. Because nearby the word it is “to detect disease”, it is like the objective of this system to check . . . how the disease spread. So surveillance should mean <i>investigation, surveying, checking</i> .	2				

----- THANK YOU VERY MUCH -----

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