

**INFLUENCE OF INFERENTIAL SKILLS
ON THE READING COMPREHENSION
ABILITY OF ADULT THAI (L1) AND
ENGLISH (L2) STUDENTS**

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The material presented in this thesis is the original work of the candidate except as acknowledged in the text, and has not been previously submitted, either in part or in whole, for a degree at this or any other University.

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Abstract

The ability to make inferences from linguistic information (spoken and written discourse) is regarded as a significant factor in successful reading success. Although, this relationship has been researched with English first language/monolingual cohorts (see Cain, Oakhill, Barnes, & Bryant, 2001; Oakhill & Cain, 2012; Silva & Cain, 2015), there is a paucity of research on inferential skills in other languages as well as in bilinguals or second language learning contexts. Therefore, the present study focused on investigating inferential skills and reading comprehension in two different languages (Thai and English) within the same group of adult students at a college in Thailand. The primary objectives of this study, as reported in this thesis, were to examine the reciprocal relationships of inferential skills within Thai and English, and to investigate whether inferential skills can predict reading comprehension both within each language and across languages (Thai-L1 and English-L2).

The study involved measures of inferential skills, reading comprehension, vocabulary and listening comprehension in Thai and English, following appropriate adaptation, piloting and revision. Raven's Advanced Progressive Matrices test (short form) was also used to explore non-verbal reasoning, and a questionnaire was used to provide background details about the participants and their views on reading comprehension strategies. Data collection was conducted at one campus of a university in Thailand. All ten measures were administered to a group of 220 Thai undergraduate students.

The results demonstrated a significant inter-relationship between inferential skills in Thai (L1) and English (L2). Scores on the inferential tasks were also related to reading comprehension within the same language. Furthermore, the findings from hierarchical regression analyses indicated that the addition of inferential skill scores significantly increased the predictability of

reading comprehension in the same language, after controlling for within-language vocabulary levels (and listening comprehension in the case of Thai) and non-verbal reasoning. Analyses across languages showed positive correlations between Thai inferential skills and English reading comprehension, and between English inferential skills and Thai reading comprehension. Hierarchical regression analyses indicated that the addition of English inferential skills scores predicted extra variability in Thai reading comprehension, after controlling for English and Thai language related skills and non-verbal reasoning measures, but the addition of Thai inferential skills scores did not influence the level of prediction of English reading comprehension after controlling for the same variables. The reading strategies questionnaire did not reveal a significant relationship with either the Thai or the English reading comprehension scores. However, relationships between self-reported reading comprehension strategies and inferential skills scores were found, though the correlations were relatively small.

Overall, the findings are consistent with the ability to make inferences being an important component of successful text comprehension—although there is little evidence of awareness influencing performance among the current participants. The influence of inference making does not seem to be explained by more general language skills (such as vocabulary and listening comprehension), nor by more general (non-verbal) reasoning skills, and it has the potential to occur across languages (from English to Thai in the present study), although within language influences may be larger than between languages. These findings have both theoretical and practical implications, which are discussed in this thesis.

Presentations Arising from the Thesis

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Glossary

Literal Comprehension is defined as the type of question which aims to explore the factual information which was explicitly stated in a reading passage.

Grammatically Connecting Inference is the term for a type of question which investigates readers' inference ability based on their grammatical knowledge.

Vocabulary Related Meaning Inference is the type of question which examines the readers' ability to infer the meaning of one particular word or phrase in the reading passage from another word or phrase which has a similar meaning in a question.

Text Coherence Inference is used for the type of question which focuses on relating the information appearing in two contiguous phrases or sentences to achieve the right meaning of a written text.

Prior Knowledge Inference is the type of question which aims to investigate the ability to connect ideas that are not explicitly stated in the text and background knowledge. This type of inference relies heavily on background knowledge which is a significant component that helps readers to fill in details missing from the text.

Lower level comprehension skills are essential as the foundation for the comprehension and production of more complex discourse. In this research, vocabulary is referred as one of these skills.

Higher level comprehension skills are the skills which are necessary to construct a mental model of a text's meaning to comprehend the implicit meaning of the text. These skills include inferential skills in this study.

Chapter One

General Introduction and Overview of the Thesis/Research

1.1. Introduction

The ultimate goal of reading is to comprehend what has been read (K. Nation, 2005; Paris & Hamilton, 2009). Reading, whether in the first, second, or additional language, is a highly complex process (Wurr, 2003), and reading is not a passive activity; the task demands that participants engage in an active search for meaning (R. C. Anderson & Pearson, 1984). Generally, reading comprehension involves two basic processes: lower level comprehension processes that involve translating the written code into meaningful language units, and higher level processes that involve combining these units into a meaningful and coherent mental representation (Kendeou, van den Broek, Helder, & Karlsson, 2014). Furthermore, many researchers (e.g., Graesser, Singer, & Trabasso, 1994; Kintsch, 1998) suggest that texts cannot be understood without contributions from the readers. Readers learn how to use their own relevant knowledge and experience to build an understanding of the text. This building of understanding depends heavily on the reader's ability to draw inferences. Individuals who experience difficulty in reading and comprehending texts are more likely to suffer from problems in school, in the workplace, and in their communities (National Center for Education Statistics, 2002). Internationally, and in Thailand, English reading comprehension is a necessary skill for successful academic performance (Eason & Cutting, 2009). In particular, employees working in many organisations, including both the government and private sectors, require strong English

comprehension skills (Akkakoson, 2011). Moreover, students at all levels who have a greater proficiency in reading are likely to have a greater proficiency in language learning (Gillet & Temple, 1999). At the undergraduate level, Thai students are expected to understand textbooks, articles, or magazines written in English in order to acquire knowledge and gather information for both their future careers and their current academic studies. Although reading plays a vital role in both academic and working contexts, low reading comprehension in English seems to be a problem for many Thai students. Research on English reading in Thailand tends to confirm that poor reading ability in English is a common problem for Thai students at all levels of education, up to and including undergraduate students (Adunyarittigun, 1998; Ratanakul, 1998; Sroinam, 2005). This is apparent from the scores of the 2010 standardised O-Net (Ordinary Nation Education Test) nation-wide exam of students in Grades 3, 9 and 12, which revealed low average scores in English (total marks = 100: Grades 3-M=20.99, SD=20.13; Grade 9-M=16, SD = 14.71; Grade 12- M=19.22, SD = 12.01) (The National Institute of Educational Testing Services, 2013). The results from all test takers of the Test of English as a Foreign Language (TOEFL) in 2012 indicated that the average TOEFL score of Thai examinees was found to be 76, which was below than the standard score of 80. This average TOEFL score was ranked at 14th out of 17 countries in Asia (Office of Education Council, 2013). At the higher levels of education, reading comprehension in English is a significant problem for many Thai university students. They often can read at a slow speed, only understanding small amounts of information and are barely able to grasp even major ideas that are directly stated (Attaprechakul, 2013).

Likewise, low reading proficiency in Thai as their first language is also a problem for some Thai students. The Thai language reading performance of Thai students can be seen from the 2009 results of the Organization for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA), which investigated 15-year-old students across OECD member countries and partner countries. Thai students' reading

proficiency was only 421, significantly below the OECD average of 493 (The Organisation for Economic Co-operation and Development (OECD), 2010). Similarly, the majority of Thai undergraduate students are often not successful in comprehending some Thai language texts as they deal with various tasks in different subjects in their mother tongue. They have difficulty in identifying the main idea of what they have read (Panniem, 2009).

In the Thai education context, there are a number of reasons for low reading proficiency. Reasons for the relatively low reading results found among Thai students compared to international norms may stem from the cultural context in which the Thai students have learnt to read. An important factor is the lack of a strong reading culture in Thailand. Leisure time reading, even in the Thai language, is not a favourite pastime for many Thai people (Wisaijorn, 2005). Consequently, reading proficiency might have not developed sufficiently due to this lack of a strong reading habit. Another cultural factor relates to the importance of hierarchical distinctions in Thai social relationships and social identity, with many students viewing the questioning of their teachers as an expression of ingratitude and therefore highly inappropriate (Adamson, 2003; Foley, 2005). Therefore, many Thai students simply accept whatever is written in their textbooks without question or critical thought (O'Sullivan & Tajaroensuk, 1997). This leads to insufficient practice in critical reading ability by Thai students. Additionally, teaching and learning methods themselves may also result in unsuccessful reading competency. Many Thai teachers of the English language still use traditional teacher-centred methods, which emphasise memorisation and passive learning (Akkakoson, 2011). As a result, Thai students lack some of the higher level comprehension skills, which are necessary to construct a mental model of a text's meaning to comprehend the implicit meaning of the text (Hogan, Bridges, Justice, & Cain, 2011; Kendeou et al., 2014). These skills include the inferential skills addressed in this study.

In order to be a skilled reader, the ability to understand words alone is not sufficient for the comprehension processes, because the meaning of words generally depends upon the context within which they appear (Basaraba, Yovanoff, Alonzo, & Tindal, 2012). Although some readers may have acquired fundamental decoding skills (Catts, Fey, Tomblin, & Zhang, 2002), they often have not learned many other essential reading skills, including inferential skills, that facilitate reading comprehension (Gersten, Fuchs, Williams, & Baker, 2001). When making an inference, readers infer meaning by using their existing knowledge of the world and information from the text itself to bridge missing information that has not been explicitly stated in the text (Graves, Juel, & Graves, 2007). The strong inference skills are a key to successful comprehension (Cain, 2010; Cain, Oakhill, Barnes, & Bryant, 2001; Dole, Duffy, Roehler, & Pearson, 1991; Eason, Goldberg, Young, Geist, & Cutting, 2012). Extensive longitudinal studies have provided evidence of the importance of inference in the development of reading comprehension (Cain et al., 2001; Hannon & Daneman, 1998; Kendeou, Bohn-Gettler, White, & van den Broek, 2008).

Much of the previous research has examined inferential skills in English as a first language, particularly with school age children (e.g., Cain & Oakhill, 1998, 1999). There have also been some studies with adult learners (Hannon & Daneman, 1998; Long, Oppy, & Seely, 1994). In addition, there are several studies in a L2 context (e.g., Hatami & Tavakoli, 2012; Prior, Goldina, Shany, Geva, & Katzir, 2014) which focused only on lexical inferential skills of adult participants who were studying English as a second language. In sum, prior research on inferential skills has emphasised a single language, generally English, either as a first language or a second language. Therefore, it was timely to examine and compare parallel usage of inferential skills in two languages. In this thesis, various cognitive-linguistic skills of adult students in a tertiary institution in Thailand, who have Thai as a first language and English as a second language, were investigated in both their first and second languages.

1.2. Purpose and research questions

The major aim of this research was to examine the relationship between inferential skills and reading comprehension in two languages. The participants were Thai university students who use Thai as the first language (L1) and English as the second language (L2). To achieve this, the present study posed the following research questions:

1. Is there a relationship between inferential skills in Thai (L1) and English (L2)?
2. Do inferential skills support reading comprehension within a single language, i.e., Thai or English?
3. Can inferential skills in one language support reading comprehension in another language (Thai-L1 and English-L2)?

1.3. The overview of the research

This research took place on a campus in Chantaburi, one of the three campuses of Burapha University, which is one of the major public universities located in the eastern region of Thailand. The university offers more than 100 programs from Bachelor's Degree to Doctorate Degree. The Chantaburi campus, where the study was conducted, presently consists of three faculties, which offer a total of nine bachelor degree programs.

To investigate the research questions presented above, this study used a quantitative data collection and analysis method. The eight bilingual measures comprised measures of: reading comprehension, inferential skills, listening comprehension, and vocabulary. These measures primarily aimed at investigating various cognitive-linguistic skills of the participants. Two additional measures were included: the Raven's Advanced Progressive Matrices to explore non-

verbal reasoning ability, and a questionnaire on reading comprehension strategies which examined the participants' reading comprehension strategies.

Two hundred twenty students studying at the Burapha University Chantaburi campus participated in this study. The participants were second year Thai students, aged between 18 and 19 years old. They are all Thai native speakers who had studied English as a foreign language. They were studying in different degree programs and none of them majored in English. The data collection of the main study was carried out between March and May, 2014 (the summer semester of the Thai academic year 2014).

Testing administration was conducted in two main sessions, conducted on two different days. In the first session, the Thai language measures comprised assessments of reading comprehension, inferential skills, vocabulary and listening comprehension, and a questionnaire on reading comprehension strategies. English language assessments and the Raven's Advanced Progressive Matrices were administered in the second session.

The quantitative analyses were employed, using the data obtained from 220 participants. Thai and English reading comprehension performances of the participants were used as the dependent variables. The primary predictor (independent) variables were inferential skills scores in Thai and English. Three additional predictor (independent) variables were two language skills (vocabulary and listening comprehension), and non-verbal reasoning abilities.

1.4. Significance of the study

Longitudinal studies have provided evidence for the significance of inference making in reading comprehension (Kendeou, Bohn-Gettler, White, & van den Broek, 2008; Kendeou, van den Broek, White, & Lynch, 2007; Oakhill & Cain, 2007). While many studies have been conducted in a single, specific language—particularly English as L1—there is a scarcity of

research relating inferential skills across two or more languages. Therefore, this study is an attempt to investigate the impacts of inferential skills on reading comprehension within and across two different languages, and to further identify the relationships between students' inferential skills in these languages. The findings of this study will contribute to the existing body of literature in the field of reading comprehension within and across languages. Furthermore, the findings may be valuable as supportive data for future studies in similar areas, including future plans aiming to use inferential skills in teaching reading comprehension in both L1 and L2. In terms of teaching and learning languages, the results of this study may provide language teachers with insights into the role of inferential skills in different languages. It may contribute towards teaching and learning inferential skills, in support of reading comprehension in language classrooms in Thailand or other educational settings that share similar characteristics. Although the context of this investigation emphasises Thai and English, the findings can be applied to both L1 and L2 language classrooms in different settings.

1.5. Ethical consideration

Research ethics were a crucial concern in this study. This research was conducted to examine the different cognitive-linguistic competences of the participants, so it was commonly accepted that this research setting would not lead to any mental or physical harm. However, it was necessary to consider any discomfort that the students might feel about doing the tasks in the research. Therefore, it was very important that the study corresponded with the code of ethics. All participants in this study were provided with an explanation of the purposes of the study and the intended outcome of the research process. Furthermore, the important message that participants were guaranteed anonymity and assured that their performance in this research would be kept confidential. They were also informed that they have the right to withdraw from a study at any time. Participants signed a consent form after this information was advised.

Chapter Two

Review of Literature and Related Research

2.1. Introduction

Reading is a very complicated cognitive process that occurs instantly and privately in readers' minds (Gate, 2000; Huey, 1968; Sipay & Harris, 1990). Reading is not a passive activity; instead, participants need to engage in an active search for meaning from the target text (R. C. Anderson & Pearson, 1984). Goodman (1971) defined reading as a “psycholinguistic guessing game”(Goodman, 1971, p. 35) that involves an interaction between thought and language. According to his view, it is not necessary for readers to interpret every word in the texts. On the other hand, readers get meanings from the text by using three levels of language clues: graphic input, syntax, and the semantic systems of the language.

To comprehend, readers must use information they have already attained to filter, interpret, organise and reflect on the incoming information from the text. Good comprehension relies on creating a mental representation of a text's meaning. Successful comprehenders apply their word recognition skills, link new information to prior knowledge, and use appropriate reading skills such as locating the main idea, making connections, questioning, inferring and predicting (Westwood, 2008). The successful comprehension of written and spoken language is a complex task that involves many different cognitive skills and processes (Cain & Oakhill, 2007). Among the different skills involved in the process of reading comprehension, inferential

skills have been identified as a significant skill, as has been well established by a number of studies with L1, particularly in the case of English as a first language (Oakhill & Cain, 2012; Oakhill, Cain, & Bryant, 2003; Silva & Cain, 2015).

The remainder of this chapter outlines the literature underpinning the research presented in this thesis. The first section (section 2.2) deals with the models of the reading comprehension processes, which provides some background on how different cognitive comprehensive processes interact in a mind in order for readers to arrive at the coherent meaning of a text. The subsequent section (section 2.3.) describes two types of reading comprehension skills which are involved in the process of text comprehension. All necessary aspects of all predictor variables, inferential skills and other additional variables, are described in sections 2.4 and 2.5, respectively. The final emphasis of this chapter concerns cross-linguistic transfer, because this investigation examines the effects between two languages. Section 2.6 describes models of cross-linguistic skills, and related research in L1 and L2 is described in section 2.7.

2.2. Models of reading comprehension

To provide a better understanding of the processes involved in reading comprehension, many different theoretical models of reading compression have been proposed. Each model of reading comprehension aims to provide insights into the processes and skills involved in reading comprehension. However, the various models may have different focuses in their explanation of models of reading comprehension.

In this section, the cited models of reading comprehension are focused specifically on the reading process, which derives previously stored information from the reader's memory and integrates it with information from a new source. In this process, inference skills play an important role in the construction of meaning and coherence representation resulting from integration of the different pieces of information. Furthermore, as this thesis focuses on reading

comprehension in two different languages (Thai and English), the cultural contexts in which each of these languages is learnt may be influenced by the Thai culture. The learning and teaching of a foreign language, such as English, is likely to be influenced by the Thai culture. For example, a communicative, learner-centred approach (CLT) —a methodology of teaching English—might be adapted to become a part of Thai practices (Foley, 2005; Saengboon, 2004), because many Thai students tend to be attached to rote memorization, and they lack the will to express their own opinions, due to their shyness and a culturally hierarchical seniority system (Mackenzie, 2002). Therefore, to provide some insights into the relationships between culture and reading comprehension, the sociocultural perspective in reading is described in the last part of this section.

2.2.1. The Constructionist-Integration model

Kintsch first proposed the Constructionist Integration model (CI) in 1988. The CI model was developed based on previous work on discourse comprehension, specifically that of Kintsch (1978) and Van Dijk and Kintsch (1983). In 1998, Kintsch expanded on the model and proposed a general processing framework for cognition. This model is considered to be the most well-formulated model of text comprehension (McNamara & Magliano, 2009).

In this model, Kintsch (1988, 1998) proposed that the reader simultaneously constructs a literal text model and a situation model, with the merging of the two forming the integration component. Once the reader has constructed meaning from the text to produce a system comprised of concepts they have activated, the reader must then integrate the concepts from this system that are pertinent to the situation model. Any concepts which have been activated and determined to be irrelevant to the implied situation are subsequently de-activated.

Kintsch (1988) outlined the process of reading comprehension from print to understanding. First, the reader must identify the individual words on a page, decode the symbols by utilising processes of perception, word recognition, and assigning of words to their roles within sentences and phrases (parsing); then subsequently and semantically analyse the words to comprehend the word meanings. The results of this process are referred to as ‘surface-level representation’ (Kintsch, 1998; Kintsch & Rawson, 2007). Furthermore, in order to successfully comprehend the written text, readers are required to construct multilevel representations of the text (i.e., microstructure, macrostructure). Microstructure level of text involves comprehending the word meanings and the interrelationships between propositions, which are idea units combining more than one word in a schematic form. Simple inferences, such as pronoun antecedent identification, are necessary to arrive at a coherence microstructure. Then, the microstructure is organised into higher order units of the text to comprehend global topics. This higher order level is referred to as the macrostructure level. The integration of the microstructure into the macrostructure results to the “textbase” representation, which is the text meaning as it is explicitly described by the text itself. The meaning explicitly derived from the text alone may seem to be shallow and insufficient for deeper understanding of full meaning of the written text. Therefore, the text content is constructed into a situation model: that is a mental model of the situation described by the text is created (Kintsch, 1998; Kintsch & Rawson, 2007).

Construction of the mental model, or the situation model, in the text comprehension process occurs as the reader integrates the information provided by the text with relevant background knowledge to build a mental representation as described by the text. In order to construct a situation model of what a reader reads, higher level comprehension skills such as inferencing, comprehension monitoring, and sensitivity to story structure, play an important role in integrating information across sentences and paragraphs into a coherent situation model (see at section 2.3.2). As inferential skills have been regarded as important skills in constructing a

situation model (Kintsch & Rawson, 2007; Van Dijk & Kintsch, 1983), Kintsch (1998) presented different several types of inferences, which are involved in the reading comprehension model. Broadly, different types of inference were classified on the basis of whether they are automatic versus controlled and whether they are retrieved versus generated.

In conclusion, the Constructionist Integration model is a significant model of text comprehension, which successfully describes different types of comprehension levels and processes. However, in this model, there is lack of information about how the reader integrates the two major levels of comprehension (text base and situation/ mental model) which seem necessary for understanding the reading text (Paris & Hamilton, 2009). The next section considers some additional models which provide various perspectives on the cognitive processes of text comprehension.

2.2.2. The Structure Building model

The Structure Building model was presented by Gernsbacher (1990). This model describes the general cognitive abilities in comprehension that are common across modalities. Therefore, the model can be applied to the comprehension processes in various media such as text and pictures. The goal of comprehension of the Structure Building model is to build a coherent mental representation or “structure of the information being comprehended”.

Gernsbacher (1990) suggests three cognitive sub-processes being involved in the structure building of text comprehension, namely: the process of laying a foundation for mental structures, the process of mapping coherent information onto developing structures, and the process of shifting to initiate new substructures. The first process, that of laying a foundation, is a process whereby readers lay foundations for their mental structures. Laying the foundation refers to the processes that occur when a comprehender is first confronted with information (e.g.,

the beginning of a novel) or when the topic changes (e.g., the beginning of a chapter). The next process of mapping and shifting involves developing the mental structures by mapping based upon new information, when that incoming information coheres with the previous information. However, if the incoming information is less coherent, then readers employ a different process. They shift to initiate a new substructure. Therefore, the majority of representations comprise several branching substructures.

The building blocks of these mental structures are memory nodes. Memory nodes are activated by incoming stimuli. Initial activation forms the foundation of the mental structures. Once the foundation is laid, subsequent information is often mapped onto a developing structure because “the more coherent the incoming information is with the previous information, the more likely it is to activate similar memory nodes” (p.289). Conversely, the less coherent the incoming information is, the less likely it is to activate similar memory nodes. In this case, the incoming information might activate a different set of nodes, and the activation of this other set of nodes forms the foundation for a new substructure (Gernsbacher, 1990).

In the Structure Building model (Gernsbacher, 1990), the mechanisms of suppression and enhancement were introduced. These two mechanisms control the memory nodes' level of activation. In the enhancement process, memory nodes are enhanced (boosted or increased) when the information they represent is related to the current structure or necessary for further structure building. In the converse situation, the activation of suppression may occur. They are suppressed (dampened or decreased) when the information they represent is irrelevant information. The efficiency of suppression processes, which determines how quickly the irrelevant meanings of ambiguous words lose activation, can be distinguished between skilled and less skilled comprehenders (Gernsbacher & Faust, 1991; Gernsbacher, Varner, & Faust,

1990). Skilled comprehenders quickly identify and suppress unnecessary information, but less skilled comprehenders lack this skill (Gernsbacher & St. John, 2000).

According to the Structure Building model, it is plausible to say that inference is also an essential skill in the process of suppression and enhancement, because when the reader integrates a new piece of information to all previous information, the reader must decide whether to enhance or suppress that piece of information. In addition, Gernsbacher (1990) also compared the process of enhancement in this model with the process of integration in the Constructionist Integration model. There are some similarities between these two processes, because they integrate the contextually relevant information with new information which seem to be coherent to the reader, and then all of this information is activated and stored. However, a few differences were mentioned, for example Kintsch (1998) assumes that the process of integration operates automatically, while it is unclear whether the mechanism of enhancement occurs automatically (Gernsbacher, 1990). The next section discusses the Landscape model of reading, which provides information about the connection between each cognitive process in comprehending a text.

2.2.3 The Landscape model of reading

The Landscape model of reading comprehension, a new cognitive model, was introduced in 1999 (van den Broek, Risdien, Fletcher, & Thurlow, 1996; van den Broek, Young, Tzeng, & Linderholm, 1999). Prior to the Landscape model, the process of reading comprehension was viewed through two main perspectives—memory-based and the constructionist approaches—which view the processes of text comprehension differently. The memory-based approach describes the reading comprehension process as autonomous, unconscious, and effortless. Thus, the activations that are required to connect text elements and understand the whole would be automatically facilitated by pre-existing information from the text, as well as from the

background knowledge of the reader (e.g., O'Brien, Albrecht, Hakala, & Rizzella, 1995). On the other hand, the constructionist approach suggests that the activation of text elements are conscious and strategic, time-consuming efforts aimed at accessing prior text and/or background knowledge, in order to extract meaning from the text (e.g., Graesser et al., 1994; M. Singer, Graesser, & Trabasso, 1994).

The Landscape Model of reading comprehension (van den Broek et al., 1996; van den Broek et al., 1999) proposed that memory-based and constructionist processes both operate during the process of reading comprehension and interact according to a principle of *standards of coherence*; if the activations that result from the automatic memory-based processes yield coherence that is sufficient in the eyes of the reader, then strategic constructionist processes are unnecessary. However, if the reader cannot comprehend adequately based on automatic memory-based processes alone, then strategic processes are employed until the satisfactory coherence of the reader is attained or until the attempt to comprehend at the desired level is abandoned (e.g., van den Broek, 1995; van den Broek, Bohn-Gettler, Kendeou, & Carlson, 2011). Standards of coherence vary according to different factors, such as the role of working memory capacity (Linderholm & van den Broek, 2002), reading goals (e.g., van den Broek, Lorch, Linderholm, & Gustafson, 2001), or text genres (e.g., Narvaez, van den Broek, & Ruiz, 1999).

The dynamics of reading processes are the interaction between automatic and strategic processes. When a reader proceeds through a text, concepts presented in the text or retrieved from background knowledge constantly fluctuate. The fluctuations in activations of concepts during reading result from four types of mechanisms. First, concepts in the newly read text segment are activated. Second, text elements from immediately preceding reading cycles can be integrated into this activation. Third, elements from prior text or from the reader's background knowledge can be (re)activated through an automatic associative process, called the *cohort*

activation mechanism in the Landscape Mode. It is an effortless memory-based comprehension process, which occurs automatically outside the reader's awareness. Fourth, readers may involve constructive processes, by which they strategically (re)activate concepts from prior reading cycles or background knowledge to form different types of semantic coherence-based relations to currently active text elements. These constructive processes carry on until the readers are satisfied with their standards of coherence (McNamara & Magliano, 2009; Yeari & Paul van den, 2011).

In conclusion, the Landscape model is an interactive view which reconciled two different views—memory-based and constructionist—by implementing them into a single conceptual framework. This provides a broader understanding of how our previous knowledge and new information work together in the text comprehension processes.

2.2.4. Sociocultural theories in reading

Sociocultural theory emphasizes the interdependence of social and individual processes in the development of human cognition. During this learning process, humans use culturally “constructed artifacts, concepts, and activities to regulate the material world of their own and each other's social and mental activity” (Lantolf & Thorne, 2000, p. 62). From a sociocultural perspective, language has been viewed as a means of input for the social activities of everyday lives. Human cognition and its development cannot be separated from the society and culture in which it is used (Zuengler & Miller, 2006).

Vygotsky's sociocultural theory (see Vygotsky, 1978) is probably the most quoted sociocultural perspective; and others, for example activity theory (e.g. Chaiklin & Lave, 1993; Leontiev, 1981) and cultural-historical activity theory (Cole, 1996; Cole & Engestrom, 1994), have extended, elaborated upon, or refined aspects of Vygotsky's theory (see discussions in

Zuengler & Miller, 1994). According to Vygotsky, studying how an individual engages in social activities, and how these influence mental processes, is necessary to understand human learning. Reading, like other aspects of learning, is a social practice. The social context affects when you read, what you read, where you read, who you read with, and, of course, why and how you read (Gee, 2002; Vygotsky, 1978). The development of language learning occurs when a learner engages in socioculturally meaningful activities (Lantolf & Thorne, 2000). This suggests that learning activities in a language classroom do not occur in isolation, but rather are built into a socially engaged environment (Coyle, 2007).

2.2.5. Summary of reading comprehension models

All of the aforementioned models of reading processes have provided insights into what happens in the process of text comprehension, particularly in the inference process. Although these models of reading comprehension process-proposed different terms to describe the reading comprehension process, their overall reading comprehension processes share some similarities: the reading comprehension process involves constructing the meaning of the text the reader read, integrating both explicit textual and background knowledge to arrive at the coherence meaning of the text through building a situation or mental model of the text the reader reads. One common area of agreement of all these theories is that construction of a situation or mental model of the text to enable a higher level understanding of text is a common aim of successful reading comprehension. The construction of a coherent situation representation of the text requires inference generation by the readers in identifying relations between parts of the text (van den Broek, 1995). Therefore, all models of text comprehension were applied in this research as the theoretical foundation for a better understanding of text comprehension processes.

2.3. Reading comprehension skills

The various aforementioned models of reading comprehension provide some insights into the ways that reading comprehension processes involve different paths in order to arrive at the meaning of the text the reader read. As postulated by these different reading comprehension processes, readers seem to apply any number of different reading skills that are best suited to the text that they are reading, in order to ultimately understand a reading passage or text (Pressley, 2000).

With respect to different language comprehension skills, according to the Simple View of Reading (Gough & Tunmer, 1986), reading comprehension was initially viewed as the product of word decoding and language comprehension. Language comprehension skills were classified as two types of skills—lower and higher level comprehension skills (Hogan et al., 2011). These types defined lower level comprehension skills as vocabulary and grammar and such like, and higher level comprehension skills as those required in a discourse context such as inferencing (Hogan et al., 2011). In this study, the definitions of the two types of comprehension skills—lower level (i.e., vocabulary) and higher level (i.e., inferential skills) comprehension skills—were based on the study of Hogan et al. (2011). Details of these two types of comprehension skills will be discussed below.

2.3.1. Lower level comprehension skills

Lower level comprehension skills are crucial for explicit comprehension of the text, as well as serving as the foundational knowledge upon which higher level comprehension skills are based. These skills include vocabulary and grammar (Hogan et al., 2011). Vocabulary knowledge has been demonstrated as an important lower level comprehension skill. Fluent L1 readers are likely to recognise almost all of the words they encounter (98-100 per cent of all

words in a text) (Pressley, 2006). In contrast, the majority of students who have limited knowledge of word recognition tend to have significant difficulties with comprehension (Westwood, 2008). Furthermore, grammatical knowledge is crucial, because it guides the integration of word meanings into propositional meanings on which the situation model of the text is based (Poulsen & Gravgaard, 2016). In sum, linguistic knowledge, such as recognising the meanings of words and storing groupings of words according to basic grammatical information, is a necessary skills to comprehend at the lower comprehension levels (Grabe & Stoller, 2011), which involve translating the written code into meaningful language units (Kendeou et al., 2014).

However, necessary skills, having only lower level comprehension skills, may not be adequate for successful reading comprehension. Some students who have acquired ample word-reading ability and fluency may still have difficulty understanding what they are reading, because they still lack higher level comprehension skills, which facilitate their accurate comprehension. (Cain & Oakhill, 2006b).

2.3.2. Higher level comprehension skills

Hogan et al. (2011) stated that higher level comprehension skills consist of the skills which are necessary to construct a mental model of a text's meaning. These skills include inference making (see more at section 2.4.), comprehension monitoring and structure knowledge. Comprehension monitoring, involves the capacity to reflect on one's own comprehension and difficulties being experienced while reading. Successful readers are typically aware of their comprehension as they read or listen to written text, and, when they experience difficulty, they automatically use a variety of strategies, such as rereading, to increase their comprehension (Pressley & Afflerbach, 1995). Without comprehension monitoring, comprehension itself may be deficient. The skill of comprehension monitoring facilitates the reader's ability to detect when an inference is required. Less skilled readers, with difficulties in comprehension monitoring, may

not be able to monitor their reading, so that they do not know when to apply appropriate reading skills for accurate comprehension (Oakhill & Cain, 2012).

Furthermore, text structure refers to how a written text is organized to guide readers' comprehension. Knowledge of text structure may help the reader to relate the ideas in a text. Inadequate knowledge about text structures, which may arise because of insufficient reading experience, is a possible source of comprehension failure (Perfetti, 1994). To be able to understand a written text, one must be able to understand relationships among elements in a text (Graesser & Clark, 1985; Langston & Trabasso, 1998). The ability to recognise text structure will facilitate readers' ability to attend to the most significant details in the text, resulting a better comprehension (e.g., Gersten et al., 2001; Hogan et al., 2011).

Higher level language skills are important to an individual's language proficiency, and to reading and listening comprehension outcomes (Kendeou et al., 2008). These higher comprehension skills are very necessary for comprehension particularly at the discourse-level (Cain, Oakhill, & Bryant, 2004). Prior to developing skills at the higher level comprehension level, it is necessary that readers acquire lower level language skills. Conversely, after they have developed their higher level skills, their ability to create accurate mental models also raises their vocabulary and grammar skills, because these lower and higher comprehension skills often demonstrate a reciprocal relationship (Kendeou et al., 2014). Generally in schools, teachers often pay more attention to children who have difficulties with lower level comprehension skills, such as spelling. However, those who can read accurately, but still have problems with text comprehension, are likely to remain unidentified and neglected (McGee & Johnson, 2003).

In summation, two significant higher level comprehension skills—comprehension monitoring and text structure knowledge—were discussed in this section. The next section will

provide more information on the various aspects of inferential skills, which is the emphasis of this study.

2.4. Inferential skills

The language of any text, spoken or written, is not a completely explicit state of the information needed for coherence. Readers may not perceive the deeper message of the language, either spoken or written, if they only understand the text as explicitly expressed in the text (Currie & Cain, 2015; Kintsch & Rawson, 2007). To understand the implicit meanings of a text as well, the reader is required to make inferences by connecting all of the elements in the text (Graves et al., 2007). Cain and Oakhill (1998) and Snow (2002) described that making inferences is the skill of comprehending information from a written text and going beyond the literal message. Inference generation relies on the ability to integrate clues in the text with prior knowledge to achieve the fully integrated deeper and coherent representation of text (Pressley, 2000).

2.4.1. The development of inferential skills

The skills of inference and integration can develop and improve as age progresses. Children who are six to eight years of age are already likely to be competent in making inferences (Casteel, 1993). As children become older, the inferences they generate change in both their quantity and quality. For example, with development children increasingly generate inferences that connect larger text units such as paragraphs, event episodes, and sections, rather than just inferences that connect individual events and facts within an episode or section. Also, children's inference ability on abstract connections grows (e.g., between themes, to characters' feelings) (Kendeou et al., 2014). Various studies on the development of inference have suggested that young children generate similar inferences to those made by adults; however, they are less

likely to do so as quickly as adults (Casteel & Simpson, 1991). Older students make inferences more spontaneously than younger children do (Sipay & Harris, 1990).

Oakhill and Yuill (1991) explained three possible causes of differences in inference-making between skilled and less-skilled comprehenders. These include general knowledge deficits that can restrict less-skilled comprehenders' inference making; less-skilled comprehenders do not know when it is appropriate to make inferences and have limited abilities in integrating pieces of information given in a text with prior knowledge. Readers who are poor at inferring meaning beyond the written texts are not likely to comprehend a text critically (Cragg & Nation, 2006).

2.4.2. Role of automaticity in inference generation

Automaticity is the ability to perform a complex task quickly, with few conscious attentional resources (LaBerge & Samuels, 1974). Skills and knowledge, learned to the level of automaticity, are better retained in long-term memory (Flor, 1995). Therefore, automaticity plays an important central role in the characterization of skill acquisition and the development of expertise (Logan, 1997). The four properties of speed, effortlessness, autonomy, and lack of conscious awareness are commonly used in definitions of automaticity (LaBerge & Samuels, 1974; Logan, 1997). For example, Samuels and Flor (1997) concluded that automatic behaviours are fast, accurate, not under conscious control, and seemingly effortless. The concept of automaticity can be applied to any reading skill, including those at the letter, word or text level (Logan, 1997). For example, initially decoding will be a difficult and effortful task for the beginning reader. However, with practice, automaticity of decoding will be achieved according to theorist such as Logan (1997). Once decoding skills become automatic, the reader switches his attention to the comprehension of a text, which will be derived from both the information provided in the text and knowledge that is already in the reader's own mind (Samuels, Ediger,

Willcutt, & Palumbo, 2005; Thurlow & van den Broek, 1997). Through automaticity, a skilled reader is able to perform multiple tasks at the same time, such as decoding the words, comprehending the information, relating the information to prior knowledge, making inferences, and evaluating information from a text (Samuels & Flor, 1997).

2.4.3. Types of inference

This section is a brief review of types of inference skills that have been used in previous published research literature. There have been numerous research studies conducted on inferential skills, focusing on distinctions between two or three types of inference (Kispal, 2008). Although researchers have used different terms to describe their proposed types of inference, there are similarities among these inference types. The specific details of these types of inference are discussed below.

Coherence and *elaborative* inferences were the two types of inference, introduced by Barnes and Dennis (1996). Coherence inferences consist of a coherent text where readers are required to use their linguistic knowledge to draw connections within the text. Elaborative inferences integrate prior information given in the text to expand on explicit information knowledge and build a situation model of the text. In 1999, Cain and Oakhill adopted Baker and Stein's terminology (1981): *text-connecting* and *gap-filling*, to utilise in their study. Text-connecting inferences (also called intersentence inferences) require information integration from different parts of a text to establish coherence. Gap-filling inferences require information from the reader's existing background knowledge. Overall, these two terms share some similarities with Coherence and elaborative inferences (Barnes, Dennis, & Haefele-Kalvaitis, 1996). As an example of coherence or text-connecting inferences, "Denise poured everyone a drink. The champagne was a good vintage" (Cain, 2010, p. 103) information combined from the two sentences infers that the drink Denise poured was the champagne in the second sentence. An

example of elaborative inferences or text connecting inferences can be seen from “Then they set off for home, pedalling as fast as they could. Debbie was very tired when she got home, but she was just in time for dinner” (Cain & Oakhill, 1999, p. 495). The readers need to apply their background to related "pedalling" in order to answer that they travelled home by bicycle.

In addition, two further types of inferences, *necessary* and *elaborative* inferences were classified by Cain (2010). Necessary inferences are required to make connections between texts in order to get the right meaning of the whole text. For example, from these sentences, “Rick walked over to the buffet table. The cake looked delicious” (Cain, 2010, p. 56), readers are required to link these sentences, so they can infer that the cake is likely to be a part of the buffet. The second type is elaborative inferences, which help readers to enrich their mental representation of the text they read. Therefore, they are able to recall and synthesise the texts. For example, when analysing the following two sentences, “Charlie dug a hole to plant a new fruit tree. He had always wanted to grow his own apples” (Cain, 2010, p. 56). It is a logical inference that Charlie used a spade (Cain, 2010).

Local coherence and *global coherence* are two inference terms—which have been widely used. Graesser, Singer, & Trabasso (1994) proposed these two inference types. Local coherences typically involve the integration of separate propositions within the text. In contrast, inferences necessary for global coherence often rely heavily on the ability to connect ideas that are not explicitly stated in the reading text. These two inference terms were also used in the study of Currie and Cain (2015). Additionally, Calvo, Estevez, and Dowens (2003) adopted two inference types from Singer’s terminology (1994) in their study. They were connective inferences and elaborative inferences. The connective inferences are necessary to establish a coherent propositional representation of the successive parts of the text, thus integrating explicit

information in a message. Elaborative inferences serve to extend or refine the explicit content and thus help to construct a mental model of the situation described by the message.

Bowyer-Crane and Snowling (2005) have used the terminology of coherence and elaborative inferences, and expanded upon it with two more types of inferences by adding *knowledge-base* and *evaluative* inferences. Knowledge-based is an inference wherein the reader needs to integrate both their world knowledge and textual coherence to comprehend the text. Considering the following sentences as an example, “The campfire started to burn uncontrollably. Tom grabbed a bucket of water.”(p. 192), in order to comprehend the full meaning of the text, one could make inferences by using their background knowledge and the coherence between these two sentences. The evaluative inference is the type of inference in which the reader greatly applies their life experience and general knowledge to enrich their mental representation. This inference is also necessary to facilitate the understanding of the text. For instance, “Helen fell off her bike and broke her arm. She started to cry” (p. 192). The reader could infer that Helen was in pain after the accident, so she was likely to be crying after the fall.

In sum, although different terms of inference have been used to describe the diverse types of inferences, these various terms can roughly be divided into two main classifications of inferences. The first category of inference facilitates connecting the different idea units within the text in order to achieve the coherence meaning of a written text. Text-connecting, coherence, or necessary inferences have similar qualities as this first category of inference. The second category involves both understanding the explicit meaning of text and the heavy application of background knowledge for an implicit comprehension of the text. Different terms, such as gap-filling, elaborative, global inferences are generally defined into the second category because background knowledge appears to be an important factor in these inferences. However, these two

aforementioned categories are only general categorical distinctions, because there are a number of details among each type of inference as defined by individual researchers.

2.4.4. Inference generation while reading

Successful reading comprehension requires that the reader produce a coherent mental representation of the text. The more coherent the mental representation of the text is, the better the comprehension of the text will be (Thurlow & van den Broek, 1997). Readers construct a coherence meaning by generating inferences that make connections between different ideas in the text or between the text and their background knowledge (Graesser, Bertus, & Magliano, 1995). The differences of inference generation depend on whether the reader is satisfied with the current level of comprehension or believes more connections need to be constructed in order to achieve a more coherent mental representation of the text (Clinton, 2011). The concept of standards of coherence was proposed (van den Broek et al., 1996; van den Broek et al., 1999), which provides a theoretical framework for understanding the different levels of inference generation among different readers, texts, or contexts (van den Broek et al., 2001). A reader with low standards of coherence would generate the minimal amount of inferences necessary to maintain basic comprehension (Christianson, Williams, Zacks, & Ferreira, 2006). Conversely, a reader with high standards of coherence would generate additional inferences beyond those necessary to maintain comprehension in order to reach in-depth comprehension of the text (van den Broek, Ridsen, & Husebye-Hartmann, 1995). In inference generation, standards of coherence are determined through a variety of factors that may involve characteristics of the reader, the context for reading, or the text. More specific details of some of these factors are described below.

Background knowledge

Readers' background knowledge has also been shown to be an integral factor in the comprehension of text through inference. Lack of the background knowledge necessary for important inferences may result in weakness or failure in inference generation (Cook, Limber, & O'Brien, 2001). The background knowledge refers to both content knowledge and knowledge about text structures (e.g., narratives or expository types) because different texts have different structures (Kendeou et al., 2014).

The significance of background knowledge has been demonstrated in several studies. For example, the results from Kendeou and van den Broek's study (2007) indicated that students who have poor background knowledge in science (e.g., incoherent ideas and misconceptions related to the topic of a text) made significantly fewer correct inferences during reading science texts as compared with students with better background knowledge. In addition, in another study with school age children, Elbro and Buch-Iversen (2013), demonstrated the indispensable role of relevant background knowledge relating to a passage as a predictor of inferential skills.

Although background knowledge is an important resource in inference making, a reader who has sufficient background knowledge may not be able to automatically apply their background knowledge in the process of inference making. The knowledge may not be easily accessible or not seem pertinent to the reader (Kispaal, 2008). One of the comprehension difficulty problems may be that the reader has the relevant knowledge but does not use it (Cain et al., 2001; Oakhill & Cain, 2007). In support of this idea, the successful background knowledge intervention of Elbro and Buch-Iversen (2013) showed that after eight 30-min sessions a large training effect was found in students' inference making skills with a substantial and sustained transfer effect to a standard measure of reading comprehension.

Working memory

Working memory enables the reader to maintain information while processing incoming information, therefore this ability makes it possible for the reader to integrate the two pieces of information (Baddeley, 2003; Daneman & Carpenter, 1980; Swanson & O'Connor, 2009). Working memory may be particularly crucial for inference generation because a reader or listener needs to maintain activation of previously processed information while relating this to the piece of text currently being processed (Currie & Cain, 2015). Generally, younger children might fail to connect several pieces of information if their work memory capacity limits the amount of information that they can store when processing text (Schmidt & Paris, 1983).

In adult learners, the role of working memory in inference generation has been demonstrated in several previous studies. For example, using the Reading Span Test, Daneman and Carpenter (1980) observed that individual differences of a group of college students in working memory capacity are associated with individual differences in inference generation and text integration. Daneman & Carpenter found that low-span readers were unlikely to correctly identify the antecedent of a pronoun when six or seven sentences intervened between the two. By contrast, high-span readers could always identify the antecedent of the pronoun, regardless of the number of intervening sentences. These studies suggest that working memory capacity is a major determinant of the efficiency of various important comprehension processes in reading. Estevez and Calvo (2000) investigated the time course of predictive inferences as a function of working memory capacity. These authors presented the context sentences with a fixed-pace procedure and manipulated the interval between the end of an inducing context sentence and the onset of a target word representing the inference, or monitored eye movements during self-paced reading of a continuation sentence that confirmed an inference suggested by the context sentence. The finding demonstrated that readers high in working memory capacity drew inferences earlier than

low-span readers did, as the former took about 500 ms less than the latter to show inference activation in the fixed-pace presentation. Calvo (2004) examined the extent to which predictive inferences depend on the readers' available vocabulary knowledge and working memory capacity among college students. Eye fixations were assessed during the reading of continuation sentences confirming inferences suggested by a preceding context sentence. The findings showed that both vocabulary knowledge and working memory make specific, although delayed, contributions to inferences: Vocabulary knowledge facilitates the selection of linguistic representations for the inference; working memory helps to integrate meanings in situation model construction of the inference.

Reader's interests and goals

Two types of interest have been investigated in text comprehension: topic interest and text-based interest. Topic interest is a stable disposition in which one prefers to read about certain topics, such as sports, science (Schiefele & Krapp, 1996). Text-based interest, specific to the text, is a temporary state in which one is engaged in a text because of its features (Schiefele, 1992).

Some researchers have argued that interest prompts deep processing in which the reader thinks critically about the material presented in the text (Krapp, 1999; Silvia, 2006). As an example, the study of Boscolo and Mason (2003) showed that the participants' performance on offline measures which required inference generation were positively associated with topic interest. Furthermore, other research by Clinton (2011) investigated the effects of interest on inference generation while reading. Analyses from the reading of two scientific texts and writing recollections, comprehension questions, self-reports on topic interest and text-based interest, and the think-aloud task while reading, the data from sixty nine undergraduate students indicated that

topic and text-based interest were both found to be positively associated with inference generation (Clinton, 2011).

Reader's goals are another factor that influences how readers generate inference because readers adjust cognitive processes and strategies in accordance with their reason for reading (Horiba, 2000; van den Broek et al., 2001). For instance, reading for an academic reason definitely requires a different kind of processing and different strategies than reading for pleasure (Brannon, 1998; Linderholm & van den Broek, 2002). It concurs with the evidence from van den Broek et al.'s and Brannon's studies. Brannon (1998) as well as van den Broek et al. (2001), which investigated college students' use of reading purpose to guide text processing. Their data revealed that students used different cognitive processes and strategies when reading for study versus when reading for entertainment. When reading for study, participants read at a slow pace and emphasised on cognitive processes and strategies such as inference and paraphrasing. In contrast, when reading for entertainment purposes, participants read at a fast pace and related in cognitive processes and strategies such as generating associations and formulating opinion about the text.

Language skills

Inferential skills have been assessed as being a significant higher level comprehension skill (Hogan et al., 2011; Kendeou et al., 2014; Silva & Cain, 2015). Theoretically, one will be able to draw on higher comprehension skills when good lower level language skills, such as vocabulary and grammar, are employed and coherence organized (Pertetli, 2007). Sufficient lower level comprehension or language skills are required to begin to employ higher level comprehension skills (i.e., inference etc.). Language comprehension skills needed to comprehend explicit meaning of the text, (see section 2.3.2.) such as vocabulary (see section 2.5.1.) and grammar, or foundational language skills (Hogan et al., 2011; Lepola, Lynch, Laakkonen,

Silvén, & Niemi, 2012), are crucial for the comprehension and production of more complex discourse (Silva & Cain, 2015). For instance, the grammatical knowledge of the use of cohesive devices is important for integrating the meaning of sentences (Cain & Nash, 2011). Therefore, without a sufficient explicit understanding of the text, the model would be incomplete and inferences could not be drawn (Cain et al., 2001; Catts, Adlof, & Weismer, 2006).

Several previous studies have shown the role of language skills, particularly vocabulary knowledge, in supporting inference generation (e.g., Hatami & Tavakoli, 2012; Nassaji, 2006; Prior et al., 2014). As an example, one research purpose of Silva and Cain (2015) was to determine how lower level comprehension skills (receptive vocabulary and grammar) and verbal memory supported early higher level comprehension skills (inference and literal story comprehension). The findings of Silva and Cain's (2015) revealed that vocabulary was a unique predictor of concurrent narrative comprehension. Longitudinally, inference skills, literal comprehension, and grammar made independent contributions to reading comprehension one year later. The influence of vocabulary on reading comprehension was mediated through both inference and literal comprehension. Furthermore, the findings of studies with undergraduate students validates this idea. The data from Calvo's study (2004) demonstrated the significance of the prior vocabulary knowledge of the participants as a determinant in their abilities for inference generation.

2.4.5. Inference teaching

It is widely accepted by reading theorists and researchers that the ability to make inferences is necessary for reading comprehension (Kendeou et al., 2008; Oakhill & Cain, 2007). Proficient readers are able to automatically use inferences to make meaning of a text, whereas those who are less skilled need to be trained in what an inference entails and how to make it (Graves & Philippot, 2009). However, in reading classrooms, sometimes students do not

know how to answer inferential questions which need integration information from prior knowledge and textual content. Moreover, some poor readers do not even distinguish between literal and inferential questions, the different text comprehension processes they require in order to answer inferential questions (Carr, Dewitz, & Patberg, 1989).

However, the significance of inference in successful reading in L1 has been well established in numerous studies (Cain & Oakhill, 1999, 2007; Kendeou et al., 2008; Silva & Cain, 2015). Without explicit training on inference, it may be difficult for readers, particularly children, to answer inferential questions (Davoudi, 2005). Similarly, as for improving reading in ESL, teaching inferencing skills explicitly in class and drawing students' attention to the significance and benefits of strategic reading could be a very effective technique (Lee, 2013). Therefore, training in the application of inferential skills should be provided to readers during reading instruction to aid their development of reading comprehension in both L1 and L2.

Although adult learners were the emphasis of the study in this thesis, related research studies of inferential skill interventions in both children and adults are worth discussing in this section, because several studies on the efficiency of inference training have been conducted with school age children (e.g., Elbro & Buch-Iversen, 2013; Fritschmann, Deshler, & Schumaker, 2007; Winne, Graham, & Prock, 1993), but few studies have attempted to investigate it with adult learners. Thus—examples of studies of inference intervention in both children and adults are discussed to demonstrate the broader ideas of how inference skills have been taught in these studies.

A few studies which demonstrated the efficiency of inference intervention are discussed, for example, McGee and Johnson (2003), studied the impact of inference training to both skilled and less skilled children. The Neale Analysis of Reading Ability (NARA) Form 2 (Neale, 1989) was administered to 75 children from six to nine years of age to identify their reading skills in

English. The experimental group, with both skilled and less skilled readers, was taught how to make inferences during a period of six sessions. The control group was instructed in standard comprehension strategies. The findings showed that less skilled comprehenders, from both the experimental group and the control, made significantly greater improvement than the skilled group. However, the students in the experimental group, who were less skilled and had also been taught inference skills, made much greater improvement than the less skilled learners in the control group. McGee and Johnson concluded that explicit inference teaching is a worthwhile reading task that should improve readers' reading ability.

In the McGee and Johnson's inference training consists of three main activities. The first activity was lexical inference; the participants were taught to look for clue words in the text that would help them understand the text. The second activity, question generation, was used to introduce children to the way in which certain words such as "who?", "where?" "why?" and "when?" could be used to formulate questions about the passage. The third activity involved prediction; the children reading a text in which some of the sentences had been obscured by opaque removable tape and then attempting to guess what each hidden sentence might be on the basis of adjacent textual clues.

Furthermore, there have been some inferential interventions with L2 children. For example, Yeh, McTigue, and Joshi (2012) investigated an intervention program in developing inferential comprehension in a sixth grader who studied English as a second language. Steve (pseudonym) was proficient in word reading and was able to detect explicit information while reading, but he struggled with linking textual information to yield integral ideas. The programme aimed to assist Steve in both local connections (i.e., word level) and global connections (i.e., connecting ideas within and beyond the text). The 10 week intervention lesson consisted of (a) word analogy, (b) short riddles, (c) short mystery stories, and (d) modeling with think-alouds.

The result showed that there was a substantial progress of Steve's logical reasoning, meta-cognitive thinking, and inferential reading skills.

Lee (2013) shared a thinking-aloud technique to enhance inferencing, which he used in his classroom as described in his journal article on inferencing in an ESL classroom. The sample lesson was conducted with a class of primary ESL students, who were approximately 11 years old in Hong Kong. In Lee's sample lesson, first, he told the students explicitly about the purpose of the lesson, that they were to learn how to interact with the text itself, rather than focus on the task or assignment. Second, Lee handed students an original school-based reading text without the questions based on the reading text. After 10 minutes for silent reading, Lee demonstrated to his students how he interacted with the reading text (think-aloud process) when reading. For example, Lee described that "I underlined and circled the key words and key phrases, line by line" (p.733). Third, students practiced the thinking-aloud process with the rest of the text. Lee also pointed out some words in the text that students could infer to previous sentences. In this way, Lee pointed out how this thinking-aloud helped to improve the inference making of the students. That is, he pointed out how to use inference in his lesson. Finally, after the lesson, Lee explicitly told the students what the thinking-aloud process is. In general, the example lesson from Lee only suggests that using the thinking-aloud technique might help students while monitoring themselves during reading. Inferencing might improve as well.

Regarding related research in adults, this has been very limited of reported studies. Collins, Brown, and Larkin (1980) proposed eight strategies used by skilled adult readers in making inferences to understand a text in their study. They argued that, in creating an understanding of text, readers progressively refine models of the text until they converge on a model that seems to be the most plausible. This refinement process makes use of several problem-solving strategies. These strategies consist of: 1) Rebinding is used when a reader

suggests or hypothesizes a possible interpretation, immediately realizes that this interpretation conflicts with previous information, and then substitutes another interpretation. In essence, the reader binds (connects) all the information up to a point but then changes the interpretation (rebinds) to make it a better or more plausible fit; 2) Questioning a default interpretation occurs when readers recognize that they are not progressing in their understanding of the text, so they question their use of the information by trying to come up with another interpretation; 3) Questioning a direct conflict occurs when readers identify a conflict between an interpretation that was just made and subsequent, new information; 4) Questioning an indirect conflict occurs when readers identify a conflict between an interpretation that was previously made and subsequent, new information; 5) Near shifting of focus occurs when readers see that they are unable to progress in their current line of thinking, so they move from a question they are unable to solve to a closely related one that opens up other options; 6) Distant shifting of focus occurs when readers see that they are unable to progress in their current line of thinking, so they move from a question they are unable to solve to a distantly related one that opens up other options; 7) Case analysing occurs when readers tentatively consider several alternative interpretations; and 8) Most-likely-case assigning occurs when readers decide from several possible interpretations which seems to be most plausible for them.

Fritschmann et al. (2007) explored possible effects of instruction in inference skills on reading comprehension skills of adolescents with learning disabilities. Eight students of ninth-grade, whose reading scores fell at least five grade levels below their current grade placement, participated in the study. Inference skills in this study consisted of interacting with the passage and the questions, and classifying inference questions into different types (i.e., purpose, main idea/summarization, prediction, and clarification questions, finding clues, returning to questions). They used measures of comprehension quizzes, a standardized test of reading comprehension, a test of strategy use, a test of strategy knowledge, and a reading satisfaction

measure. The result revealed that students with disabilities can learn to use inference skills to answer different inferential questions, and perform better reading comprehension.

Fritschmann et al's successful inferential strategy training consists of five steps. During the first step "Interact with the passage and the questions", students first preview the passage, paying particular attention to the title and the length of the passage. Then, they read the questions and identify two main categories of questions: factual or think and seek (inferential) questions. Next, students classify think and seek questions into four types: purpose, main idea/summarization, prediction, and clarification questions. In the second step, "Note what you know," students activate any background knowledge or experiences they may have related to the topic and questions, underline any key words in the questions that indicate what information to look for in the passage, and note code letters next to each question to indicate the category of the question and the question type. The third step, "Find the clues," students carefully read the passage and find and underline clues that are directly related to key words in the questions. They then create tentative answers to the questions mentally. The fourth step, "Explore more details," prompts students to look for any additional clues in the passage that support the tentative answers they have selected. The final step, "Return to the question," calls for the students to go back to each question and make sure that an answer has been selected and marked.

While the majority of researchers applied a variety of general reading comprehension techniques to inference instruction (Kispal, 2008), the general steps of teaching inferences, which have been discussed above in both research with children and adults, are similar. Therefore, inference training in both children and adults may provide some ideas which can be applied in any classroom. Reading theme or language complexity may vary according to age groups.

2.4.6. Research on inferential skills in L1 and L2

2.4.6.1. Research on inferential skills in L1

Numerous research studies on inference in L1 have been conducted with school age children who had English as their first language. The discussion on inferencing may have started with the work of the British researchers, Jane Oakhill and Kate Cain, who have been studying various aspects of inferencing in reading comprehension. Their work has been particularly important in this field (Kispaal, 2008; Tennent, 2015). For example, Cain and Oakhill (1999) investigated the direction of the relationship of inferential skills and reading comprehension and of possible sources of inferential failure. Three groups of children participated: same-age skilled and less skilled comprehenders, and a comprehension age match group. Two types of inference were investigated, i.e., text-connecting—where the reader makes connections between different sentences within the text, and gap-filling—where the reader brings information from outside the text to facilitate fully comprehension of the text. The findings indicated that the ability to make inferences was not a by-product of good reading comprehension; however, good inference skills themselves are a plausible cause of good reading comprehension ability. The group of skilled comprehenders was more successful in making text connecting inferences than the other two groups, but interestingly the skilled comprehenders were not significantly better than the less skilled comprehenders on the gap-filling inferences. Similarly, the role of inference in reading comprehension was demonstrated in the study of Cain et al. (2001), which investigated the relationship between young children's comprehension skills and inference making skills (coherence and elaborative inferences) by controlling for individual differences in general knowledge. A multi-episode story was read to the children, two types of inference were assessed. Skilled comprehenders and less skilled comprehenders were assessed as to their inferential skills by their answers to two types of inference questions. The results argued that there was a strong

relationship between comprehension skills and inference-making ability when knowledge was equally available to all participants. The findings of both studies were consistent with the role of inferential skills in reading comprehension.

In addition, research studies have further investigated the influence of inferential skills and other variables on reading comprehension. One further longitudinal study on children by Oakhill and Cain (2012) sought to identify predictors of reading comprehension. The participants were year three (7-8-year-old) and year six (10-11-year-old) students. Different measures on reading ability, vocabulary, phonological awareness, working memory, grammatical knowledge, general intellectual ability, inference and integration skill, comprehension monitoring, and knowledge and use of story structure were employed. The findings showed that reading comprehension skill measured in Year 3 was a strong predictor of comprehension in Year 6; vocabulary and verbal IQ also made significant unique contributions to the prediction of comprehension ability across time. The higher level comprehension skills of inference, comprehension monitoring, and knowledge / use of story structure were the strongest predictors of reading comprehension in year 6. This suggests that higher level comprehension skills show more significant role when texts are more complex. More recently, Silva and Cain (2015) explored how lower level comprehension skills (receptive vocabulary and grammar) and verbal memory support early higher level comprehension skills (inference and literal story comprehension), and the predictive power of these skills on subsequent reading comprehension. Four to six-year-old children completed assessments of nonverbal ability, receptive vocabulary and grammar, verbal short-term memory, and inferential and literal comprehension of a picture book narrative. Vocabulary was a unique predictor of concurrent narrative comprehension. Longitudinally, inference skills, literal comprehension, and grammar made independent contributions to reading comprehension 1 year later. The influence of vocabulary on reading comprehension was mediated through both inference and literal comprehension. Therefore, the

results show that inference skills are significant to the construction of text representations in the earliest stages of reading comprehension development. Therefore, the results from these studies have shown the importance of inferential skills in successful reading comprehension. They give insights into how other skills, such as vocabulary, interact with inferential skills in the process of reading comprehension.

Furthermore, individual differences in inference generation has been one of the main areas of research. Two types of inference were primarily examined, i.e., text-based and knowledge-based inference in several studies (e.g., Cain & Oakhill, 1999; Cain et al., 2001; Currie & Cain, 2015). Several researchers, as shown by the following studies, have reached the conclusion that skilled readers are better at inference making than less-skilled readers. As an example, the study of Carlson et al. (2014) was to investigate differences between readers with different levels of comprehension skill when engaging in a causal questioning activity during reading, and the varied effects on inference generation. A total of 74 fourth-grade students with different levels of comprehension skill read narrative texts aloud and were asked causal questions at specific points during reading. Responses to questions were examined for the types of inferences the readers made during reading. Two types of inference (i.e., text-based and knowledge-based inference) were examined. There was no main effect of comprehension skill in terms of readers' text-based inferences made in response to the causal questions. However, readers differed in their use of knowledge-based inferences in response to the causal questions. Struggling readers generated fewer related knowledge-based inferences than did good readers when asked causal questions during reading. In conclusion, Carlson's findings were consistent with earlier studies (e.g., Cain & Oakhill, 1999; Cain et al., 2001), which found that both skilled and less skilled readers could achieved text-based inference, but less-skilled made fewer knowledge-based inferences than skilled readers did.

With respect to research on inferential skills in adolescent and adult learners, there has been limited research with adult learners. The two following studies investigated how different factors influence on successful reading comprehension. First, Cromley and Azevedo (2007) proposed a new model of reading comprehension, the direct and inferential mediation (DIME). They investigated effects of five predictors: background knowledge, inferences, strategies, vocabulary, and word reading on reading comprehension with 175 students in the 9th grade. Their average age was 14.20 years. Cromley and Azevedo (2007) suggested that all variables made significant contributions to comprehension directly and/or mediated by strategies and inferencing, and the ability to use strategies such as summarising and inferencing provided a greater contribution to reading comprehension in adolescents and adults, than in children. Second, Purvis (2014) investigated the reading comprehension and metalinguistic abilities of pre-service teachers in a territory institution. Purvis's findings showed that the skills of spelling, inferencing, and working memory were each found to make unique contributions to predicting reading comprehension performance, with inferencing demonstrating the highest level of contribution. In sum, these two studies agree with the argument that inference is a significant predictor of reading comprehension in adult learners.

Furthermore, another research aspect are the individual differences between skilled and less skilled readers in inferencing making. Two studies of Hannon and Daneman (1998) and Long et al. (1994) investigated the inferencing abilities of adult participants from higher education institution. The findings from both studies demonstrated that adults who were considered to be skilled readers make knowledge-based inferences spontaneously, while the less-skilled readers did not. Performance of skilled readers and less skilled readers are differentiated by their performance on tasks requiring them to make inferences.

Factors involving inference generation, such as readers' goals (van den Broek et al., 2001) and readers' interest (Clinton, 2011) were examined in adults. As an example, Clinton (2011) examine a cognitive process, inference generation, that could explain the positive association between interest and learning from texts. Clinton' study consisted of two studies. Native English speaking students from a university participated for course credit in this study. In Study one, sixty undergraduate students participated by reading two science texts, which differed in coherence levels, silently. The results replicated previous findings that topic interest is positively associated with recall and accurate answers to comprehension questions for both texts. In Study two, sixty-nine undergraduate students participated by reading the same two science texts while thinking aloud. The results of her study two indicated that topic interest was positively associated with inference generation while reading for the more coherently-written text. Subsequent analyses indicated inference generation partly explained the positive association between topic interest and accurate answers to comprehension questions for the more coherently-written text.

In conclusion, research on inferential skills in L1 focused on school-age children, who were English native speakers. The emphasis on young child participants may result from that the significance of the initial reading stages of young children. In addition, research in adults has been more likely to explore specifically one particular type of inferences in depth. Differences between readers in inference generation are common interests in L1 inference research.

2.4.6.2. Research on inferential skills in L2

Reading in L2 may be more complex than reading in L1, because L2 reading involves more than one language. Therefore, a number of factors from both L1 and L2 are involved in L2 reading, such as first language (L1) transfer, and the learners' level of L2 proficiency (Koda, 2005). Therefore, these different factors involved in L2 reading comprehension, particularly

vocabulary knowledge, have been repeatedly investigated. Vocabulary has been seen as a necessary skill in the development of L2 language proficiency, including reading (Hatami & Tavakoli, 2012). As a result, the main area of research regarding inferential skills in L2 is lexical inferencing, which is the ability to infer the meaning of unknown words. It may be that effective reading in L2 relies on the reader's ability in such language skills (Grabe, 2009). There is evidence of this from numerous investigations (e.g., Kaivanpanah & Alavi, 2008; Karlsson, 2014; Prior et al., 2014). English as L2 was the focus of these studies. Greater details are provided below.

Several factors, which may influence lexical inferencing, have been investigated. Wu and Shen (2009) investigated whether technical university EFL learners' reading proficiency affected their lexical inference performance and their responses to the contextual instruction. A total of 145 Taiwanese first-year technical university students completed the instruments, consisting of a reading proficiency test, a lexical inference task, and a vocabulary strategy questionnaire. Their finding indicated that there was a correlation between EFL learners' reading proficiency and their lexical inference performance and their reading strategies. Furthermore, the instruction of contextual inference had a positive effect on the more proficient learners' lexical inference ability.

Vocabulary knowledge, as a factor of successful lexical inferencing, has been widely investigated. For example, Hatami and Tavakoli (2012) determined whether breadth and depth of vocabulary knowledge are related to L2 ease and success in lexical inferencing. The findings indicated that although both vocabulary breadth and depth played an important role in lexical inferencing success, vocabulary breadth made a more important contribution. The results further revealed that neither vocabulary breadth nor depth had a significant effect on perceived ease of inferencing. The finding of Hatami and Tavakoli (2012) is consistent with Prior et al.'s study,

which examined the predictive roles of L2 vocabulary knowledge and L2 word reading skills in lexical inferencing in the L2 on 53 Israeli high school students who emigrated from the former Soviet Union, and spoke Russian as an L1 and Hebrew as an L2. Vocabulary and decoding knowledge predicted L2 reading comprehension, which in turn was strongly related to lexical inferencing abilities in the L2. In addition, the ability of decoding predicted additional variance in lexical inferencing, beyond the role of reading comprehension. These findings support the idea that beginning L2 readers with more word knowledge demonstrate better lexical inferencing abilities.

There has been little evidence as to differences in inferencing generation between two languages. As an example, Karlsson (2014) investigated the differences existed between advanced learners' inferencing skills in their first versus second language. Fifteen university students were examined by two inferencing tests in their L1 (Swedish) and L2 (English) respectively. The results of the study showed that the learners made extensive use of contextual clues, in their L1 as well as in their L2.

Besides lexical inferencing in L2, there has been little research, investigating other similar types of inference, comparable to what has been widely conducted in L1 children research. Lee's study (2014) is one of the few investigations in L2 research, which investigated other types of inference, not lexical inferencing. Lee (2014) investigated how ESL primary school students draw inference during reading. Nine sixth grade students at a school in Hong Kong participated in this study. To reveal how they made inferences while reading English texts, they were asked to participate in a think-aloud session in which they read a narrative text and an informational text in English. The analyses reported that they had low performance in bridging and global inferencing, and they even made fewer inferences with the informational article.

In sum, previous research has identified strong relations between lexical inferencing abilities and reading comprehension (Cain & Oakhill, 1999; Cain, Oakhill, & Elbro, 2003). Specifically, lexical inference is the primary strategy that learners use when they attempt to identify the meanings of unknown words (Hatami & Tavakoli, 2012), which relates to vocabulary acquisition. Vocabulary knowledge and lexical inference are very important for reading, particularly in L2 reading. This is a plausible reason as to why lexical inferencing is the type of inference which several researchers have given importance.

2.5. Additional skills assessed in this study

In addition to inferential skills, which were the primary skills this study aimed to investigate, three further skills were also assessed in this study. Each of the reading and reading-related skills to be assessed will be systematically discussed in relation to the aims of the research below.

2.5.1. Vocabulary

Language-learners, teachers, and researchers agree that vocabulary is an essential element in the process of learning a language (Schmitt, 2008). Reading comprehension ability and word knowledge are highly correlated in both children and adults (Carroll, 1993). As Wilkins (1972) suggests “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p.111).

Currently, researchers no longer regard vocabulary knowledge as a single dimension but as a multidimensional construct (Hatami & Tavakoli, 2012). A distinction has often been made between two dimensions of vocabulary knowledge: depth and breadth (or size). Breadth of vocabulary knowledge is defined as vocabulary size, or the number of words for which a learner has at least some minimum knowledge of meaning (I. S. P. Nation, 2001). The size of

vocabulary needed for various types of language use varies according to the task. For instance, one needs a vocabulary of around 3000 word families to understand a basic conversation, 5000 word families to read a novel, and at least 9000 words to cope with more advanced texts (Nation, 2006). Depth of vocabulary knowledge is defined as a learner's level of knowledge of various aspects of a given word, or how well he or she knows this word (Read, 1993). Related research revealed a possible strong link between depth and breadth of vocabulary knowledge (Nurweni & Read, 1999). Qian (1999) states, "breadth and depth are two interconnected dimensions of vocabulary knowledge, the development of which are interdependent to a substantial extent" (p. 287). Both vocabulary breadth and depth of vocabulary knowledge are important predictors of both reading comprehension and comprehension-related skill (Cain & Oakhill, 2014).

Vocabulary and reading have an interconnected relationship. It has been mentioned that text comprehension could not occur without knowledge of individual word meanings, and for that reason vocabulary is routinely shown to be related to general measures of reading (Oakhill & Cain, 2012). Regular reading increases your vocabulary knowledge. Research on both first and second language development supports the conclusion that most vocabulary learning occurs naturally when learners attempt to understand new words they hear or read in context (Paribakht & Wesche, 1999). Furthermore, Cain et al. (2004) suggest that practice at reading is likely to lead to more efficient access of word meanings. Regular reading can also provide instances to acquire, refine, and consolidate vocabulary knowledge through inference from context. The finding of Purvis's (2014) study conducted with university students, showed that, in addition to the influence of inferential skills on reading comprehension, vocabulary knowledge was also found to make a unique contribution to explaining the variance in reading comprehension amongst this population.

Vocabulary may be important for inference making in two ways. First, vocabulary knowledge is important because inferences involve word knowledge; local coherence inferences involve mapping between synonyms and category exemplars, and global coherence inferences tap knowledge about the interrelations between word meanings. Second, vocabulary knowledge may support inference making because it can provide a boost to accurately maintain the contents of working memory, necessary to aid the integration of information from different parts of the text (Currie & Cain, 2015). Vocabulary knowledge and its development are necessary for inferential skill making, particularly for second-language (L2) learners, who wish to operate at a high level in English and thus need to learn many thousands of word families (Hatami & Tavakoli, 2012). Vocabulary size appears to stand in direct relation to their ability to draw lexical inferences regarding unknown words in context (I. S. P. Nation, 2001). However, readers often face situations where they cannot fully comprehend the language input, because they do not know the meanings of all of the words that they encounter. In such cases, readers use certain skills to compensate for their insufficient L2 lexical knowledge. Lexical inferencing is the primary strategy that learners use when they attempt to identify the meaning of unknown words (e.g. Hatami & Tavakoli, 2012). There are commonalities across languages how learners approach unknown words in context. Inference making plays an important role in vocabulary acquisition in L1 and L2. (Wesche & Paribakht, 2010). Moreover, research shows that the most important skill to possess when learning a previously unknown word is to be able to interpret its meaning based on the context in which it is found (I. S. P. Nation, 2001). Paribakht and Wesche (1999) found that their university ESL students, who were from a variety of L1 backgrounds, used inferencing in about 78% of all cases where they actively tried to identify the meanings of unknown words. Lexical inferencing, therefore, is an important process in both listening and reading comprehension. As an example, Hatami and Tavakoli (2012) determined whether breadth and depth of vocabulary knowledge are related to L2 ease and success in lexical

inferencing. They found that although both vocabulary breadth and depth played an important role in lexical inferencing success, vocabulary breadth made a more important contribution to reading comprehension. Hu and Nation (2000) suggested that learners must know 98-99% of words in a written text for sufficient comprehension. Adults' ability to infer new word meanings from context is related to independent assessments of their vocabulary knowledge and memory capacity (Daneman & Green, 1986) because a high ratio of known words will facilitate the inferencing of unknown words and the depth of lexical knowledge is likely to result in more successful guessing (Qian, 2002).

2.5.2. Listening comprehension

Listening comprehension may involve three processes. The first deals with the bottom up process, which includes decoding information by segmentation of words to their subcomponents. In order to reach higher level of processing, listener must start processing from linguistic knowledge to understand the whole message (Vandergrift, 1999). The second process is the top-down process, focusing on interpretation of meaning rather than recognition of sounds, words, and sentences (Lynch & Mendelsohn, 2002). The third model, called the interactive process, involves integrating both top down and bottom up processes (Paran, 1997).

With the exception of decoding, both written and spoken discourse need the same language knowledge and skills to support comprehension (Kendeou, Savage, & van den Broek, 2009; Smith, 1994). Listening comprehension and reading comprehension have many similarities. First, both listening and reading comprehension rely on basic oral language comprehension skills, such as vocabulary knowledge and morphosyntactic awareness, which allow the individual to construct meaning from the linguistic information provided by a text. Second, both skills draw on higher-level comprehension processes that help the individual to derive meaning from texts, such as using background knowledge and metacognitive strategies

(Buck, 2001; Rost, 2011; Snow & Burns, 1998). Therefore, it is not surprising that reading comprehension and listening comprehension are in a bidirectional relationship; however, it does not mean that these two skills necessarily develop equally (Perfetti, Landi, & Oakhill, 2007).

Several research studies have demonstrated that the influence of listening comprehension on reading comprehension increases with age, and that listening comprehension accounts for a substantial proportion of the variability in reading comprehension in older students (Carver, 1998; Catts, Hogan, & Adlof, 2005; Macaruso & Shankweiler, 2010; Tilstra, McMaster, Van den Broek, Kendeou, & Rapp, 2009). This is consistent with the findings of Vellutino, Tunmer, Jaccard, and Chen (2007), which found that listening comprehension predicted concurrent reading comprehension in children aged 7–12 years.

The positive relationship between listening comprehension and reading comprehension in adult learners has been established in earlier studies. Bell and Perfetti (1994) and Gernsbacher et al. (1990) agreed that there is a strong relationship between listening and reading comprehension in college students. Furthermore, Macaruso and Shankweiler (2010) assessed the simple view of reading (Gough & Tunmer 1986), which proposes that listening comprehension and decoding can account for all of the variance in reading comprehension. The finding of Macaruso and Shankweiler indicated that listening comprehension and reading fluency made independent contributions to reading comprehension in community college students. Edele and Stanat (2016) investigated whether tested listening comprehension in L1 is a significant predictor of minority students' language reading comprehension in L2. The sample included 502 ninth grade students with Russian as L1 and 662 ninth grade students with Turkish as L1. They were part of the immigrant population in Germany, with German as their second language. The results showed in both language groups, L1 listening comprehension significantly predicted L2 reading

comprehension in linear regression models; this was also true after important control variables were taken into account.

In conclusion, the majority of previous studies have demonstrated that listening comprehension was significantly correlated with reading comprehension in both children and adults. Thus, further investigation on listening comprehension as a predictor variable as in this study would give valuable insight into how listening comprehension plays a role in reading comprehension in different languages.

2.5.3. Non-verbal reasoning abilities

“In reading and conversation we make inferences about meaning. In planning we make inferences about the future. In remembering we make inferences about the past. Cognition, in all its forms, is inferential” (Moshman, 2004, p. 223). This argument suggests that inference ability is involved in every aspect of life. The development of inference making begins at a young age before attending formal reading lessons, because these skills are not influenced by word reading abilities. As a result, these skills are assumed to be stimulated from the course of childhood (Hogan et al., 2011; Kendeou et al., 2008; van den Broek, 1989). This in line with Pillow’s study (2002), which demonstrated logical inference in young children. Pillow (2002) presented a total of 112 children, between 5 and 10 years, with a series of inference tasks, including a deduction task in which they saw two toys of different colours, which were then hidden in two cans. After looking into one of the cans they were asked about the colour of the toy in the other can. Every child, regardless of age, inferred the colour correctly. Furthermore, children’s inference generation in narrative comprehension across media (i.e., aural, TV and written narratives) was investigated. The results demonstrated that the inferential ability of young children was highly inter-related across different media

Reasoning ability results from logical inference generation. When thinkers constrain their inferences with the intent of conforming to what they deem to be appropriate inferential norms, they can be said to be reasoning (Moshman, 2004). Thus, investigating the non-verbal reasoning abilities of the participants may provide additional valuable resource for the study in this thesis.

2.6. Models of cross-linguistic skill transfer in reading

As this thesis was researched with an emphasis on the study of inferential skills in two different languages (Thai and English), various relationships across languages were considered. Researchers have speculated that there is a relationship between student L1 and L2 skills (Sparks, Patton, Ganschow, Humbach, & Javorsky, 2008). In addition, a positive transfer between reading skills in L1 and L2 has been established with bilingual individuals and students in foreign language classes (e.g., Aghaie & Zhang, 2012; Gebauer, Zaunbauer, & Moller, 2013; Oller & Cobo-Lewis, 2002). For a better understanding of the inter-relationships between reading skills in L1 and L2, the previously postulated theoretical frameworks used to explain potential transfer processes of reading skills across languages will be discussed below.

2.6.1. The Reading Universal Hypothesis

Goodman (1976) postulated the Reading Universal Hypothesis. The Reading Universal Hypothesis argues that the reading process will be much the same for all languages, with minor variations to accommodate the specific characteristics of the writing systems and the grammatical structures of the language. Although grammatical patterns and rules operate differently in each language, readers will need to use their grammatical competence in much the same way. Goodman (1976) claims that the general reading process in any language involves a three cue system. The starting cue is graphophonic: the reader responds between the graphic and phonological systems. The second cue system requires the readers to access their syntactic

knowledge to comprehend the structure of phrases and sentences. Semantic understanding of the text is the final process that the reader tries to comprehend what the text means.

Furthermore, Goodman (1982) argues that some physiological, psychological, and strategic processes in reading are common to all human beings (with the possible exception of those with physical disabilities such as brain damage or blindness): “I believe the movement in reading through optical, perceptual, syntactic, and semantic cycles is universal in reading all languages regardless of the orthographies they employ. The use of sampling, predicting, confirming, and correction strategies is also universal in all forms of reading” (p. 74).

Some previous studies seem to support the Reading Universal Hypothesis (Goodman: 1976, 1982). For example, Tang (1997) investigated the relationship between reading processes in L1 and L2, with bilingual adult learners who had Chinese as their L1 and English as L2. Tang’s finding revealed that the participants used similar reading strategies to construct the meaning of the reading texts in L1 and L2. Tang (1997) concluded that the similarities of strategies used in the comprehension processes is line with the Reading Universal Hypothesis by Goodman (1971, 1982) because the participants in this study used all of the strategies that they believed appropriate to construct meaning of the texts. Furthermore, they were performing similar tasks so that their processing strategies were similar despite differences in languages.

Another study by Wurr (2003) also supports the Reading Universal Hypothesis (Goodman, 1976, 1982). Although the original intention of Wurr’s study was to focus on reader’s perception on reading processes, Wurr (2003) investigated three adult ESL readers in the U.S.A. They were literate in the native language (L1- Spanish or Korean). Wurr asked the participants to describe their views on L1 and L2 reading processes. The finding of Wurr’s study indicated that those readers, who viewed reading in their L1 and L2 as requiring different comprehension processes, when reading in L2 they focused on the surface features of the text

and language rather than on the concepts expressed by these features. Therefore, their linguistic concerns limited the range of information sources from which they can draw in the reading process. On the other hand, those readers, who believed on L1 knowledge as an essential resource for L2 reading, they tended to have a high tolerance for ambiguity in specific linguistic cues such as orthography and phonology, as variations in font and accent indicate. They could apply the cognitive reading skills they acquired in L1 when reading in L2. Skilled acquired in L1 can be applied when reading in another language. This suggests a universal reading process (Goodman, 1976, 1982).

2.6.2. Common Underlying Proficiency Theory (Interdependence Hypothesis)

Cummins (1981, 1983) proposed the theory of a Common Underlying Proficiency (CUP), which is also called the Interdependence Hypothesis. Cummins makes a strong case for the transfer of literacy skills across languages. The theory argues that there is a cognitive/academic proficiency that is common for all written languages although the surface aspects of two languages differ. Only surface aspects of languages (e.g., pronunciation) are distinct and language specific, whereas cognitive and literacy-related skills established in the first language may transfer across languages. When learners developed language skills, no matter whether in L1 or L2, their language skills will improve in both languages.

Cummins (1983) compared the space of language or literacy to a balloon. For the purpose of bilingual education, he argues that we can better inflate the L2 balloon by blowing into the L1 balloon because the space for literacy development is not, and should not be separated. L2 learners can thus benefit from proficiency either in L1 or in L2, or from both, since literacy skills can be seen as common or interdependent across languages.

Cummins explains the development of language and literacy skills of children, suggesting that the development in L2 language skills of children relies on the children's proficiency in those skills in their L1. According to Cummins's hypothesis, the ability to learn L2 depends on the proficiency of L1 language ability when learners are firstly exposed to L2. Language skill is able to be transferred; however, it is not automatic. Children's skills in one language will transfer to a second language when their L2 language competency is sufficient. Children with a high level in L1 tend to attain similar high levels of L2 proficiency. However, one who has not acquired sufficient L1 language background is likely to have difficulty in the continuing development of L1 when they are exposed to L2.

In an extension to his interdependence hypothesis, Cummins (1998) stated that "transfer is more likely to occur from minority to majority language because of the greater exposure to literacy in the majority language outside of school and the strong social pressure to learn it." Cummins was referring specifically to the example of Japanese students in a Japanese-English bilingual program, who showed benefits in the majority language (Japanese). The important condition for transfer from L2 to L1 is sufficient exposure to the majority language (L1) in academic contexts, such as reading and writing.

2.6.3. The Language Threshold Hypothesis

Cummins (1979) introduced the well-known Linguistic Threshold Hypothesis, and Clark (1979, 1980) proposed the well-known short-circuit hypothesis, also known as the Linguistics threshold hypothesis. These two hypothesis agree on one identical perspective. According to the Linguistic Threshold Hypothesis (Cummins, 1979) or Linguistic Ceiling (Clarke, 1980), the L2 language ability of readers is required to reach an ample level of L2 knowledge (i.e., vocabulary, grammar and discourse), called a threshold level, so the readers would able to transfer their reading skills effectively from L1 to L2. On the other hand, insufficient knowledge

of L2 may hinder the good first language readers to use good reading skills or strategies in L2. Therefore, language competence appears to be a strong influence on readers. This hypothesis suggests that there is a correlation between L1 and L2 reading performance for low language skilled learners, but beyond the language threshold, the transferable skill shows the significant relationship between L1 and L2 reading performance. In addition, Alderson (1984) also demonstrated that good first language readers will be able to read well in the foreign language once their reading competency has been accomplished at a certain level of foreign language ability.

The fundamental issues for reading in L2 is that reading comprehension abilities focus on the importance of L2 knowledge versus L1 reading abilities. The Language Threshold Hypothesis, as proposed by researchers, states that language knowledge is more important than L1 reading abilities up to some point at which the learner has enough L2 knowledge to read reasonably fluently (Grabe & Stoller, 2011).

2.7. Research on cross-linguistic skill transfer in L1/L2 reading

Overall, research investigating reading comprehension skills in different languages has been conducted into two brief areas: the importance of reading skills or strategies relating or the overall reading comprehension ability in reading comprehension performance in two different languages. Greater details are discussed below.

2.7.1. Research on reading skills/strategies

A number of studies have demonstrated the importance of L1/L2 linguistic knowledge, particularly on basic skills at the early stages of learning to read, such as decoding, to reading comprehension in L2 (Grabe, 2009; Yamashita, 2002). Several studies investigated whether phonological awareness in L1 was a predictor of reading and decoding skills in another

language. As an example, Lindsey, Manis, and Bailey (2003) examined longitudinal prediction of English and Spanish reading skills, with a group of 249 very young students (Spanish-L1, English-L2). The investigation carried out over three time segments beginning with kindergarten through grade 1. The study results of Lindsey et al. (2003) indicated that phonological awareness transferred from Spanish to English and was predictive of word-identification skills. In addition, Sun-Alperin and Wang (2011) explored the possible effect of phonological and orthographic processing skills in Spanish (L1) on reading and spelling acquisition in English (L2), with 89 Spanish-English bilingual children. The study reported cross-language phonological and orthographic transfer occurring from Spanish to English. The authors concluded that orthographical and orthographic processes in bilingual reading (Spanish and English) shared some characteristics. In addition, Braze, Tabor, Shankweiler, and Mencl (2007) assessed the literacy skills of 44 young adults between the ages of 16 and 24 from a diverse range of backgrounds but all of whom were thought to have struggled with reading during their schooling. Their results indicated that vocabulary made a significant contribution to reading comprehension above that explained by word decoding and other linguistic comprehension components.

However, there are limited studies in the area of higher level comprehension skills across languages emphasising higher comprehension skills, such as inferential skills and comprehension monitoring. For example, Han and Stevenson (2008) examined the contributions of comprehension monitoring in the first language (L1–Chinese) and a foreign language (FL–English) to reading proficiency. 126 students in the vocational department of a foreign languages university in China participated in the study. The results showed that participants performed significantly better in comprehension monitoring in L1 reading than in FL reading. FL comprehension monitoring made a small contribution to FL reading proficiency, but that L1 reading proficiency made a much larger contribution. In addition, another example was a study investigating lexical inferencing in two languages. Karlsson (2014) aimed to examine what

differences, if any, there are between advanced learners' inferencing skills in the participants' L1 (Swedish) and L2 (English). This was conducted with university students to two parallel lexical inferencing tests in their L1 (Swedish) and L2 (English) respectively. Although the number of inferences and the success rate vary from student to student, Karlsson's finding showed that the learners made extensive use of contextual clues, in their L1 as well as in their L2.

There are additional insights from recent research which was focused on reciprocal transfer or from L2 to L1 (e.g., Oller & Cobo-Lewis, 2002; van Gelderen, Schoonen, Stoel, de Glopper, & Hulstijn, 2007). As an example, a positive reciprocal reading skills transfer was found in Gebauer et al's study. Gebauer et al. (2013) investigated cross-language transfer between first-language (L1) and second-language (L2) reading fluency and reading comprehension in a group of 220 German elementary school students who were enrolled in English partial immersion programs. These findings are in line with previous results showing reciprocal transfer effects between L1 and L2 reading comprehension and reading fluency. In addition, the overall dominance of paths from L2 to L1 over paths from L1 to L2 may be attributable to the plentiful opportunities for academic reading in the L2 at school. In addition, one recent study by Gottardo, Javier, Farnia, Mak, and Geva (2014) examined the bidirectional, cross-linguistic associations between language and word-level reading skills and reading comprehension for grade 4 to 6 students, who spoke Spanish as their first language (L1) and English as a second language (L2). The findings showed significant reciprocal associations between Spanish word reading and English reading comprehension. However, the results did not support a cross-linguistic association between English word reading and Spanish reading comprehension.

Furthermore, several studies on teaching reading strategies in either language (L1 or L2) demonstrated a positive development of reading skills in both L1 and L2. As an example,

Salataci (2002) investigated the explicit reading strategies of L2 on reading comprehension in L2 (English) and L1 (Turkish), with eight Turkish students who were enrolled in an intensive English course at a university in Turkey. The data came from think-aloud protocols, observation, a background questionnaire, a semi-structured interview, and a reading comprehension test. The results indicated that strategy instruction had a positive effect on both Turkish and English reading comprehension. This suggested that reading strategies in L2 could transfer for use in a L1 (Turkish) as well. Similar transfer from L2 to L1 was also found in the study of Aghaie and Zhang (2012), who explored the efficacy of explicit teaching of cognitive and metacognitive reading strategies on English reading performance with ESL students in Iran. A control group and a treatment group were designated to test the effects of explicit teaching of strategies. Their findings revealed that the treatment group performance displayed significantly better results than the control group, after four months of strategy-based instruction in L2 (English). The findings from think-aloud protocol analysis showed that students in the treatment group transferred metacognitive strategies, more than cognitive strategies, to both L1 (Iranian) and L2 (English).

In conclusion, reading skills transference between different languages has been established by the aforementioned studies. The direction of research on reading skill transfer has expanded to include reciprocal skill transfer. However, the majority of studies on skills transferred in cross-language transfer have focused on early reading skills, such as decoding or phonological awareness. However, research specific to the transference of skills on higher level of comprehension, such as inferential skills remains scarce.

2.7.2. Research on language proficiency in L1/L2

Concerning another aspect of research, researchers have emphasised the importance of the impact of L1 literacy knowledge on L2 reading development (Koda, 2005, 2007). One of these studies was conducted by Yamashita (2002) which explored the contribution of first

language (L1) reading ability and second or foreign language (L2/FL) proficiency to L2 reading comprehension, with a close emphasis on the compensation between L1 reading ability and L2 proficiency. The participants of 241 Japanese university students enrolled in an English course were measured by L2 reading ability test, L1 reading ability, and L2 language proficiency test. The findings reported the mutual compensation between L1 reading ability and L2 proficiency, which works in order to achieve the highest possible level of L2 reading comprehension for readers with different ability backgrounds in L1 reading and L2 proficiency. van Gelderen et al. (2007) investigated the reading comprehension development in Dutch (L1) and English (L2) of 389 adolescent students during a three-year span from Grades 8 through 10. Assessment of the participants' performances on reading comprehension, linguistic knowledge, processing efficiency in both languages, and their metacognitive knowledge about reading indicated that the component skills of L1 and L2 reading held different weights in L1 and L2 reading models. In addition, L1 reading comprehension was found to correlate strongly with L2 reading comprehension and contribute more to L2 reading comprehension than other L2 component skills.

Jiang (2011) investigated the interrelationships of first language (L1) literacy, second language (L2) proficiency, and L2 reading comprehension with 246 Chinese college students learning English. L1 literacy and L2 proficiency were measured with college admission exams in Chinese and English. L2 reading comprehension was measured with the reading comprehension section of a TOEFL and a researcher developed passage comprehension test. The results showed that L2 language proficiency accounted for 27%-39% of variance in L2 reading comprehension, while L1 literacy accounted for less than 6% of the variance. In addition, Sparks, Patton, Ganschow, and Humbach (2012), who examined whether L1 reading achievement and L1 print exposure would influence L2 proficiency in reading comprehension, writing, listening comprehension and oral expression, word decoding, spelling, and overall proficiency. The 10-

year longitudinal study was conducted by following 54 students from 1st to 10th grade students in the Midwestern United States. L1 in this study was English and L2 was one of three languages (Spanish, French or German). The participants were monitored in their L1 language ability through 1st through 5th grades. When the participants were in the 9th grade, they enrolled in one of the L2 courses and L2 aptitude test was measured. The results suggested that L1 reading ability contributed to the significant relationship to L2 word decoding, L2 reading comprehension, L2 listening/speaking, and overall L2 proficiency.

Overall, although there were different orthographic properties between L1 and L2 in some of the above research studies, their consistent findings indicated a potential for positive relationships between language proficiency and reading comprehension in L1 and L2 regardless of the orthographic property factor. Therefore, these findings suggest that there are some relationships between languages even when they have different orthography.

Chapter Three

Thai Education

This study investigated inferential skills and the differences between language skills in Thai and English of a group of Thai college students. Therefore, this chapter aims to provide some relevant background which would facilitate a better understanding of the study. The four sections of this chapter are comprised of: the education systems in Thailand, the Thai language, and the teaching and learning of reading in English, as well as in the Thai language. The Thai education system will provide an overview of the education system wherein the study was conducted. Two languages (Thai and English) were the primary considerations of the present study. Some basic Thai orthographic properties, which are considerably different from English (L2) will be presented. In addition, the current situation of teaching and learning the Thai and English languages are also discussed to provide some pertinent information regarding where the research was undertaken.

3.1. Thai education system

The education system in Thailand has been through three main education reform-periods. The first took place during the reign of King Rama V (1898-1910). The second reform occurred during in 1973-1988 as a result of a student revolution, and the third and most recent reform was the result of the Asian economic crisis and political reforms (1999- present). In order to initiate education reforms, the National Education Act (NEA) of 1999 was enacted on 20 August 1999. The NEA states that all Thai citizens have equal rights and the opportunity to receive a basic education from the state for 12 years (grade 1 to grade 12) (Office of the National Education

Commission, 1999). Subsequently, since May 2004, free basic education was extended to cover two years of pre-primary education as well (Ministry of Education, 2004). In sum, children are provided free basic education for 15 years from kindergarten to higher secondary level (grade 12), with compulsory education covering nine years of study-six years of primary (grade 1-6) and three years of lower secondary education (grade 7-9) (Office of Education Council, 2007). The educational system is divided into two main levels: basic education and higher education. The details are shown in Figure 3.1.

Basic Education					Higher Education	
Level	Pre- primary	primary	Lower secondary	Upper secondary	Bachelor Degree and below	Graduate Degree
		Grades 1-6	Grades 7-9	Grades 10-12		
		Compulsory				
Approximate age	3-5	6-11	12-14	15-17	18+	

Figure 3.1. The education system of Thailand, adapted from Office of Education Council (2012)

Details of each level of education can be summarized as follows: (South East Asian Ministers of Education, n.d.; The Ministry of Education)

Level one is a Preparatory Level, which is provided for 3-5year old children. It aims at encouraging the harmonious physical, intellectual, emotional and social development of children prior to entering formal education. Pre-school education can be provided in many ways such as child care centres, nursery schools and kindergartens.

Primary education (grade 1 to 6) is considered as level two (beginning level). This level is the beginning of compulsory education and free for 6-11-year-old children. The primary school curriculum comprises five areas of learning experiences, namely: basic skills development, life experience, character development, work oriented education, and special experiences. The last area is provided for children in grades 5 and 6, which are the last two grades at the primary level. Their subjects include Thai language, mathematics, science, social studies/religion/culture, health and physical education, art, careers and technology, and foreign languages. Most of the government primary schools are under the Office of Basic Education Commission, Ministry of Education. There are also demonstration schools attached to some universities.

Secondary education aims to improve the learners' quality of life and serves as the basis for future education. Secondary Education is divided into two levels, each covering a period of three years. The lower level emphasizes on learners' intellect, ethics/morality and basic skills. It allows the learner to explore his individual interests and aptitudes through a wide choice of both academic and vocational subjects. The upper level aims to provide appropriate academic and vocational knowledge and skills corresponding with the learner's interests and aptitudes. This level covers eight broad subjects: Thai language, mathematics, science, social studies/religion/culture, health and physical education, art, career and technology, and foreign languages. There is also a wide range of exploratory pre-vocational subjects available. The use of the credit system at this level facilitates flexibility in the teaching-learning process. Both public and private sectors are involved in the organization of secondary education. Public schools are mostly under the Office of Basic Education Commission, Ministry of Education.

Higher Education: aims at the full development of human intellect and the advancement of knowledge and technology. This level may be organized in the form of colleges, universities, or institutions for specialized studies.

3.2. Thai language

Since this study investigated the effects upon two languages (Thai and English), some basic information of Thai language is provided in this section. Generally, the characteristics of Thai language are very different from English and some interesting aspects of Thai language are addressed below.

Thai is a tonal language that has an alphabetic orthography. Tones are the core of the language. They are essential, as important as any vowel or consonant. The appropriate meaning of various words is distinguished by the tones used for each syllable. Each syllable is pronounced with one of five distinct tones – middle, low, falling, high, or rising. The tone must be spoken correctly for the intended meaning of a word to be understood because every word has a particular mandatory tone (Winskel & Iemwanthong, 2010).

There are 44 consonants, which represent 21 consonant sound in Thai. Thai vowels are used with the consonants in Thai language. These vowel symbols cannot stand alone and must be used in combination with consonant symbols. These vowel symbols will occur before, after, above, and/or below a consonant symbol, in various combinations. In addition, some vowel sounds will occur even though they are not explicitly represented by a symbol. And in other cases written vowel and consonants will be silent as either single symbol elements or as entire syllables in a word (Kohsom & Gobet, 1997; Winskel & Iemwanthong, 2010).

The Thai language generally does not use spaces to separate the words in a sentence (Winskel, 2013). Rather spaces are used for more limited functions within a sentence or paragraph.

Spaces are normally used for separating sentences and sometimes for emphasising words. This lack of spacing may lead to ambiguity, as a string of characters may be parsed into words in different ways, which may result in different meanings for a sentence. Therefore, to identify the intended meaning of those words, Thai readers may have to read the entire sentence to find out what the various words mean (Kohsom & Gobet, 1997).

3.3. Teaching and learning English in Thailand

English is a compulsory foreign language subject. According to the Framework of Foreign Language Curriculum (Office of the Basic Education Commission, 2001) in the Thai education system, English studies are divided into four levels. Level one (Preparatory Level) and level two (Beginning Level) are in primary education, while levels three and four (Expanding Levels) are in lower secondary education and in upper secondary education, respectively.

Level one begins at the first level of primary study for seven or eight year-old students (Wiriyaichitra, 2002). The curriculum in the primary level aims to provide students with the foundation of English skills and prepare them for secondary education (Wongsothorn, 2000). Primary students study English approximately three to four periods per week (Punthumasen, 2007). The secondary level is divided into two sub-levels: the lower secondary (grades seven to nine) and the higher secondary (grade ten to twelve). The first level (grade seven to nine) aims to enable students to use English as a basic communication skill. The next level is targeted at enabling students to use English for higher education. Teachers of English plan their lessons based on the guidelines of the 2001 Basic Education Curriculum issued by the Ministry of Education. However, they are able to adapt the curriculum to suit the needs of the local community (Ministry of Education, 2006).

Undergraduate education aims to equip students to use English for their studies, retrieving information, and communicative purposes in all four skills. Students have to take four English courses as compulsory undergraduate subjects. The first two courses are the English foundation courses, and the other two may be either English for Academic Purposes (EAP) or English for Specific Purposes (ESP) courses, as required by each major (Wongsothorn, Hiranburana, & Chinawongs, 2002). At the university level, both public and private Thai universities have reformed the English language curriculum in order to meet the demands for English language skills in the workplace (Khamkhien, 2010). Each Thai university develops their own language curriculum and learning materials to serve their university's goals and the students' needs, as well as to meet the requirements of the National Education Act 1999. Furthermore, many universities set up a self-access learning centre to promote student learning autonomy. Completion of an English exit exam is required prior to graduation in some universities. The results of this exams do not affect the students' graduation. However, if the students get a good result, they can use it as a reference when applying for a job (Payaprom, 2012).

Thai students spend twelve years studying English in primary and secondary schools, and a few years at higher education, and the educational organizations have made efforts to improve the English proficiency of Thai students. However, it seems that English is a problem for many Thai students at all educational levels. Although the Thai government has tried to improve the quality of teaching and learning English, the outcomes are not as good as the government desires (Payaprom, 2012). Several studies demonstrated that Thai graduates' English proficiency was relatively low (e.g., Sroinam, 2005; Techa-Intrawong, 2003; Wongsothorn, 2003). For example, Rajprasit, Pratoomrat, and Wang (2015), investigating English proficiency of Thai undergraduates at a government university, found that the students demonstrated difficulty using

English skills in communication, although they themselves perceived their abilities to be at a fair level.

3.3.1. Problems of teaching and learning English in Thailand

There are a number of factors that affect the teaching and learning of English in Thailand. These factors can be mainly described under three headings (categories): Thai teachers, Thai students, and other related factors.

Thai teachers

The most important factor in student learning progress is the teacher, and teacher quality outweighs other factors such as motivation, funding, and class size. Qualified teachers can create the best environment for learning (Geringer, 2003). Lack of qualified teachers of English has been a significant problem. Mackenzie (2002) argued that the general quality of English language teaching staff is unsatisfactory, as many competent language graduates choose to work in private companies. Nupong (2002) also reported that 65% of primary school teachers who were teaching English had not taken English as their academic major, which only approximately 70% of Thai teachers of English at the secondary level had graduated with a bachelor's degree in English. In addition, Dhanasobhon (2006) explained that at the secondary level, there is a shortage of teachers of English because graduates with a major in English prefer to work in other higher salary jobs such as flight attendants, the hotel and tourism businesses, or with private companies. Another important factor relating to teachers is that of teaching methodology. Nupong (2002), who surveyed the problem of English teachers, found that the lack of knowledge of and expertise in a variety of teaching approaches is the biggest challenge faced by teachers. Furthermore, many studies show that the teaching practice of Thai EFL teachers still emphasises

the grammar-translation method. In addition, many Thai teachers of English still use traditional teacher-centred methods, emphasising memorization and passive learning (Akkakoson, 2011).

Thai students

Despite the fact that Thai students have studied English for more than ten years before they graduate from university, their English proficiency still does not meet the demands of the workplace (Payaprom, 2012). One of the reasons related to this low English proficiency is their lack of motivation for learning English (Punthumasen, 2007). English is learnt as a foreign language; it is not an essential language they use in daily life. Therefore, many students perceive English as lacking relevance and they are not motivated to learn it. Some characteristics of Thai students are likely to prevent the improvement in learning English. These include: an over-emphasis on accuracy, having an attachment to rote memorisation, and lacking the will to express their opinions due to a culturally-based seniority system and shyness (Mackenzie, 2002).

Other related factors

Apart from issues relating to teachers and students as identified above, many researchers pointed to other significant factors, such as learners of mixed abilities in overly large classes, and rare opportunities for student exposure to English outside of class time (Dhanasobhon, 2006). Large class sizes for English instruction can be seen in many universities across Thailand. For example, in a typical class there may be at least 50 to 100 students, therefore it is very difficult for a teacher to manage to provide opportunities for students to practice all four language skills (Payaprom, 2012). Moreover, there have been other difficulties that hinder the improvement of English learning in Thailand, such as teaching overload and other responsibilities, and inadequate teaching materials and equipment (W. Baker, 2012).

3.4. Teaching and learning reading in English in Thailand

Reading is an important language skill (Hogan et al., 2011). Reading comprehension is a necessary skill for successful academic performance (Eason & Cutting, 2009). Employees working in many organizations, including both government and private sectors, require strong comprehension skills (Akkakoson, 2011). Moreover, students at all levels who have a greater proficiency in reading are likely to have greater proficiency in language learning (Gillet & Temple, 1999).

In terms of reading in English, undergraduate level students need to understand textbooks, articles, or magazines written in English in order to acquire knowledge and gather information for both their future careers and their current academic studies. Even though reading plays a vital role in the academic lives of all students of English as second or foreign language (EFL/ ESL), teachers and researchers have found that many of these students cannot read and comprehend English effectively (Wei, 2005). Several studies (Adunyarittigun, 1998; Aegpongpaow, 2008; Ratanakul, 1998; Sroinam, 2005) in Thailand found that Thai students had insufficient English reading ability.

Furthermore, individuals who experience difficulty in reading and comprehending English texts are more likely to suffer from problems in school, in the workplace, and in their communities (National Center for Education Statistics, 2002). English reading comprehension is a problem for many Thai university students. They often can only read at a slow speed, only picking up tiny bits of information and are barely able to grasp even major ideas that are directly stated (Attaprechakul, 2013).

3.4.1. Problems of Thai students' English reading comprehension

Although Thai students have studied English since they were in the kindergarten, English reading skills of Thai students, including university students, remains unsatisfactory (Adunyarittigun, 1998; Akkakoson, 2011). The low English reading problem arises from teaching methodology in the reading classes. In reading classes, many teachers still use a grammar-translation approach which focuses on grammatical structure and unknown vocabulary presentation. Students are then required to read aloud and translate the sentences or paragraphs from the texts. There is seldom any activity that engages students' interest and motivation in learning English and that promotes collaboration (Chittawat, 1995; Noytim, 2006). Furthermore, Oranpattanachai (2004) indicated similar procedures in teaching reading in her own teaching experience and observations. She recommended three main steps in regular reading classes. Pre-reading activities are set to provide students with background knowledge for the text to be read. Reading activities include reading paragraphs, explaining new vocabulary items, identifying grammatical structures, asking questions about the read passages, reconsidering the difficult parts of the text and explaining how to derive the answers for the comprehension questions. Furthermore, Tamrackitkun (2010) explained about Thai undergraduates at one Thai university where she has taught and conducted the research that students do not read much, either in or out of English class. Moreover, the conditions of reading are usually controlled by the teachers, not by the students, that is, the teachers will tell students what, when, and how to read.

3.5. Teaching and learning Thai in Thailand

Based on The Basic Education Core Curriculum 2008, students who have completed grade 12 are expected to be able to do the following in terms of reading: read aloud accurately poetry and literature in prose and in verse presented in stylised melody; understand, interpret, convey meaning and elaborate on what has been read; analyse and criticise their readings;

logically express disagreements and present new ideas from the readings; write conceptual frameworks, mind-maps, notes, synopses and reports from their readings; synthesise, evaluate and apply knowledge and thoughts from their readings for self-development and educational and occupational development; apply knowledge and thoughts for problem-solving in life; have good reading manners, and have acquired a reading habit. At university level, reading comprehension skills are a key tool in studying at tertiary level for Thai students. To be an efficient reader, they can access new knowledge by themselves through reading. This includes the following abilities; selecting appropriate reading materials, summarising, criticising and synthesising what they have read.

3.5.1. Problems of Thai students Thai language reading comprehension

Although Thai is their first language, the Thai language reading proficiency of Thai students needs further improvement. The reading ability of Thai teenagers might be seen from the data from the Organization for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA), which investigated 15-year-old students across OECD member countries and partner countries/economies. The 2009 results revealed that the average reading proficiency of Thai students was 421, significantly below the OECD average of 493 (The Organisation for Economic Co-operation and Development (OECD), 2010). However, reading in Thai is critical for successful learning at the university level. Additionally, the National Institute of Educational Testing Service (NETS) organised the Ordinary National Educational Test (O-net) to assess the academic proficiency of Thai students, the 2015 test results (The National Institute of Educational Testing Services, 2016) for the 2015 academic year revealed that the Thai language proficiency of Thai 12 grade students across the country was 49.36 out of the total score of 100, which indicated that the scores of the majority of Thai 12 graders were less than half of the total score. This low Thai language score suggests that

Thai reading proficiency of Thai undergraduate students is relatively low. These problems result from various reasons, including their inability to identify the main idea of what they have read and their lack of necessary reading skills (Panniem, 2009). Additionally, many Thai undergraduates have difficulty in reading critically (Jorajit, 1999; Munsethawit, 2000).

One of the significant reasons of the low reading proficiency in Thai people is a lack of reading culture. Reading, even in Thai language, is not a favourite pastime for many Thai people (Wisaijorn, 2005). There are only a small number of libraries and access to them is relatively restricted. Therefore, students often lack reading role models as the older generation does not appear to value, or engage in, reading. Another cause may be due to typical Thai classroom behaviour including reading classrooms. Due to the importance of hierarchical distinctions in Thai social relation and social identity, the role of teachers is viewed as a senior position and any questioning of the teachers would be regarded as an expression of ingratitude and highly inappropriate (Adamson, 2003; Foley, 2005). Thai students simply accept whatever is written in textbooks without question or critical thinking (O'Sullivan & Tajarosuk, 1997). Therefore, it may be one of the reasons why critical reading ability of Thai students is low and needs improvement.

Chapter Four

Development of Measures and Pilot Work

4.1. Introduction

Development of an appropriate assessment battery was a crucial process of the study. An appropriate assessment battery would demonstrate the actual variability across the cohort. The data from the assessment measures was fundamental to the subsequent main testing in the thesis. In this study, an assessment battery consisted of the eight bilingual measures of reading comprehension, inferential skills, listening comprehension, and vocabulary. These measures primarily aimed at investigating various cognitive-linguistic skills of the participants in Thai and English. Two additional measures were included, the Raven's Advanced Progressive Matrices to explore non-verbal reasoning ability, and a questionnaire for examining the participants' self-perceptions on reading comprehension strategies. Generally, in all, 10 measures were involved in the processes of development, adaptation, piloting, and revision in order to obtain an appropriate assessment battery. Specific details of each measure will be discussed within the chapter.

The remainder of the chapter comprising four sections, provides an overview of the ten assessment measures used, in terms of the rationale, development, pilot study, and analyses, for the main study. The first section describes the rationale background for the assessment measures, which explains why ten measures are included in this study. The details of the development of each measure are presented in the second section. The third section of this chapter consists of all necessary information as used for the pilot study. The final section displays the processes by which the data from the pilot study was analysed and revised in order to arrive the most

appropriate measures for the main testing phase. Full details of each section are as discussed below.

4.2. Rationale of assessment measures

4.2.1. Measures of reading comprehension

Comprehension is the ultimate goal of reading. It is noticeable that reading comprehension is more than a simple process of recognizing or understanding individual words, but rather reading comprehension is a complex construct that is composed of a number of cognitive component processes (Cain et al., 2004; Graesser et al., 1994; Hannon & Frias, 2012). In this study, reading comprehension was included in the assessment battery as the dependent variable.

To assess reading comprehension abilities in English as a first language, there are a number of standardised assessments of English reading comprehension available for assessing school-age populations (Cain & Oakhill, 2006a). However, English standardised assessments designed specifically for the English native speaking adults, especially in territory education contexts are insufficient (Purvis, 2014). In addition, to assess reading ability in English as a second language, there are some standardised measures for exploring English proficiency of non-English native speakers (for example, the Test of English as a Foreign Language, TOEFL, and the International English Language Testing System, IELTS). However, these standardised assessments were not likely to be suitable for this present study since that are copyrighted tests that would not allow the level of manipulation required to produce similar Thai and English measures. Therefore, as this research study was designed to assess reading comprehension in two languages (Thai and English), two parallel format measures for assessing both Thai and English

reading comprehension were required and, consequently, Thai and English reading comprehension measures were specifically developed.

4.2.2. Measures of inferential skills

A text does not always explicitly state the information needed for coherence, so readers (and listeners) regularly have to make inferences to integrate information within the text with details that are only implicit (Currie & Cain, 2015). Therefore, inferences are a significant skill for successful reading comprehension (Currie & Cain, 2015; M Singer, 1994).

Most measures for assessing inference making ability have been specifically developed for the study in which they were implemented. For example, Cain and Oakhill (1999) developed an inferential measure to investigate the relationship between inference making ability and comprehension failure in young children, and Cain, Oakhill, Barnes and Bryant (2001) developed inferential skills assessments, by modifying those used by Barnes and Dennis (1996), in order to investigate the relationship between 7-8-year-old children's comprehension skill and inference-making ability. Hence, measures for assessing inferential skills are generally developed to meet specific research objectives in each study. Likewise, in this study, inferential skills measures were designed carefully to meet the specific pattern of the inferential skills to be assessed.

4.2.3. Measures of language skills

The primary aim of this study was to investigate the relationship between inferential skills and reading comprehension. In addition, the study also examined vocabulary skills and listening comprehension, which are two major factors of successful reading comprehension, in order to contrast their effects with that of the ability to draw inferences from text.

4.2.3.1. Vocabulary

Vocabulary has been found to be one type of knowledge necessary for text comprehension and for inference, in particular (Cain & Oakhill, 2014) and is one of the best predictors of reading comprehension (Carroll, 1993; Davis, 1944; Thorndike, 1973). Furthermore, the conclusions from the studies of Seigneuric and Ehrlich (2005) and De Jong and Van Der Leij (2002) indicated that there was a reciprocal relationship between reading comprehension and vocabulary development in early school age children. Moreover, data suggest that vocabulary may be one of the best predictor of reading comprehension in skilled adult readers (Guo, Roehrig, & Williams, 2011).

Generally, vocabulary skills have been explored in two main dimensions: vocabulary breadth and depth (Cain & Oakhill, 2014; I. S. P. Nation, 2001). Vocabulary breadth refers to the size of the lexicon (Ouellette, 2006; Tannenbaum, Torgesen, & Wagner, 2006) or the number of words for which a learner has at least some minimum knowledge of their meaning (I. S. P. Nation, 2001), whereas vocabulary depth involves how well the meanings are known. Both types of vocabulary skills have been found to be predictors of reading comprehension (Ouellette, 2006).

In the present study, vocabulary breadth, or size, was explored because it was quoted in many studies investigating reading comprehension (e.g., Elbro & Buch-Iversen, 2013; Ghazanfar & Farvardin, 2015) and the purpose of the research was to explore the number of words that participants had a general knowledge of their meaning. The Vocabulary Size test (I. S. P. Nation & Beglar, 2007) was determined to be the most appropriate measure to investigate the vocabulary proficiency of the participants as this assessment was developed to measure receptive vocabulary of non-native speakers of English (I. S. P. Nation & Beglar, 2007). Therefore,

receptive vocabulary was the more useful type of measure for the present study as it has been more often used in studies of reading and allows for group testing.

4.2.3.2. Listening comprehension

Juel, Griffith, and Gough (1986) argued that the quality of reading comprehension depends entirely on the quality of reader's listening comprehension. Moreover, there are several research studies that have shown high correlations between reading and listening comprehension, including among college students (e.g., Bell & Perfetti, 1994; Macaruso & Shankweiler, 2010). Therefore, it is appropriate to assess the participants' listening ability with respect to its correlation to reading comprehension.

Although there are a number of standardized measures for evaluating listening comprehension in English, copyright considerations and the level of manipulation required to produce similar Thai and English listening comprehension measures led to these measures being specifically developed for this study.

4.2.4. Measure of non-verbal reasoning abilities

To comprehend a reading passage, readers seem to apply a varied number of reading skills to best suit the text they read (Pressley, 2000). Therefore, besides investigating verbal skills that have been related to successful reading comprehension, this study also examined non-verbal reasoning abilities.

The Advanced Progressive Matrices (Raven, 1962) is one of the most common and popularly used tests of non-verbal abilities (Kaplan & Saccuzzo, 2009). It has been widely employed to assess different age groups, in particular, adolescents and adults (Raven & Raven, 2008). The test was designed to assess an individual's intellectual capacity, thinking ability, and observation skills, and thus it has been recommended as a successful measure for identifying

academic potential (Ablard & Mills, 1996). The Raven's Advanced Progressive Matrices are composed of two sets: Set I consists of 12 items, generally used as a practice test, and Set II, which consists of 36 items. The test is administered either without a time limit or with a recommended administration time of 40 minutes (Raven, Court, & Raven, 1994, 2003). However, a primary drawback of the full form (36 items) of Raven's Advanced Progressive Matrices is the length of the test administration, which might increase the influence of interfering variables, such as fatigue and boredom (Chiesi, Ciancaleoni, Galli, Morsanyi, & Primi, 2012).

To shorten the administration time, a few shortened versions of the APM were proposed. One of the most common used short forms was abridged by Arthur and Day (1994). In the short form of the APM proposed by Arthur and Day (1994), they selected only 12 items from The Advanced Progressive Matrices (Raven, 1962). The 12 item scale was obtained and administered to samples of university students in order to test its factor structure, the progressive item difficulty, and its reliability. The study of Arthur and other studies (e.g., Chiesi et al., 2012) showed a similar finding, that the short form of 12 items is a sound instrument for assessing non-verbal ability within a short time frame.

4.2.5. Questionnaire on reading comprehension strategies

Apart from nine assessments aiming to investigate the participants' academic performance, a questionnaire was included to investigate more about the participants' perceptions on reading comprehension strategies. This questionnaire was used to study the participants in terms of how they apply their reading comprehension strategies when they read. Data from the questionnaire gave additional insights as to how the participants' perceptions on their reading comprehension strategies related to the results of their performance on the test measures.

4.3. Measure development

An assessment battery consisting of nine measures and a questionnaire was primarily aimed at exploring the relationship between inferential skills and reading comprehension. All measures were carefully developed or selected to meet the participants' interests, language ability, and culture. Additionally, the reading passages were developed with great concern regarding the appropriate use of language and context to facilitate the participants' understanding. All measures were designed to be appropriate as a written test for a group testing session. Therefore, the multiple choice format was used for all measures in this study, as it is usually suitable for group administration (Cain & Oakhill, 2006a).

4.3.1. Reading comprehension measures

The Thai and English reading comprehension tests aimed to examine the participants' reading proficiency in both Thai and English. Both the Thai and English reading comprehension measures were adapted from the Thai language critical reading test (Form A and Form B) reported in Prasansorn's (2001) study, which assessed the reading abilities of secondary school students before and after teaching methods that used directed reading along with higher-level thinking or conventional instruction procedures. This measure, therefore, was deemed to assess the type of skills on which the present study aimed to focus. It also had the features that the content should be familiar to Thai students, and that the test items were constructed on the basis of the cognitive domains of Bloom's taxonomy (L. W. Anderson et al., 2001), enabling different types of reading skills to be investigated.

By random selection, the English reading comprehension test was constructed based on the Thai language critical reading test Form A, whereas Form B was used for the Thai reading comprehension test. After modifications of the test were completed, Form A was translated into

an English version to measure English reading comprehension. Both versions (form A and B) of Thai language critical reading test (Prasansorn, 2001) were revised in order to arrive at the most appropriate versions of reading comprehension measures, and Thai and English cultural awareness in the reading passages was taken into account. As a result, some types of reading passages, which were Thai poetry and advertising commercials, were omitted from the test because these passages could have led to ambiguity of interpretation and cultural inferences. Consequently, a total of 42 items from 11 reading passage were considered. Additionally, the longest reading passage was removed to reduce the time needed to complete the test. This process resulted in a 10-passage scale, which seemed appropriate for a 30 to 40 minute administration time; longer administration might lead to boredom and a lack of motivation to finish the test.

I English reading comprehension test

This test was adapted from the Thai language critical reading test Form A developed by Prasansorn (2001). As the test was designed in parallel with the Thai reading comprehension test, one tale from the primary test was removed as the content was either not suitable or made no sense when it was translated into an English version. Following such revisions, Form A was translated into English by the researcher. This draft test was amended according to the advice of three experts in test development to avoid ambiguity and cultural interference. An example from the test is provided below and see Appendix A for the full measure.

Passage:

Nawarat Pongpaiboon was born on 26 March 1940 at PhanomThuan district, KanchanaBuri. He is a son of Sombat and Somjai Pongpaiboon. He was in the family where everyone loved Thai literature. His father was especially interested in Thai classical music and Thai poetry.

Sombat (Nawarat's father), with a few friends, enjoyed reading Thai poems interactively, with each of them reading a line of poetry in turn. The wooden walls of their home were covered with poems they had written. Their neighbours told us about the family's past life.

Nawarat's mother herself liked reading Thai literature. She also liked to share her enjoyment through the stories she read to her children. His father loved reading not only poems, but also other things, such as traditional Thai literature and contemporary stories.

Question:

What factors encouraged Nawarat Pongpaiboon to become a poet?

- | | |
|-----------------------------------|----------------------|
| a. Nawarat's personal interests | b. Nawarat's talents |
| c. Nawarat's teachers and friends | d. Nawarat's family |

II Thai reading comprehension test

The Thai reading comprehension test was developed from the Thai language critical test Form B (Prasansorn (2001), which contained 11 reading passages with a total of 42 question

items. As the English reading comprehension test was reduced to ten reading passages with 40 question items, one passage from Form B was also withdrawn, thereby retaining the format of ten reading passages and 40 questions across both Thai and English measures for the initial procedures in this research. An example from the test is provided below and see Appendix B for the full measure.

Passage:

การเลือกรับวัฒนธรรมต่างชาตินั้น จะต้องใช้วิจารณญาณมองให้ลึกซึ้งถึงแก่นแท้ของวัฒนธรรม จากแนวคิดของศาสตราจารย์สุมน อมรวิวัฒน์ ในเรื่อง การก้าวรุกและปะทะทางวัฒนธรรมชี้ให้เห็นถึงการรับวัฒนธรรมต่างชาติมาโดยมิได้พิจารณาถึงแก่นแท้ของวัฒนธรรม ไม่ได้ก่อให้เกิดผล ดีเลย เช่น วัฒนธรรมในการกินฟาสต์ฟู้ด แก่นแท้อยู่ที่การกินง่าย อยู่ง่าย กินให้ได้สารอาหารที่ถูกส่วน รวดเร็วและประหยัด เพื่อว่าจะได้มีเวลาทำงานต่อไป แต่เรากลับรับวัฒนธรรมมาแบบฉาบฉวย ขอมเสียเงินแพงๆในการเข้าร้านฟาสต์ฟู้ด ซึ่งของกินราคาแพงและเสียเวลานั่งกินเป็นชั่วโมงๆ กลายเป็นค่านิยมฟุ่มเฟือย แสดงความโก้เก๋แต่ไร้ปัญญา

Question:

เยาวชนไทยควรมีหลักในการรับวัฒนธรรมจากต่างชาติอย่างไร ?

- ก. เลือกรับวัฒนธรรมที่คนส่วนใหญ่เห็นว่าเหมาะสม ข. เลือกรับวัฒนธรรมตามคำแนะนำของผู้ใหญ่
- ค. เลือกรับวัฒนธรรมที่เหมาะสมกับตนเอง ง. เลือกรับวัฒนธรรมโดยได้รตรง

4.3.2. Inferential skills measures

The inferential skills measures aimed to investigate the level of inferential skills of the participants. Both the Thai and English inferential skills tests were developed in parallel by the researcher. The tests consisted of ten short reading passages and 50 multiple-choice-questions with four choices for each. All reading passages were carefully written, taking into account the potential for cultural interference and the participants' interests and competency. Each reading passage used five different types of questions as follows.

Literal Comprehension

This type of question aims to explore the factual information which was explicitly stated in a reading passage. As the primary aim of this assessment is to investigate inferential skills of the participants, the inclusion of literal content questions is very necessary for assessing the readers' basic comprehension of a text. If a reader is unable to comprehend the literal content of a text, difficulty in comprehending a text requiring inference skills is likely to follow (Hogan et al., 2011). Furthermore, Perfetti and Bell (1994) suggests the complete separation of inferences from the literal information of a text is difficult. An example of this sort of question is: "Debbie was going out for the day with her friend Michael" was the information which provided the answer to the question "Who did Debbie spend the afternoon with?" (Cain & Oakhill, 1999, p. 495). The correct answer is "Michael" which was explicitly stated in the reading passage.

Grammatically Connecting Inference

This aims to investigate readers' inference ability based on their grammatical knowledge. Grammar has been described as a lower level language skill or a foundation skill (Lepola et al., 2012) which is of importance to understand individual sentences (Silva & Cain, 2015). In summary, grammar is necessary to help readers in the process of inference making (Silva &

Cain, 2015). An example of this sort of question can be found in the following sentence “Tim also took off his dusty overalls and threw them into a plastic garbage bag” which provides the information to answer this question “Where did Tim put his overalls?”. The grammatical knowledge specifically about pronouns (in this case “them”) is required to achieve the correct answer as being “in a garbage bag”.

Vocabulary Related Meaning Inference

As vocabulary is mediated through inference comprehension (Silva & Cain, 2015), this type of question aims to investigate the readers’ ability to infer the meaning of one particular word or phrase in the reading passage to another word or phrase which has a similar meaning in a question. Taking this as an example, when the targeted words such as "every morning" appear in the sentence, then readers need to relate "every morning" to "daily" in the comprehension question.

Text Coherence Inference

This type of inference focuses on relating the information appearing in two contiguous phrases or sentences to achieve the coherence meaning of a written text. The separate prepositions within two crosses or sentences are typically cued by a pronoun, synonym, or category exemplar. This type of question shares similarities to text-connecting inference which was one category of two inference questions developed by Cain and Oakhill (1999). An example used by Cain and Oakhill (1999) is: “Michael got some drink out of his duffel bag and they shared that. The orange juice was very refreshing” which provides the information needed to answer the question “Where did Michael get the orange juice?”. The reader has to make a connection between the phrase “some drink” which appears in the one sentence and the phrase

“orange juice” which appears in the other sentence. If the reader can link these phrases correctly, then they should be able to respond with the correct answer of “his duffel bag”.

Prior Knowledge Inference

This type of inference aims to investigate the ability to connect ideas that are not explicitly stated in the text. The similar ideas that can be distributed throughout the text to arrive to a single conclusion such as an overall theme of a text. This type of inference relies heavily on background knowledge which is a significant component that helps readers to fill in details missing from the text. The type of inference question is relatively similar to gap-filling inference, another category of inference suggested by Cain and Oakhill (1999), or evaluative inference referred to by (Bowyer-Crane & Snowling, 2005). For instance, in “No one came to the party. Nancy threw away the cake.” (an example from Hogan et al. (2011, p. 6), the question might be “What was Nancy’s feeling after the party?”. Here, the correct answer would likely be to infer that she was upset because she threw away the cake rather than saving it.

I English inferential skills test

Ten reading passages were constructed for the English inferential skills test. The number of words in a reading passage was between 142 and 222. The participants read each passage and answered the five questions related to that passage. Potential test items were reviewed by three experts in test development, in terms of content quality, clarity and lack of ambiguity, and sensitivity to cultural issues, and also by two English native speakers, who provided advice on wording. Subsequently the test was amended, based on their suggestions, to achieve an appropriate version of the test. An example from the test is provided below (see Appendix C for the full measure).

Passage:

Paul usually has a very long day because he spends forty minutes driving to work every day. He usually works eight hours a day. Today he wanted to buy something nice for Alice. When he got home in the late evening, with a bunch of lovely flowers, he took his muddy boots off on the steps of the front porch. Alice would get angry if his dirty items made it as far as the welcome mat. He also took off his dusty overalls and threw them into a plastic garbage bag. Alice leaves a new bag tied to the porch railing for him every morning. He went straight to take a shower as he had been instructed by Alice. Then, he joined her to eat dinner after he had made himself “presentable,” as Alice often said. Alice prepared Paul’s favourite drink. He sat comfortably and grabbed a can of beer.

Questions:

1. How long did Paul take to travel to work?

- | | |
|------------------|------------------|
| a. every day | b. every evening |
| c. forty minutes | d. eight hours |

2. Where did Paul put his overalls?

- | | |
|-----------------------|---------------------------|
| a. on the front porch | b. on the welcome mat |
| c. in a garbage bag | d. in the washing machine |

3. How often did Alice change the plastic garbage bag?

- | | |
|----------|-------------------|
| a. daily | b. every two days |
|----------|-------------------|

แล้ว หลายครั้งที่ฉันอยากย้อนกลับไปแก้ไขสิ่งที่ฉันพูดกับพ่อ แม่ และคนอื่นๆในบ้านด้วย ฉันรู้สึกว่ามันน่าพูด
 อย่างนั้นเลย ภาพของนนท์กับแฟนเก่าในงานสังสรรค์ ยังวนเวียนอยู่ในหัวของฉัน มันคงยังรู้สึกแยเหมือนเมื่อคืน
 ก่อน

Questions:

1. ใครมาเรียกผู้เขียน

ก. น้องสาว

ข. พ่อ

ค. แม่

ง. คนในบ้าน

2. ผู้เขียนรู้สึกอย่างไรกับวันนี้

ก. วันที่ดี

ข. วันที่ไม่ดี

ค. วันที่น่าตื่นเต้น

ง. วันที่น่าเบื่อ

3. ฝนได้ช่างมีลักษณะอย่างไร

ก. ฝนตกหนักมากเป็นเวลานาน

ข. ฝนตกหนักมาเพียงครู่เดียว

ค. ฝนตกพริ้วๆ เป็นเวลานาน

ง. ฝนตกๆ หยุดๆ

4. เหตุการณ์อะไรที่น่าจะเกิดขึ้นเมื่อคืนก่อน

ก. นนท์ไม่ยอมคุยกับแฟนเก่า

ข. นนท์กับแฟนเก่าทะเลาะกัน

ค. นนท์สนิทสนมกับแฟนเก่า

ง. แฟนเก่าไม่ทักทายนนท์

5. นนที่น่าจะมีความสัมพันธ์อะไรกับผู้เขียน

ก. ญาติสนิท

ข. น้องชาย

ค. เพื่อนสนิท

ง. คนรัก

4.3.3. Language skills measures

In the current study, vocabulary and listening comprehension were designed as measures of language skills to assess the language ability of the participating students.

4.3.3.1. Listening comprehension tests

The purpose of the Thai and English listening comprehension tests was to evaluate the participants' listening skills in both Thai and English. The tests were specifically developed for this study, comprising ten listening comprehension passages with 50 questions items in a “yes” or “no” format. Each listening comprehension passage, consisting of three to four simple sentences on various everyday life topics, was followed by five questions. These questions were based on five types of questions used in the inferential skills tests. All listening passages and questions were recorded as read by a native speaker at a normal conversational speed. When administering the test, each listening passage and associated questions were played to the participants once. They were then asked to choose “yes” or “no” to the related questions.

I English listening comprehension test

Ten passages with 50 questions were developed to measure English listening comprehension. All passages and questions were recorded by an English native speaker at normal conversational speed. An example from the test is provided below (see Appendix E for the full measure).

Spoken passage:

Kim is 17 years old. She is going to finish high school next month. She wants to have a party for her graduation. She'd like to enjoy the party with her friends so she doesn't want her parents to be there.

Spoken question:

Does Kim want her parents to be at the party?

(Yes) (No)

II Thai listening comprehension test

The Thai listening comprehension test, consisting of ten Thai listening comprehension passages and 50 “yes” or “no” questions, was carefully designed by the researcher. Two Thai university lecturers, who were an expert in Thai language, advised on the Thai listening comprehension test to terms of complexity and ambiguity to arrive at an appropriate of content and question items. Following amendments based on the suggestions of two Thai university lecturers, all the listening comprehension passages and questions were recorded as read by a Thai native speaker at normal conversational speed. An example from the test is provided below (see Appendix F for the full measure).

Spoken passage:

วันนี้แม่รู้สึกไม่ค่อยดี ครั้นเนื้อครั้นตัว เจ็บคอ สงสัยจะโดนไข้หวัดเล่นงานซะแล้ว เมื่อเช้าทานยา แต่
 อาการก็ยังไม่ดีขึ้น เดี่ยวจะโทรไปลางานก่อน และคงต้องไปหาคุณหมอแล้วละ

Spoken question:

ผู้พูดรู้สึกดีขึ้นหลังจากทานยาใช่หรือไม่

(ใช่) (ไม่ใช่)

4.3.3.2. Vocabulary tests

The objective of the Thai and English vocabulary tests was to investigate the vocabulary proficiency of the participating students. The vocabulary tests both in Thai and English contained 50 items of four options. In the test structure, a targeted vocabulary item was presented with a sentence containing that word. The participants selected one option from four multiple choice options which has the same meaning as the targeted word. The Vocabulary Size test of 20,000 versions (I. S. P. Nation & Beglar, 2007) was applied as a fundamental resource of the English vocabulary measure. The Thai vocabulary test was developed based on this vocabulary size test.

I English vocabulary test

The Vocabulary Size test (20,000 version) developed by I. S. P. Nation and Beglar (2007) was used to examine the English vocabulary proficiency of the participating students. The Vocabulary Size test is a standardised test used to evaluate the English vocabulary knowledge of English native speakers and non-native English learners. The 20,000 version of the Vocabulary Size test contains two forms (A and B), with 100 items in each form. For this study, form B was randomly chosen to be a measure of English vocabulary. To avoid the participants' boredom and a lack of motivation in attending a 100 item test administration, 50 test items were randomly selected from the 100 items. An example from the test is provided below (see Appendix G for the full measure).

Example item and possible answers

basis: This was used as the <basis>.

- | | |
|--------------|-------------------------|
| a. answer | b. place to take a rest |
| c. next step | d. main part |

II Thai vocabulary test

The set of Thai vocabulary used for the Thai vocabulary test was randomly selected from Thai vocabulary lists of secondary level education Thai language textbooks. All participants had encountered all of these words when they were in high school. These words were then placed in a format following that used with the English vocabulary measure. An example from the test is provided below (see Appendix H for the full measure).

Example item and possible answers

กัลยาณี เธอเป็นกัลยาณี

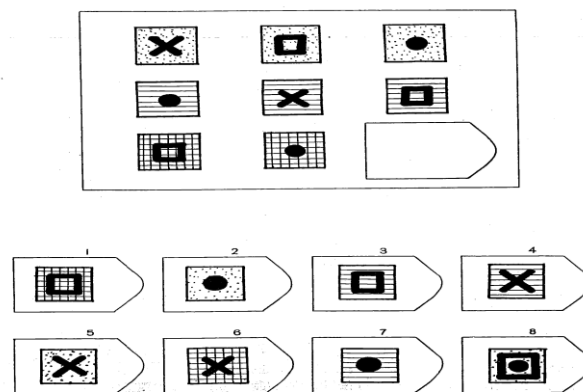
- | | |
|--------------|---------------------|
| ก. หญิงงาม | ข. หญิงที่เรียบร้อย |
| ค. หญิงสุขุม | ง. หญิงอ่อนช้อย |

4.3.4. Non-verbal reasoning abilities measure

The Raven's Advanced Progressive Matrices (Raven et al., 2003), as originally developed by Raven et al. (1994), has 36 test items. The short form of the Raven's Advanced

Progressive Matrices (AMP) consists of 12 items and was abridged by Arthur and Day (1994). The original 36 items of the Raven's Advanced Progressive Matrices were designed to assess an individual's intellectual capacity, thinking ability, and observation skills: it has been recommended as a successful measure for identifying academic potential (Ablard & Mills, 1996). The purpose of the shorter form was to allow for a shorter administration time as well as providing similar psychometric properties similar to the long form does. The reliability of the 12 item short form was obtained at .072 (Arthur & Day, 1994).

Due to appropriate testing time administration, the Advanced Progressive Matrices-Short Form (APM-SF) by Arthur and Day (1994) seemed to be suitable to employ as a non-verbal reasoning abilities measure of this study. The details of the test procedure are described. For each test item, the participants were asked to identify the missing element that completes a pattern from eight options provided (the pattern is presented in the form of a matrix). For example, the correct answer of the test item below is option 6, as it contains properties that fit best with all provided patterns: i.e., the two complete rows have a cross, a square and a dot, so the final row should have each of these shapes too, and the bottom row has a checked background, so the correct option should be a cross on a checked background.



4.3.5. Questionnaire on reading comprehension strategies

To develop a questionnaire on reading comprehension strategies, the researcher studied the questionnaires on reading strategies in the research of Abbott (2006) , Akkakoson (2011), Phakiti (2003), and Tsai, Talley, and Ernst (2010) . The questionnaire was utilised to ascertain how participants were aware of reading comprehension strategies that they were using when they read.

The reading comprehension strategies questionnaire comprised two sections. The first section surveyed the participants' demographic characteristics, related academic background, and their self-evaluation on their reading skills. The second section consisted of statements to explore the reading comprehension strategies that the participants used or were aware of while reading. The questionnaire statements relating to reading comprehension strategies used in this questionnaire were developed based on strategies and skills needed in four types of inferential skills questions in this study, namely, Grammatical Relating Inference, Vocabulary Related Inference, Text Coherence Inference and Prior Knowledge Inference. The preliminary version of this section of the questionnaire consisted of 15 items. This version was examined by three research experts to correct any mistakes and resolve issues of ambiguity, and to suggest any points that the researcher may have omitted. Taking their comments into account, three statements were revised, two were removed, and one was added.

The final version of the second section of the questionnaire consisted of 14 items. It was translated into a Thai version, which was reviewed and proofread by two Thai experts for clarity. The questionnaire was designed to use a Likert-scale. The participants were asked to rate each statement on a five-point scale indicating (1) never, (2) seldom, (3) sometimes, (4) regularly, and (5) always. An example of the questionnaire format is provided below (see Appendix I for the full questionnaire).

Example question in Thai with English translation in brackets

1. ฉันได้นำความรู้ทางหลักไวยากรณ์ที่ได้เรียนมาใช้ในการอ่าน 1 2 3 4 5

(I apply my learned grammatical knowledge while reading)

4.4. Pilot study of assessment measures

4.4.1. Aims

The pilot study sought to achieve two goals. The first aim was to ensure that the test items were appropriate to use in the main study: items that could discriminate between good and poor performers on the tests would be retained. Second, the results from the piloting were utilised for revision at achieving the most appropriate measures and administration procedures in the conduct of the main study.

4.4.2. Participants

A group of 84 second year university students participated in the pilot study. They were studying the second semester of the 2013 academic year at the university in which the main study would be conducted. They shared similar backgrounds to the students who would participate in the main study in terms of age group and educational context. The participants were of a similar age group (18 or 19 years old) and in their second year of studying in the same institution, when they participated in either the pilot or main study.

4.4.3. Tests and materials

The full assessment battery targeted for the main study comprised ten measures. However, two measures, the Raven's Advanced Progressive Matrices (short form) and the questionnaire on reading comprehension strategies, were not included in the pilot administration. The Raven's Advanced Progressive Matrices (short form) has been used regularly as a standardised non-verbal measure across many different contexts and countries (see Landi, 2010; Purvis, 2014), and has been shown to possess good psychometric properties even in its short form (Ablard & Mills, 1996; Arthur & Day, 1994). Therefore, further development of this scale was unnecessary. The questionnaire on reading comprehension strategies aimed to explore the participants' self-perceptions, which were self-reflections on their own reading strategies. Consequently, the questionnaire was retained in its developed form for the main study. Therefore, a battery of eight tests was used in the pilot testing. All of the tests aimed to test the same skills in both Thai and English. The bilingual measures were reading comprehension, inferential skills, vocabulary and listening comprehension. The 84 students were divided into small groups for ease of testing and no one participant took all eight tests in this pilot. Generally, each participant attended two or three test sittings, which sittings depended on the availability of the participants.

4.4.4. Procedures

The objectives of this research and the pilot procedure were demonstrated to the participants at the first meeting and the 84 students completed the consent forms to agree to participate in this study. The pilot study was conducted over a period of two weeks in the second semester of the 2013 academic year. Testing was held by appointment after class hours. It took a total of 3 hours to administer all tests.

Two pilot sessions with two groups of student were administered on two different weeks. The first session was conducted to pilot the Thai vocabulary and Thai listening comprehension tests; the second session was administered English vocabulary and English listening comprehension tests. The following week, inferential skills and reading comprehension measures, in both Thai and English, were conducted. There were four sittings: one for each of the Thai inferential skills, English inferential skills, Thai reading comprehension and English reading comprehension tests. Each participant was assigned to sit on one of these four sessions. The researcher conducted the majority of pilot sessions, and only two sessions of the pilot, which were English inferential skills test and Thai reading comprehension test, were administered by an examiner who was an English university lecturer with prior training in test administration. Table 4.1 shows the details of the piloting administration.

Table 4.1. The details of the pilot administration

Measures	No. of Items	Time allocation	No. of participants
Thai measures			
1. Reading comprehension	40	30	16
2. inferential skills	50	20	24
3. Vocabulary	50	15	32
4. Listening comprehension	50	15	32
English measures			
1. Reading comprehension	40	40	23
2. inferential skills	50	30	21
3. Vocabulary	50	15	29
4. Listening comprehension	50	15	29

4.4.5. Examiner's training

The process of training aimed to ensure that test administration was standard. One Thai lecturer of English was recruited to administer the test during the pilot and main study. The examiner's training process was conducted in two afternoons. An overview of the research and all measures was explicitly explained on the first day of the training. As all the testing measures were multiple-choice format and would be administered in group sitting, general testing administration procedures were relatively similar. The examiner was given the examiner's manual which consisted of all the instructions for test administration (see Appendix J for the manual used). On the second day the examiner was provided opportunities to practice how to give instructions.

4.5. Method of item analysis and results

Six of the eight tests were revised after the pilot study. Item analyses were considered primarily to identify appropriate question items which could discriminate between good and poor performers. For example, test items with a ceiling effect would have the potential to be too easy for many of the examinees leading to many scores near the maximum possible score. Likewise, items with a floor effect would potentially be too difficult for most participants and lead to large numbers of incorrect answers. Such items, therefore, may not discriminate well between good and poor performance. Hence, items showing the potential for floor or ceiling scores were removed from the test.

Time allocation for the main study testing was a second concern. A large number of items were developed for each test so that some could be deleted (mainly those showing poor discrimination) and better suit the time allocation which would be given in the main study tests.

The following table 4.2. displays the descriptive statistics for all six measures in the pilot testing and after the process of item deletion.

Table 4.2. Descriptive statistics for six measures in the pilot and after the process of item deletion.

Measure	No. of Partici- pants	Pilot			After item deletion		
		Total scores	Mean	SD	Total items	Mean	SD
Thai Reading comprehension	16	40	26.94	3.70	35	22.25	3.32
Thai Inferential Skills	24	50	29.92	7.31	45	25.88	7.20
Thai vocabulary	32	50	26.28	4.24	50	26.28	4.24
Thai listening comprehension	32	50	40.75	3.98	25	18.19	2.52
English Reading comprehension	23	40	10.78	2.26	40	10.78	2.26
English Inferential Skills	21	50	15.90	5.19	35	14.24	5.18
English vocabulary	29	50	12.62	4.06	40	11.79	3.66
English listening comprehension	29	50	25.76	2.91	40	20.55	2.81

4.5.1. Changes made to the finalized assessments

Based on two considerations of item analysis presented above in the section 4.4., some original items of six tests were removed to increase the overall reliability of the tests, and two tests were retained without any amendment for the main study. Details of the item deletion process are discussed below.

Thai reading comprehension test

Forty items of the Thai reading comprehension test were piloted with 16 participating students in the 30-minute time allocation. The pilot results indicated that five items demonstrated a tendency for ceiling or floor effects: four items were too easy, with 15 out of 16 participants getting the item correct, and one item appeared to be too difficult as all participants' answers were incorrect. As a result, 35 items of the piloted Thai reading comprehension test were retained for the main study. Since every participant finished the test within the permitted time, the 30 minutes allocated for the piloting session seemed to be longer than necessary. Consequently, a reduction of time allocation to 25 minutes should be sufficient for most participants in the main testing study, particularly given the reduction in the number of items in the test.

English reading comprehension test

Twenty-three students participated in the English reading comprehension test. The piloting results indicated that all 40 items showed adequate variability in testing and, therefore, all were retained for testing in the main study. As regards allocated testing time, six of 23 participants did not complete the test in the allocated time of 30 minutes. Thus, a 30-minute time allocation was considered to be appropriate for the main testing study as most participants would be expected to complete the test.

Thai inferential skills test

Twenty-four participants piloted the Thai inferential skills test. The test consisted of 50 items drawn from ten reading passages (one reading passage / five question items). The pilot results demonstrated that the majority of items (four out of five) of one reading passage seemed to be too easy, with 22 of 24 participants answering three of them accurately, and 18 of 24

answering the fourth accurately. Therefore, these five question items were removed due to a lack of variability, leaving 45 questions from nine reading passages being retained for the main study. The twenty minutes allowed for pilot testing were also retained as only nine of the 24 participants did not complete the test.

English inferential skills test

Twenty-one students were administered the English inferential skills test. The test comprised ten reading passages with 50 question items (one reading passage / five question items) to be completed within a 30-minute testing time. Fourteen participants were not able to finish the test within the permitted time and most participants completed only seven reading passages. Given that the majority of participants did not complete questions 36 to 50, there was insufficient data to assess the variance of these test items. Thus, these 15 question items, from the reading passages eight to ten, were removed. The remaining 35 items from seven reading passages showed adequate variability for the main study.

Thai vocabulary test

The Thai vocabulary test consisting of 50 four choice question items was conducted with 32 participants. The item analysis results suggested that all 50 items demonstrated a large range of variability. Hence, these 50 items were appropriate for inclusion in the main study. Additionally, given that the 15 minutes allocated in the pilot session seemed longer than needed to complete the task for most students, the time was reduced slightly to 12 minutes.

English vocabulary test

Twenty-nine participants attended the 50 item English vocabulary test. The mean score was 12.62, with a maximum score of 20 and a minimum score of five. These results suggested that the test was relatively difficult, despite each item showing reasonable variance. Six

participants did not finish the test and several participants indicated that they had to rush to finish the test. This indicated that the number of test items might be reduced, and that the 15 minutes be retained for this reduced set of items. Therefore, the last ten items were removed.

Thai listening comprehension test

Thirty-two students participated in the pilot study. The Thai listening comprehension test consisted of ten passages with 50 question items (one listening passage / five question items). Piloting indicated that about half of items showed evidence of a trend towards ceiling effects, with 28 to 31 of the participating students producing correct answers. Consequently, these items were withdrawn and twenty-five question items were retained for the main testing.

English listening comprehension test

The English listening comprehension test consisted of 50 yes-no question items and was administered to 29 participants. Two listening passages with ten corresponding question items were removed as they showed little variability in the pilot data. Forty items were finalized for the main testing.

Chapter Five

Methodology (Main Study) and Findings

This chapter describes the methodology and the results of all ten measures used in the present study which address research questions 1 to 3:

1. Is there a relationship between inferential skills in Thai (L1) and English (L2)?
2. Do inferential skills support reading comprehension within a single language, i.e., Thai or English?
3. Can inferential skills in one language support reading comprehension in another language (Thai-L1 and English-L2)?

To answer the above research questions, the following analyses were conducted using SPSS (version 20.0):

1. Descriptive statistics were examined to investigate the level of present knowledge of the participants.
2. Pearson correlations were calculated to determine the relationship between scores on the measure of reading comprehension, and inferential skills together with other predictor variables in this assessment battery.
3. Hierarchical multiple regression analyses were performed to assess the predictive ability of inferential skills in reading comprehension.

5.1. The research context and participants

5.1.1. The research context

Burapha University is a major university in the eastern region, which aims at distributing equal educational opportunities to all students in the eastern region of Thailand. Therefore, the university allocates 50 percent of its admissions to high school graduates from the eastern region, and other 50 percent of students from all over the country. Burapha university has three campuses in three provinces: Chonburi, Sakaew, and Chantaburi. This study took place on the Chantaburi campus of the university.

5.1.2. Participants

The cohort of this study was 220 Thai second-year university students who were attending the summer semester (March-May) of the academic year 2014, on the Chantaburi campus of Burapha University. The first section of the reading comprehension strategies questionnaire provided some demographic backgrounds about the participants. The participants' average age was 18-19 years old, the majority were female, and none were majoring in English. Details of the participants' backgrounds are as in table 5.1.

With respect to English courses at the tertiary level, the participants, as non-English major students, needed to complete three English courses in order to meet the requirements for a four-year undergraduate programme. The first two English courses are foundational English courses: English I and English II. These English courses are designed to enable students to develop language skills in an integrated way. The time allocation for one course is three periods of sixty minutes per week for sixteen weeks. All language skills are given equal emphasis. The course assessment is based on 30% for in class performance, 30% for the midterm test and 40% for the final test. In addition, the students have to complete another course in English for specific

purposes. The content of this course varies according to the major of students, because the course aims to provide specific English vocabulary as it relates to the participants' study major. Generally, based on the majors of study available at this campus, this course is broadly divided into one of three areas: science, social sciences, or art. With respect to Thai language courses, the participants are required to complete only one Thai language course, called Thai Language Skills for Communication. This course aims to provide students practice in summarizing, critiquing, and evaluating what they receive through reading, listening, and watching. They used that information to do an oral presentation based on their summary.

Table 5.1. Background of participants

		No of participants	%
Gender	Male	76	34.5%
	Female	144	65.5%
Education prior to university	High school	218	99.1%
	Vocational school	2	.9%
The number of years of studying English in school	12	44	20%
	13	176	80%
Major subjects	Business Administration	93	42.3%
	Logistics and Cross-Border Trade Management	60	27.3%
	Agricultural Technology	32	14.5%
	Information Technology	35	15.9%
Self-evaluation of their reading skill in Thai	Very poor	0	0%
	Poor	6	2.7%
	Fair	94	42.7%
	Good	115	52.3%
	Excellent	5	2.3%
Self-evaluation of their reading skill in English	Very poor	19	8.6%
	Poor	94	42.7%
	Fair	102	46.4%
	Good	5	2.3%
	Excellent	0	0%

Response to the questionnaire and background information on the university student population suggested that participants were relatively homogenous. First, all were Thai native speakers in the same age group, and shared similar cultural backgrounds. Second, they had

studied English for about 12 to 13 years. When participants were asked to evaluate their reading skills, 42.7 percent ($n = 94$) of them measured their English skills as being “poor”, while 46.4 percent of them ($n = 102$) rated their skills as “fair”, suggesting that the participants had low self-perceptions toward their English reading abilities. In terms of Thai reading skills, the majority of participants (52.3%, $n = 115$) rated themselves as “good” readers. Interestingly, despite the fact that Thai is their native language, 42.7 percent of them ($n = 94$) rated their Thai skills as being “fair”.

5.2. Measures for the main study

Ten measures were administered in this study: the eight used in, and revised following the pilot study, plus the Raven’s Advanced Progressive Matrices, and the questionnaire on reading strategies. Table 5.2. presents basic information about these ten measures.

Table 5.2. The assessment battery used in the main study

Measure	Types of question items	No of item	Time
1.Thai reading comprehension	four multiple choices	35	25
2.English reading comprehension	four multiple choices	40	30
3. Thai inferential skills	four multiple choices	45	20
4. English inferential skill	four multiple choices	35	28
5. Thai vocabulary	four multiple choices	50	12
6. English vocabulary	four multiple choices	40	15
7. Thai listening comprehension	Yes or no	25	10
8. English listening comprehension	Yes or no	40	10
9. Raven's Advanced Progressive	Eight multiple choices	12	10
10. Questionnaire	Likert Scale (1-5)	14	10

5.3. Data collection procedure

Data collection was conducted between March and May 2014 at the same university in Thailand at which the pilot work was performed. Permission to conduct research in this institution had already been given by the director of the university for the pilot and main study. The researcher arranged meetings with second year students to invite them to participate in the research study. The agenda of the meeting consisted of information about the aims of the research, the data collection procedures, and the signing of consent forms. Prior to participating in the study, all participants were given a participation sheet and asked to sign a consent form, in accordance with the University of Canterbury Human Ethics Committee's requirement. The form indicated that this study aimed to investigate inferential skills and reading comprehension. It informed the students that they were invited to participate in the study, but that participation

was not obligatory, and that, if they did participate, they could withdraw from the study at any time without penalty.

Measures were administered to participants on two different days by the researcher; one day for the Thai measures and the second for the English measures. The first session occurred in the third week of term and was followed by the second session which occurred between the sixth and eighth week of term depending on the availability of the participants. The tests were administered either in the evening after normal classes or on a weekday when the participants did not have a lecture and were available to participate. For those participants who agreed to participate on a weekday evening, the researcher reviewed their class schedules to ensure that on the day of the test they had only a morning or an afternoon class, or none at all. This was done to minimize the potential for participant boredom or exhaustion impacting upon the test results. Moreover, the researcher postulated that participants who had attended an afternoon class should have at least one or two hours of rest prior to testing

Test sessions were arranged by appointment with a group of 30-40 participants. As the 220 participants came from four different academic majors, and the 30-40 participants from the same major were likely to have the same schedule of classes, a testing group of 30-40 participants from each of these majors was likely to have the same schedule of classes. Grouping participants by their schedule of classes was convenient for both the research and the participants in arranging an appropriate time for test administration. Moreover, a group of 30 to 40 participants was a suitable number for testing in a classroom setting, allowing an appropriate spacing between each participant.

Each administration took approximately 90 minutes in a classroom setting, but the participants were not allowed to talk or see each other's work during the test. The test instruction and procedures were clearly explained in Thai in order to facilitate the participants'

understanding before administering the tests. To avoid tiredness/boredom effects, there was a 40 minute break in each testing session. Before taking a break, the participants were informed as to how significant their participation was as a contribution to this research and were encouraged to remain for the second session. Drinks and some light snacks were provided to refresh the participants in front of the testing classroom during the break. As a result, all participants returned to continue the second section of the administration after the break.

In consideration of order of testing for the two sessions, arranging an inferential skills measure and a reading comprehension measure into different sessions was a primary concern. These measures were related to reading a variety of passages, therefore, it might lead to the participants being very exhausted if these two tests were conducted in one session. As a result, test orders in these two test administrations might be slightly different due to the variation of time required for Thai and English measures. Details of measures and the amount of test time for both sessions are described in Tables 5.3.

Table 5.3 Details of two test administrations

Measures	No of items	Time allocation
First day test administration		
1. Questionnaire	14	10
2. Thai listening comprehension	25	15
3. Thai reading comprehension	35	25
40 minute break		
4. Thai vocabulary	50	12
5. Thai inferential skills	45	20
Second day test administration		
6. Raven's Advanced Progressive	12	10
7. English vocabulary	40	15
8. English inferential skills	35	28
40 minute break		
9. English listening comprehension	40	15
10. English reading comprehension	40	30

5.4. Analysis of the data and statistical techniques

The numerical data from ten measures in the assessment battery was analysed by a quantitative statistical method. Following descriptive statistics assessing levels of performance in measures, Pearson correlation coefficients (Bachman, 2004) were used to demonstrate the relationships between inferential skills and reading comprehension. In addition, a series of hierarchical multiple regression analyses were conducted to investigate differences in the level of

prediction across the measures. The dependent variable in this study was reading comprehension in both Thai and English. The primary independent variable was inferential skills in Thai and English, and three additional independent variables were two language skills (vocabulary and listening) and non-verbal reasoning.

5.5. Data from the main study

5.5.1. Descriptive statistics for the main study

Descriptive statistics of nine out of ten measures from the data of 220 Thai undergraduate students are presented in Table 5.4

Table 5.4. Descriptive statistics for nine measures in the main study (N = 220)

Measures	No. of items	Mean	SD	Range
1. Thai reading comprehension	35	19.08	3.89	8-28
2. Thai inferential skills	45	27.82	5.77	9-38
3. Thai listening comprehension	25	18.12	2.53	2-24
4. Thai vocabulary	50	25.72	4.37	11-38
5. English reading comprehension	40	11.42	3.36	2-23
6. English inferential skills	35	13.22	4.35	3-26
7. English listening comprehension	40	19.61	3.11	10-27
8. English vocabulary	50	11.10	3.58	1-20
9. Raven's Advanced Progressive	12	5.42	2.29	0-11

5.5.2. Reliability analysis of data from main study

To create greater confidence in the data generated by the main study, the data of two hundred twenty students were used to examine the internal consistency reliability of the research measures. Cronbach's alpha was used to measure the internal consistency reliability of the tests to ascertain all the test items within one test were consistent in testing the same thing (Muijs, 2011). The table 5.5. displays the reliability estimates of nine measures from the main study.

Table 5.5. Reliability estimates of measures of the data from the main study (prior to the process of item deletion)

Measures	Thai		English	
	No. of items	α	No. of items	α
Bilingual Measures				
1. Reading comprehension	35	.541	40	.350
2. Inferential skills	45	.759	35	.640
3. Vocabulary	50	.534	40	.415
4. Listening comprehension	25	.292	40	-0.13
Other measures				
	No. of items		α	
5. Raven's Advanced Progressive	12		.603	

To lead to a greater alpha score of the reliability of the entire tests, the reliability analysis was performed again with an item-deletion analysis. Some test items, which were suggested for deletion from the analysis, were removed to increase the reliability. The process of item deletion was completed when there was little or no increase in reliability.

Table 5.6. The number of test items in the main study and revised version after reliability analyses

Measures	Thai		English	
	No. of items		No. of items	
Bilingual Measures	Main testing	Finding analyses	Main testing	Finding analyses
1. Reading comprehension	35	30	40	35
2. Inferential skills	45	45	35	35
3. Vocabulary	50	40	40	30
4. Listening comprehension	25	15	40	-
Other measures	No. of items			
5. Raven's Advanced Progressive	12			

The data from the above table indicated that the number of items of six measures had been modified. Only three measures, consisting of Thai inferential skills, English inferential skills and the Raven's Advanced Progressive Matrices measures, had been retained for the finding analyses, because the reliability of these measures was sufficiently appropriate to retain for the further finding analyses. The summary of reliability analyses of all measures is presented in table 5.7.

Table 5.7. Reliability estimates of measures for the analyses

Measures	Thai		English	
Bilingual Measures	No. of items	α	No. of items	α
1. Reading comprehension	30	.594	35	.407
2. Inferential skills	45	.759	35	.640
3. Vocabulary	40	.606	30	.513
4. Listening comprehension	15	.428	40	
Other measures	No. of items		α	
5. Raven's Advanced Progressive	12		.603	

5.6. The data for the research analyses

The data obtained from 220 participants in the main study was revised, based on the item deletion analysis that was used to investigate the research findings.

5.6.1. Descriptive statistics for the main study after revising based on the item deletion of the reliability analysis

Descriptive statistics of nine out of ten measures from the data of 220 Thai undergraduate students can be found in this section. Table 5.8. presents the descriptive statistics of the Thai measures consisting of measures of reading comprehension, inferential skills, listening comprehension, and vocabulary.

Table 5.8. Descriptive statistics for the Thai language measures (N = 220)

	No of items	Mean	SD	Range
Thai reading comprehension	30	17.12	3.81	7-27
Thai inferential skills	45	27.82	5.77	9-38
Thai listening comprehension	15	10.64	2.06	2-15
Thai vocabulary	40	21.80	4.19	8-33

Overall, all the scores of Thai measures demonstrated the great variability of the tests. None of the measures obtained a possible ceiling score. The total score of 45 items of the Thai Inferential skills test contained five types of questions, namely, Literal Comprehension, Grammatical Connecting Inference, Vocabulary Related Meaning Inference, Text Coherence Inference, and Prior Knowledge Inference. Each type of questions comprised nine question items. Literal Comprehension questions had the highest mean score ($M = 7.22$ ($SD = 1.49$)). The scores of Text Coherence Inference questions had the lowest mean score ($M = 4.43$, $SD = 1.86$). Literal Comprehension questions seemed to be easier for the participants than the four other types of questions. This can possibly be explained by the fact that Literal Comprehension questions were more likely to require-only factual information that the participants were able to acquire directly from the reading passage. When reading Text Coherence inference questions, the participants had to apply different language skills to correctly answer this type of question.

Table 5.9. Descriptive statistics for five types of questions in the Thai inferential skills measure

Types of questions in the Thai inferential skills test	No of items	Mean	SD	Range
1. Literal Comprehension	9	7.22	1.49	1-9
2. Grammatical Connecting	9	6.22	1.32	2-9
3. Vocabulary Related Meaning	9	4.84	1.56	0-9
4. Text Coherence	9	4.43	1.86	0-8
5. Prior Knowledge	9	5.11	1.61	1-9
Total	45	27.82	5.77	9-38

As can be seen in Table 5.9., nine was the max score of Literal Comprehension, Grammatical Connecting Inference, Vocabulary Related Meaning Inference, and Prior Knowledge Inference questions, which was possibly the ceiling score, but the maximum score of Text Coherence Inference was eight. Generally, the range of scores of the five types of questions was relatively similar, minimum and maximum scores were between zero-two and eight-nine.

Table 5.10. presents the descriptive statistics of four English measures: reading comprehension, inferential skills, listening comprehension and vocabulary.

Table 5.10. Descriptive statistics for the English measures (N = 220)

	No of items	Mean	SD	Range
English reading comprehension	35	10.10	3.31	1-20
English inferential skills	35	13.22	4.35	3-26
English vocabulary	30	8.70	3.38	1-16

Roughly, the scores of all three English assessment measures indicated variation. None of the mean scores obtained possible minimum or maximum scores. The mean of the English reading comprehension test was 10.10 (SD = 3.31) of the total score of 35. Likewise, the mean of the English vocabulary test was 8.70 (SD = 3.38) of the total score of 30. This suggested that the measures of English reading comprehension and vocabulary were relatively difficult for the majority of participants. Additionally, the five types of question in the English inferential skills measure were further assessed. The means and the standard deviation of these questions in the English inferential skills test are presented in table 5.11.

Table 5.11. The mean and standard deviation of the five types of questions in the English inferential skills measures

Five types of questions in the English inferential skills	No. of items	Mean	SD	Range
1. Literal Comprehension	7	3.78	1.49	0-7
2. Grammatical Connecting	7	2.77	1.40	0-6
3. Vocabulary Related Meaning	7	1.84	1.20	0-5
4. Text Coherence	7	2.24	1.21	0-6
5. Prior Knowledge	7	2.59	1.37	0-6
Total scores	35	13.22	4.35	3-26

The above table demonstrates the descriptive statistics of the five types of questions in the English inferential skills test. The highest mean score was Literal Comprehension (M =3.78, SD = 1.49), which is the same result as for Thai inferential skills test. The participants obtained their lowest mean score in Vocabulary Related Meaning Inference (M = 1.84, SD = 1.20). Likewise, the mean scores of Vocabulary Related Meaning Inference in the Thai inferential skills test indicated the second lowest mean scores. The similar results indicated that these Vocabulary Related Meaning Inference questions in both Thai and English were relatively

difficult for the participants. Table 5.12. presents the descriptive statistics of the Raven's Advanced Progressive Matrices which were used to evaluate non-verbal reasoning abilities of the participants.

Table 5.12. Descriptive statistics for Raven's Advanced Progressive Matrices (N=220)

	No of items	Mean	SD	Range
The Raven's Advanced Progressive Matrices (short form)	12	5.42	2.29	0 / 11

5.7. Correlations between predictor variables included in the Assessment battery

This section presents the results for the study's first research question, that asks whether there is a relationship between inferential skills in Thai (L1) and English (L2). To answer this research question, the Pearson product-moment correlation coefficients were conducted to assess the relationships among six predictor variables including inferential skills in Thai and English. Table 5.13. presents the results of this analysis.

Table 5.13. Pearson product moment correlation between six predictor variables

	1	2	3	4	5	6
1. Thai inferential skills		.159*	.436**	.413**	.217**	.243**
2. Thai listening comprehension			.206**	.061	.105	.206**
3. Thai vocabulary				.328**	.334**	.186**
4. English inferential skills				-	.280**	.167*
5. English vocabulary					-	.114
6. Raven's Advanced Progressive Matrices (short form)						-

* $p < .05$. ** $p < .01$.

The above table shows the correlations among six predictor variables of reading comprehension, consisting of two primary predictor variables (Thai and English inferential skills), three language skill measures (Thai listening comprehension, Thai vocabulary, and English vocabulary) and the Raven's Advanced Progressive Matrices as an additional variable.

The significant correlation result within the same language demonstrated that there were significant positive correlations among Thai predictor variables. The Thai inferential skills measure was positively correlated with performance on Thai listening ($r = .159$, $n = 220$, $p = .01$) and Thai vocabulary ($r = .436$, $n = 220$, $p = .01$). Furthermore, Thai listening comprehension and Thai vocabulary were positively correlated ($r = .206$, $n = 220$, $p = .01$). The English inferential skills measure was significantly correlated with the English vocabulary measure ($r = .280$, $n = 220$, $p = .01$).

With the respect to the correlation among predictor variables across languages, the findings indicated that Thai inferential skills were significantly positively correlated with English

inferential ($r = .413$, $n = 220$, $p = .01$) and with English vocabulary ($r = .217$, $n = 220$, $p = .01$). Inferential skills and vocabulary showed a positive relationship across languages in both Thai and English. Scores achieved on the Thai inferential skills measure were significantly positively correlated to scores on English vocabulary and vice versa. However, there was no significant relationship between English inferential and Thai listening comprehension.

With regard to the correlations between the Raven's Advanced Progressive Matrices and other predictor variables, there were positive relationships between the Raven's Advanced Progressive Matrices and four measures: Thai inferential skills, Thai listening comprehension, Thai vocabulary, and English inferential skills. Only English vocabulary was not correlated with the Raven's Advanced Progressive Matrices. In conclusion, to answer the first research question which aimed to investigate the relationship between inferential skills in Thai and English, the findings revealed that there was a positive relationship between Thai and English inferential skills at $.413^{**}$. The correlations of five types of inferential skills in Thai and English were also investigated. The results are reported in Table 5.14.

Table 5.14. Pearson product moment correlations between five types of questions in Thai and English inferential skills measures

Questions	1	2	3	4	5	6	7	8	9	10
1. Thai Literal Comprehension	-	.443**	.411**	.437**	.488**	.203**	.186**	.158*	.109	.267**
2. Thai Grammatical		-	.397**	.402**	.417**	.311**	.168*	.100	.092	.225**
3. Thai Vocabulary Meaning			-	.429**	.303**	.136*	.105	.099	.057	.158*
4. Thai Text Coherence				-	.513**	.234**	.354**	.180**	.157*	.259**
5. Thai Prior Knowledge					-	.269**	.265**	.247**	.164*	.312**
6. English Literal Comprehension						-	.408**	.261**	.190**	.395**
7. English Grammatical							-	.187**	.267**	.349**
8. English Vocabulary Meaning								-	.215**	.252**
9. English Text Coherence									-	.223**
10. English Prior Knowledge										-

* $p < .05$. ** $p < .01$.

The findings from the table 5.14. showed that, with the regard to the five types of questions in the Thai inferential skills measure, there were significantly moderate correlations between the five types of questions. The correlation between Thai Text Coherence Inference and Thai Prior Knowledge Inference was slightly higher than that of the other types of questions. All five types of questions in the English inferential skills tests also demonstrated positive correlations at the small to moderate levels.

Referring to the relationships across languages, Thai Text Coherence Inference and Thai Prior Knowledge Inference were positively correlated with all five types of questions in the English inferential skills test. When considering questions in the English inferential skills test, only English Multiple Sentence Inference had a positive correlation with all five types of questions in the Thai inferential skills test.

5.8. The relationships between predictor variables including the Raven's Advanced Progressive Matrices and reading comprehension

This section primarily aimed to investigate the relationship between inferential skills and reading comprehension in the same language. These analyses assessed the correlations of not only inferential skills, but also of other additional variables; namely, language skills (listening comprehension and vocabulary) and the Raven's Progressive Advanced Matrices, with reading comprehension of Thai and English. Bivariate correlations were conducted to assess the relationships among these variables using Pearson product-moment correlation coefficients.

5.8.1. The relationships between inferential skills and reading comprehension within the same language (Thai and English)

The Pearson bivariate correlation analysis was first performed to examine the relationship between inferential skills measure with other additional variables and reading comprehension

within the same language. Thai measures were investigated and followed by English measures, while the Raven's Advanced Progressive Matrices was added as an additional variable in all analyses.

Table 5.15. indicates the correlation analysis between Thai predictor variables including the Raven's Advanced Progressive Matrices and reading comprehension. The results demonstrated that all Thai measures and the Raven's Advanced Progressive Matrices had significant positive relationships with Thai reading comprehension. As can be seen, scores obtained on the Thai Inferential skills measure revealed a stronger positive correlation with Thai reading comprehension than other measures did. Furthermore, all five types of questions in the Thai inferential skills measure were significantly correlated with Thai reading comprehension. Interestingly, Thai Text Coherence inference showed the highest relationship with Thai reading comprehension ($r = .371$). One interesting finding was the correlations of Thai Vocabulary Related Meaning Inference and Thai vocabulary with Thai reading comprehension were relatively similar. This could possibly be explained that both measures were designed to investigate the vocabulary knowledge of the participants.

Table 5.15. Pearson product-moment bivariate correlations between Thai measures, the Raven's Advanced Progressive Matrices and Thai Reading Comprehension

	Thai reading comprehension
Thai inferential skills	.421**
Literal Comprehension	.309**
Grammatical Connecting	.327**
Vocabulary Related Meaning	.253**
Text Coherence	.371**
Prior Knowledge	.282**
Thai listening comprehension	.199**
Thai vocabulary	.245**
Raven's Advanced Progressive Matrices	.232**

* $p < .05$. ** $p < .01$.

Then, the analysis aimed to investigate whether there were any relationships between English measures including the Raven's Advanced Progressive Matrices and English reading comprehension. The findings of correlation are reported in Table 5.16.

Table 5.16. Pearson product-moment bivariate correlations between English inferential skills and English reading comprehension

	English reading comprehension
English inferential skills	.368**
Literal Comprehension	.241**
Grammatical Connecting	.294**
Vocabulary Related Meaning	.103
Text Coherence	.264**
Prior Knowledge	.283**
English vocabulary	.198**
Raven's Advanced Progressive Matrices	.140*

*p < .05. **p < .01.

The analysis from the table 5.16. indicates that there were significant correlations between all three measures and English reading comprehension. In consideration of the relationships of five types of questions and reading comprehension, only Vocabulary Related Meaning Inference did not show any positive relationship with English reading comprehension, whereby the four other types of in the test were significantly correlated with English reading comprehension.

5.8.2. The relationships across languages between predictor variables including the Raven's Advanced Progressive Matrices and Reading comprehension

This section describes the relationships across languages between Thai predictor variables and English reading comprehension or vice versa. The Pearson-Coefficient bivariate correlation analysis was also performed to assess whether there were relationships between all eight predictor variables in this study. The relationship between Thai predictor variables and

English reading comprehension was first investigated and the results are demonstrated in Table 5.17.

Table 5.17. Pearson product-moment bivariate correlations between Thai measures including the Raven's Advanced Progressive Matrices and English reading comprehension

	English reading comprehension
Thai inferential skills	.158*
Literal Comprehension	.062
Grammatical Connecting	.051
Vocabulary Related Meaning	.187**
Text Coherence	.135*
Prior Knowledge	.130
Thai vocabulary	.211**
Thai listening comprehension	.046
Raven's Advanced Matrices	.140*

* $p < .05$. ** $p < .01$.

The findings showed that two Thai predictor variables (Thai inferential skills and Thai vocabulary) and the Raven's Advanced Progressive Matrices demonstrated a relatively small correlation with English reading comprehension. However, Thai listening comprehension was not significantly correlated with English reading comprehension. Then, the correlation between English inferential skills and Thai reading comprehension was investigated and the results are displayed in Table 5.18.

Table 5.18. Pearson product-moment bivariate correlations between English measures and Thai reading comprehension

	Thai reading comprehension
English inferential skills	.318**
Literal Comprehension	.267**
Grammatical Connecting	.225**
Vocabulary Related Meaning	.226**
Text Coherence	.122
Prior Knowledge	.185**
English vocabulary	.120
Raven's Advanced Progressive Matrices	.232**

* $p < .05$. ** $p < .01$.

The findings showed that both English inferential skills and the Raven's Advanced Progressive Matrices were positively correlated with Thai reading comprehension.

In conclusion, there were some correlations across languages between inferential skills and reading comprehension. Interestingly, the relationship between English inferential skills and Thai reading comprehension ($r = .318$, $n = 220$, $p = .01$) was higher than the relationship between Thai inferential skills and English reading comprehension ($r = .158$, $n = 220$, $p = .05$).

5.9. Inferential skills as a predictor of reading comprehension in Thai and English

Results from the correlation analyses demonstrated positive relationships between inferential skills and reading comprehension within the same and across languages. This section further investigated whether inferential skills predict extra variability in reading comprehension in the same language as well as across languages. The hierarchical multiple regression analyses

were used to assess the level of prediction of reading comprehension provided by various measures in the assessment battery. The total score of the reading comprehension measures in Thai and English were used as the dependent variables (DV), while the measures of inferential skills in Thai and English were used as the primary predictor (independent) variables. Moreover, measures of listening comprehension and vocabulary were included as additional predictor variables due to their strong relationship with reading comprehension. The study aimed to further investigate the Raven's Advanced Progressive Matrices as another additional predictor variable. In each fix-order hierarchical multiple regression analysis, gender was entered in the first step as a control variable. The predictor variables of language skills and non-verbal (Raven's Advanced Progressive Matrices) were then entered in Step 2. Inferential skills measure was added in the last step.

5.9.1. Thai inferential skills as a predictor of Thai reading comprehension

This section investigated the ability of Thai measures consisting of Thai inferential skills, Thai listening and Thai vocabulary in predicting Thai reading comprehension. The first analysis was focused on the predictive ability of only Thai inferential skills, so gender was entered as a control and followed by the Thai inferential skills. Table 5.19. presents the results of a hierarchical regression analysis when entering gender as a control variable and the inferential skill scores as a predictor of Thai reading comprehension.

Table 5.19. Results of a hierarchical regression analysis investigating Thai inferential skills as a predictor of Thai reading comprehension

Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1 Control	.100	.100	F = 24.29 p < .001	Gender .261 p < .001
2 Thai inferential skills	.244	.144	F = 41.19 p < .001	Thai inferential skills .383 p < .001

Results obtained from this analysis demonstrated that Thai inferential skills were statistically significant. The inferential skills explained approximately 14 percent of variance in Thai reading comprehension with the Beta value ($\beta = .383$, $p < .001$).

Next, the language skills measures (Thai listening comprehension, Thai vocabulary) and the Raven's Advanced Progressive Matrices were entered into the model to investigate whether inferential skills predicted Thai reading comprehension after the predicting influence of these measures. These results are presented in Table 5.20.

Table 5.20. Results of a hierarchical regression analysis investigating Thai language skills and the Raven's in addition to Thai inferential skills as predictors of Thai reading comprehension

Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1 Control	.100	.100	F = 24.29 p < .001	Gender .279 p < .001
2 Thai language skills and Raven's	.215	.115	F = 10.49 p < .001	Thai listening .086 Thai vocabulary .068 Raven's .150 p = .015
3 Thai inferential skills	.283	.068	F = 20.39 p < .001	Thai inferential skills .300 p < .001

The data from the above table showed that variables of Thai language skills and the Raven's Advanced Progressive Matrices were statistically significant, with accounting for approximately 12 percent of variance of Thai reading comprehension. The predictor variable of Thai inferential skills was also significant, with explaining addition approximately 7 percent of variance above Thai language skills and the Raven's Advanced Progressive Matrices. In the final model, only Thai inferential skills were statistical significant ($\beta=.300$, $p < .001$).

In conclusion, these analyses revealed that all four predictor variables consisting of Thai listening, Thai vocabulary, the Raven's Advanced Progressive Matrices, and Thai inferential skills, Thai inferential skills was the best predictor of Thai reading comprehension.

5.9.2. English inferential skills as a predictor of English reading comprehension

Similar hierarchical regression analysis was conducted to investigate whether inferential skills were a predictor of English reading comprehension. Gender was entered into the model as a control variable, and English inferential skill was entered as a merely independent variable at step two. Table 5.21. shows whether English inferential skills influence in predicting English reading comprehension.

Table 5.21. Results of a hierarchical regression analysis investigating English inferential skills as a predictor of English reading comprehension

Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1 Control	.000	.000	F = .024 p = .878	Gender -.039
2 English Inferential Skills	.137	.137	F = 34.35 p < .001	English Inferential skills .373 p < .001

In this analysis, without the influence of other predictor variables, English inferential skills accounted for approximately 14 percent of variance in English reading comprehension. Next, two independent variables, including English vocabulary and the Raven's Advanced Progressive Matrices, were entered into the model at step two, after controlling for gender. English inferential skill was added as the last variable to investigate whether English inferential skill still made any contribute in predicting English reading comprehension after the influence of other variables. The results of this analysis are displayed in Table 5.22.

Table 5.22. Results of a hierarchical regression analysis investigating English language skills and the Raven's in addition to English inferential skills as predictors of English reading comprehension

	Variables	R ²	R ² Change	Sig. R ² Change	Final Beta	
1	Control	.000	.000	F = .024 p = .878	Gender	-.021
2	English language skills and Raven's	.054	.054	F = 6.172 p = .002	English vocabulary Raven's	.096 .072
3	English inferential skills	.151	.097	F = 24.473 p < .001	English Inferential skills	.332 p < .001

The findings obtained from the above data indicated that the model was statistically significant at steps two and three with language skills and the Raven's Advanced Progressive Matrices, explaining approximately 5 percent of variance in English reading comprehension, and English inferential skills predicted 10 percent above that of the language skills and the Raven's Advance Progressive Matrices. In this final model, only English inferential skills were statistically significant: English inferential ($\beta = .332$, $p < .001$).

In conclusion, this analysis indicated that reading comprehension performance in the same language was best predicted by inferential skills measures. Additionally, inferential skills significantly demonstrated a similar predictive power for assessing reading comprehension in the same language.

5.9.3. Thai inferential skills as a predictor of English reading comprehension

To assess the ability of Thai measures variables in predicting English reading comprehension, a hierarchical regression analysis was performed. The total score of the English reading comprehension was used as the dependent variable, while Thai predictor variables, consisting of Thai language skills and Thai inferential skills were the independent variables. The variables were entered in a prescribed order: gender of the participants was entered to control for the effects of the variable, followed by the Raven's Advanced Progressive Matrices, English language skills, Thai language skills, English inferential, and finally Thai inferential skills. Table 5.23. presents the results of the hierarchical regression analysis entering the Thai measures after English measures of English reading comprehension.

Table 5.23. Results of a hierarchical regression analysis investigating adding Thai predictors to English predictors of English reading comprehension

Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1 Gender	.000	.000	F = .024 p = .878	Gender -.015
2 Raven's	.020	.020	F = 4.420 p = .037	Raven's .072
3 English language skills	.054	.034	F = 7.786 p = .006	English vocabulary .080
4 Thai language skills	.073	.019	F = 2.176 p = .116	Thai vocabulary -.006 Thai Listening
5 English inferential skills	.155	.082	F = 20.619 p < .001	English inferential skills .327 p < .001
6 Thai inferential skills	.156	.001	F = .362 p = .548	Thai Inferential skills -.046

Results obtained from this analysis indicated that Thai inferential skills measure was not statistically significant. This suggested that the addition of Thai inferential skill scores did not increase the level of prediction of English reading comprehension. Three predictor variables were statistically significant, with the Raven's Advanced Progressive Matrices, explaining 2 percent of English reading comprehension, English language skills explaining additional 3.4 percent and English inferential skill explaining approximately 8 percent. In the final model, only the variable of English inferential skills was statistically significant ($\beta = .327$, $p < .001$).

5.9.4. English inferential skills as a predictor of Thai reading comprehension

Similar hierarchical regression was also performed to assess the ability of English predictor variables in predicting Thai reading comprehension. Scores obtained from the Thai reading comprehension were used as the dependent variable, while English predictor variables were considered to be independent variables. Gender was entered into the model in the first step as a control. Then, the all predictor variables were entered, starting with the Raven's Advanced Progressive Matrices, Thai language skills, English language skills, Thai inferential skills, and finally English inferential skills. The results are presented in Table 5.24.

Table 5.24. Regression analyse investigating adding English predictors to Thai predictors of Thai reading comprehension

	Variables	R ²	R ² Change	Sig. R ² Change		Final Beta
1	Control	.100	.100	F = 24.29 p < .001	Gender	.266 p < .001
2	Raven's	.167	.067	F = 17.328 p < .001	Raven's	.141 p = .022
3	Thai language skills	.215	.048	F = 6.620 p = .002	Thai vocabulary	.042
					Thai listening	.092
4	English language skills	.217	.002	F = .640 p = .425	English vocabulary	.004
5	Thai inferential skills	.284	.067	F = 19.807 p < .001	Thai inferential	.260 p < .001
6	English inferential skills	.297	.013	F = 3.956 p = .048	English inferential skills	.131 p = .048

Within this analysis, English inferential skills were the only English predictor variable which was statistically significant, explaining 1 percent of variance in Thai reading comprehension. Additionally, three other additional variables were also statistically significant. In the final model, English inferential skills explained the addition of 1.3 percent of variance in Thai reading comprehension. In the final model, two out of the seven variables were statistically significant, with Thai inferential skills indicating the highest Beta value ($\beta = .260$, $p < .001$), and English inferential skills ($\beta = .131$, $p = .048$).

5.9.5. Five types of questions as a predictor of Thai reading comprehension

Hierarchical regression analyses were also conducted to examine whether five types of questions in the Thai and English inferential skills make a unique contribution to predicting Thai reading comprehension. Thai reading comprehension was used as the dependent variable (DV), five types of questions in Thai and English inferential skills were considered as predictor (independent) variables. Five types of Thai questions were first investigated, and the order of entry of predictor variables was first Thai listening comprehension, then Thai vocabulary, and finally Thai inferential skills after a control variable (participants' gender). Then, five types of English questions were performed. Tables 5.25.-5.26. present the results for these analyse as below.

Table 5.25. Regression analyse investigating Thai inferential question predictors of Thai reading comprehension

	Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1	Control	.100	.100	F = 24.29 p < .001	Gender .290 p < .001
2	Thai Language skills and Raven's	.215	.115	F = 14.73 p < .001	Thai Listening .087 Thai Vocabulary .081 Raven's .162 p = .010
3	Thai inferential questions	.298	.082	F = 9.89 p < .001	Literal Comp .062 Grammatical .091 Vocabulary .087 Text Coherence .200 p = .007 Prior Knowledge -.048

Table 5.26. Regression analyse investigating English inferential questions predictors of Thai reading comprehension

Variables	R ²	R ² Change	Sig R ² Change	Final Beta	
1 Control	.100	.100	F = 24.286 p < .001	Gender	.302 p < .001
2 English Language skills and Raven's	.180	.079	F = 15.761 p < .001	English Vocabulary	.052 .211 p = .001
3 English inferential questions	.228	.049	F = 7.796 p < .001	Literal Comp	.073
				Grammatical	.085
				Vocabulary	.115
				Text Coherence	.034
				Prior Knowledge	.046

5.9.6. Five types of questions as a predictor of English reading comprehension

The predictive ability of the five types of questions in the English and Thai inferential skills measures of English reading comprehension were investigated. English reading comprehension was set as the dependent variable, and five types of questions in the Thai and English inferential skills measures were utilised as predictor (independent) variables. The predictive ability of English questions was first analysed and then the Thai questions respectively. Gender was entered into the model each time in the first step to act as a control. The order of both analyses was a control variable (the participants' gender), then language skills measure, Raven's and finally inferential skills measure. The results are demonstrated in Tables 5.27-5.28.

Table 5.27. Regression analyse investigating English inferential questions predictors of English reading comprehension

Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1 Control	.000	.000	F = .02 p = .878	Gender -.010
2 English Language skills and Raven's	.054	.054	F = 4.12 p = .007	English Vocabulary .105 Raven's .076
3 English inferential questions	.173	.119	F = 5.52 p < .001	Literal Comp .103 Grammatical .147 p = .043 Vocabulary -.048 Text Coherence .172 p = .012 Prior Knowledge .116

Table 5.28. Regression analyse investigating Thai inferential question predictors of English reading comprehension

Variables	R ²	R ² Change	Sig. R ² Change	Final Beta
1 Gender	.000	.000	F = .024 p = .878	Gender .038
2 Thai Language skills and Raven's	.056	.056	F = 3.166 P = .015	Listening -.002 Vocabulary .167 p = .028 Raven's .110
3 Thai inferential questions	.083	.027	F = 2.114 p = .030	Literal Comp -.086 Grammatical -.077 Vocabulary .173 p = .030 Text Coherence .030 Prior Knowledge .037

5.10. Analysis from the questionnaire on reading comprehension strategies

The questionnaire was developed to assess the participants' perceptions of reading comprehension strategies. The Thai version of the questionnaire was administered to participants at the beginning of the data collecting session of Thai measures. Prior to administering the questionnaire, the participants were clearly informed that the questionnaire was aimed at investigating their self-perceptions regarding reading comprehension strategies in general, not specific in any particular language.

The questionnaire consisted of two sections. The first section surveyed the participants' demographic characteristics and some educational background. The second section of the questionnaire was composed of fourteen statements on reading comprehension strategies. This aimed to survey participants' self-perceptions regarding reading comprehension strategies. The participants indicated the extent to which they use the described statements by responding either (5) always, (4) regularly, (3) sometimes, (2) seldom or (1) never. Table 5.29. displays the scale rating used to interpret reading comprehension skills. The results of the questionnaire from the 220 Thai undergraduate students are presented in Table 5.30.

Table 5.29. The interpretation scale of mean scores for the statements of reading comprehension strategies

Range of Mean Scores	Interpretation
1.00-1.80	Never
1.81-2.60	Seldom
2.61-3.40	Sometimes
3.41-4.20	Regularly
4.21-5.00	Always

Table 5.30. The results of the questionnaire from the 220 Thai undergraduate students

Item	Questionnaire Statements	Mean	SD	Interpretation
1.	I apply my learned grammatical knowledge while reading.	3.09	0.77	Sometimes
2.	I look for grammatical patterns in the reading passage.	2.63	0.76	Sometimes
3.	I analyse grammatical cues in the sentences.	2.57	0.80	Seldom
4.	I skip unknown words that I cannot understand even if I know every word in it.	2.57	0.85	Seldom
5.	I choose the meaning of vocabulary that best suits the context.	3.32	0.85	Sometimes
6.	I try to guess the meaning of the word or expression.	3.68	0.79	Regularly
7.	I link the content with what I already know to help me understand the text.	3.63	0.81	Regularly
8.	I use my prior knowledge to help understanding the reading text.	3.85	0.69	Regularly
9.	I use the title to help to understand the contents.	3.64	0.76	Regularly
10.	I react emotionally to the text.	3.43	0.80	Regularly
11.	I try to connect or relate information presented in different sentences or parts of the text.	3.64	0.80	Regularly
12.	I go back and forth in the text to find relationship among ideas in it or go over difficult parts several times to double-check and correct my understanding of the text.	3.58	0.91	Regularly
13.	I try to interpret hidden meaning in the text.	3.41	0.86	Regularly
14.	I try to make an inference or draw a conclusion based on information not explicitly stated in the text.	3.28	0.82	Sometimes
All Items Overall Mean		3.27	.07	Sometimes

As can be seen in Table 5.30., the overall mean of 3.27 with a standard deviation of .07 indicated that participants' perception of reading comprehension strategies used was at the medium level (sometimes). With regard to the means of individual item in the questionnaire, the means of individual item range from 2.57 (SD = 0.80) to 3.85 (SD = 0.69). Item 8 (statement: I use my prior knowledge to help understanding the reading text.) was the highest mean score (M = 3.85), whereas the least mean score was item 2 (statement: look for grammatical patterns in

the reading passage.) ($M = 2.57$). Interestingly, even the overall mean of vocabulary fell into the medium level use, item 4 of this category (statement: I skip unknown words that I cannot understand even if I know every word in it.) was at the low-usage level ($M = 2.57$). This suggests that the majority of the participants seem to expect to understand every single word in order to comprehend reading texts.

5.10.1. Correlation between the participants' self-perceptions of reading comprehension strategies and their performance on the reading comprehension measures

As the means of the questionnaire items have been reported in the previous section, it should, therefore, be interesting to explore further the relationship between participants' reported reading comprehension strategies and their Thai and English reading comprehension performance. The correlation analyses were conducted by using data from the questionnaire on reading comprehension strategies and the participants' scores from the Thai and English reading comprehension measures. The findings are presented in Tables 5.31-5.32.

Table 5.31. Correlation between the participants' perceptions on reading comprehension strategies (overall mean) and their scores on the Thai and English reading comprehension measures.

Measures	Questionnaire Overall mean
Thai reading comprehension	0.06
English reading comprehension	0.082

* $p < .05$. ** $p < .01$.

The analysis from the table 5.31. indicates that there was no positive relationship between the overall mean of the questionnaire and the Thai reading comprehension scores. Similarly, the questionnaire mean score was not correlated with English reading comprehension scores.

Table 5.32. Correlation between the participants' self-perceptions on reading comprehension strategies (individual item) and their Thai and English reading comprehension scores

Item	Questionnaire statements	Reading comprehension	
		Thai	English
1.	I apply my learned grammatical knowledge while reading.	0.55	.095
2.	I look for grammatical patterns in the reading passage.	-.116	.079
3.	I analyse grammatical cues in the sentences.	-.060	.023
4.	I skip unknown words that I cannot understand even if I know every word in it.	.002	-.004
5.	I choose the meaning of vocabulary that best suits the context.	.080	.045
6.	I try to guess the meaning of the word or expression.	-.014	.191**
7.	I link the content with what I already know to help me understand the text.	.029	.166*
8.	I use my prior knowledge to help understanding the reading text.	-.038	.111
9.	I use the title to help to understand the contents.	.040	0
10.	I react emotionally to the text.		.018
11.	I try to connect or relate information presented in different sentences or parts of the text.	.036	-.04
12.	I go back and forth in the text to find relationship among ideas in it or go over difficult parts several times to double-check and correct my understanding of the text.	.118	-.006
13.	I try to interpret hidden meaning in the text.	.070	-.053
14.	I try to make an inference or draw a conclusion based on information not explicitly stated in the text.	.095	.002

*p < .05. **p < .01.

As reported in the table 5.32., none of the questionnaire items showed a positive correlation with Thai reading comprehension performance. With respect to the correlation with the English reading comprehension measure, two questionnaire items on vocabulary showed a positive relationship with the English reading comprehension score. Thus, the relationships of the overall mean score of the questionnaire with the Thai reading comprehension as well as with the English reading comprehension scores revealed a relatively similar pattern of correlation.

5.10.2. Correlation between the participants' self-perceptions of reading comprehension strategies and their performance on the inferential skills measures

Relationships between the questionnaire items and the Thai and English inferential skills scores were further analysed, with data from the questionnaire on reading comprehension strategies, and the participants' scores from the five types of questions used in the Thai and English inferential skills being investigated to assess their correlations. The findings are presented in Tables 5.33-5.35.

Table 5.33. Correlation between the participants' perceptions on reading comprehension strategies (overall mean) and their scores on the Thai and English inferential skills measures

Inferential skill Questions	Questionnaire Overall mean
Thai inferential skills	.147*
Literal Comprehension	.063
Grammatical Connecting	.107
Vocabulary Related Meaning	.055
Text Coherence Inference	.178**
Prior Knowledge Inference	.123
English inferential skills	.159*
Literal Comprehension	.109
Grammatical Connecting	.105
Vocabulary Related Meaning	.126
Text Coherence Inference	.088
Prior Knowledge Inference	.091

* $p < .05$. ** $p < .01$.

As shown in the above table, the overall mean of the questionnaire on reading comprehension strategies was correlated with the Thai inferential skill scores as well as the English inferential skills scores at low positive level ($r = 0.147$ and 0.159 respectively). In addition, based on five types of questions in the Thai inferential skills, only Thai Text Coherence Inference indicated a positive correlation with the overall mean score.

Table 5.34. Correlation between the participants' self-perceptions on reading comprehension strategies (individual item) and their Thai inferential skills scores

Item	Questionnaire Statements	Types of questions in the Thai inferential skills measure				
		1	2	3	4	5
1.	I apply my learned grammatical knowledge while reading.	.058	.061	.035	.065	.080
2.	I look for grammatical patterns in the reading passage.	-.068	-.104	-.136*	-.062	.000
3.	I analyse grammatical cues in the sentences.	-.134*	-.004	-.085	-.017	-.041
4.	I skip unknown words that I cannot understand even if I know every word in it.	.071	.052	-.048	-.025	.012
5.	I choose the meaning of vocabulary that best suits the context.	.044	.139*	-.013	.132	.094
6.	I try to guess the meaning of the word or expression.	.049	.056	.102	.128	.095
7.	I link the content with what I already know to help me understand the text.	.027	.061	.122	.154*	.038
8.	I use my prior knowledge to help understanding the reading text.	.104	.117	.041	.089	.122
9.	I use the title to help to understand the contents.	.089	.086	.028	.147*	.096
10.	I react emotionally to the text.	.046	.056	-.062	-.022	.048
11.	I try to connect or relate information presented in different sentences or parts of the text.	.128	.149*	.082	.165*	.038
12.	I go back and forth in the text to find relationship among ideas in it or go over difficult parts several times to double-check and correct my understanding of the text.	.117	.129	.065	.154*	.157*
13.	I try to interpret hidden meaning in the text.	.013	.027	.032	.191**	.108
14.	I try to make an inference or draw a conclusion based on information not explicitly stated in the text.	.069	.069	.135*	.138*	.081

Note. 1 = Thai Literal Comprehension Inference, 2 = Thai Grammatical Connecting Inference, 3 = Thai Vocabulary Related Meaning Inference, 4 = Thai Text Coherence Inference, 5 = Thai Prior Knowledge Inference

Table 5.35. The correlation of the participants' self-perceptions on reading comprehension strategies and their performance on the English inferential skills measure

Item	Questionnaire Statements	Types of questions in the English inferential skills measure				
		1	2	3	4	5
1.	I apply my learned grammatical knowledge while reading.	.109	.125	.040	.050	.161*
2.	I look for grammatical patterns in the reading passage.	-.038	.092	.055	.069	.077
3.	I analyse grammatical cues in the sentences.	-.012	-.055	.004	.009	-.050
4.	I skip unknown words that I cannot understand even if I know every word in it.	-.032	.090	-.026	.080	.023
5.	I choose the meaning of vocabulary that best suits the context.	.079	.150*	.095	.164*	.087
6.	I try to guess the meaning of the word or expression.	.086	.114	.018	.119	.046
7.	I link the content with what I already know to help me understand the text.	.149*	.125	.121	.133*	.108
8.	I use my prior knowledge to help understanding the reading text.	.078	.050	.054	.126	.133*
9.	I use the title to help to understand the contents.	.053	.064	.107	.021	.090
10.	I react emotionally to the text.	.034	.038	.118	.044	-.019
11.	I try to connect or relate information presented in different sentences or parts of the text.	.063	.061	.088	.010	.103
12.	I go back and forth in the text to find relationship among ideas in it or go over difficult parts several times to double-check and correct my understanding of the text.	.092	.032	.093	-.036	-.008
13.	I try to interpret hidden meaning in the text.	.040	.074	.055	.040	.028
14.	I try to make an inference or draw a conclusion based on information not explicitly stated in the text.	.040	.007	.050	.001	-.029

Note. 1 = Thai Literal Comprehension Inference, 2 = Thai Grammatical Connecting Inference, 3 = Thai Vocabulary Related Meaning Inference, 4 = Thai Text Coherence Inference, 5 = Thai Prior Knowledge Inference

Overall, the data from tables 5.34.-5.35. demonstrated a similar pattern of correlation in that each questionnaire item showed either no correlation or correlation with 1-2 types of questions in the Thai inferential skills as well as English inferential skills measures.

Regarding types of inference questions in Thai and English, the Thai Text Coherence Inference questions indicated more frequent correlation (four questionnaire items) than for the other four types of questions, and the English Text Coherence and Prior Knowledge Inference questions demonstrated correlation with a greater number of questionnaire items (two items) than other English types of questions.

5.11. Conclusion

The analyses of this study aimed to answer three research questions. Research question one was to find out whether there was a relationship between inferential skills in Thai (L1) and English (L2). The results from the Pearson bivariate correlation analysis indicated that there was a positive relationship between inferential skills in Thai and English at .413**.

Research question two investigated whether inferential skills supported reading comprehension within a single language (Thai or English). Based on the Pearson correlation coefficient analyses between inferential skills and reading comprehension within the same language, the findings suggested that both Thai and English inferential skills were positively correlated with reading comprehension in the same language, with a similar level of correlation—Thai inferential skills and reading comprehension ($r = .421^{**}$) and English inferential skills and reading comprehension ($r = .368^{**}$).

In addition, analyses using hierarchical multiple regression were conducted to investigate the predictive power of inferential skills on reading comprehension within the same language. The findings revealed that the addition of inferential skills scores made a significant contribution

in the prediction of reading comprehension, both in Thai and English, after controlling language and non-verbal skills.

Research question three asked whether inferential skills predicted reading comprehension across languages. With regard to the relationship between the two languages (Thai and English), the findings showed a positive correlation across the two languages. There was a correlation between Thai inferential skills and English reading comprehension ($r = .158$, $n = 220$, $p = .01$) and English inferential skills were also positively correlated with Thai reading comprehension ($r = .318$, $n = 220$, $p = .01$).

However, only the English inferential skill scores predicted additional variability in Thai reading comprehension after controlling for the Thai measures, while the addition of Thai inferential skill scores did not show any contribution to English reading comprehension.

According to the analysis of the questionnaire on the participants' self-perceptions of reading comprehension strategies, the findings showed no positive correlation between the self-perceptions on reading comprehension strategies use and Thai /English reading comprehension performance. With regard to the correlation with Thai/ English inferential skills scores, the results showed that there was a small correlation between reading strategies use and Thai inferential skills performance. Similarly, a small correlation was demonstrated between the questionnaire on reading comprehension strategies and English inferential skills scores.

Chapter Six

General Discussion

The final chapter discusses the thesis findings and draws a number of conclusions. The chapter begins with an overview of the entire study and its key findings. The following sections then discuss theoretical implications linking the findings to previous and recent literature, and providing potential explanations for the research outcomes. Practical implications are the focus of the next section. In addition, a discussion of the study's limitations and recommendations for future research will also be provided.

6.1. Summary of the study and key findings

The primary objectives of this thesis were: (i) to examine the reciprocal relationships of inferential skills within two languages (Thai and English); (ii) to investigate the relationships between inferential skills and reading comprehension within the same language and ascertain whether inferential skills can predict reading comprehension within the same language; and (iii) to further determine the relationships between inferential skills and reading comprehension across languages and whether inferential skills can predict reading comprehension across languages.

This study was a quantitative investigation incorporating data from nine assessment measures and a questionnaire completed by 220 Thai undergraduate students. Primary measures were used to assess the participants' performance in various cognitive-linguistic skills in two languages (Thai and English). Testing administration was conducted in two main sessions conducted on two different days. The Thai language measures comprised assessments of reading

comprehension, inferential skills, vocabulary and listening comprehension, plus a questionnaire on reading comprehension strategies. These measures were employed in the first session. In the second session, English language assessments and the Raven's Advanced Progressive Matrices were administered.

In the quantitative analyses of this study, Thai and English reading comprehension scores were used as the dependent variables. The primary predictor variables (independent) variables were inferential skills in Thai and English. Three additional predictor (independent) variables were two language skills (vocabulary and listening comprehension) and non-verbal reasoning abilities. The major findings of this study are summarized below, with additional findings being described in the following sections.

1. The relationships between predictor variables within and across languages:

i) Both Thai and English inferential skills positively correlated with Raven's Advanced Progressive Matrices.

ii) Thai inferential skills correlated with Thai listening comprehension and Thai vocabulary.

iii) English inferential skills significantly correlated with the English vocabulary.

iv) There were positive correlations between the five types of questions in both Thai and English inferential skills.

v) There were positive relationships between Thai and English inferential skills.

vi) Thai inferential skills correlated with English vocabulary.

vii) English inferential skills correlated with Thai vocabulary.

2. Inferential skills and reading comprehension in the same language:

Both Thai and English inferential skills predicted extra variability in reading comprehension within the same language after controlling language and non-verbal skills measures.

3. Inferential skills and reading comprehension across languages:

Only English inferential skills predicted additional variability in Thai reading comprehension after controlling for the Thai measures.

4. Regarding the five types of questions in the inferential skills measures as a predictor of reading comprehension:

i) Thai Text Coherence Inference was the only type of question which made a significant contribution to predicting Thai reading comprehension.

ii) English Grammatical Connecting Inference and English Text Coherence Inference were the only two types of English questions which predicted unique variance in English reading comprehension.

iii) Thai Vocabulary Related Meaning Inference predicted extra variability in English reading comprehension.

5. The questionnaire on reading comprehension strategies:

i) There was no significant relationship between overall mean score of the questionnaire and reading comprehension within either Thai or English.

ii) There was a significant positive correlation between the overall mean scores of reading comprehension strategies and Thai inferential skills scores as well as English inferential skills scores.

6.1.1. The relationships between predictor variables within and across languages (Thai and/or English)

The first research question was designed to investigate the relationship between inferential skills in Thai as the first language (L1) and English as the second language (L2). The following analyses aimed to answer the first research question and investigated the relationships between other predictor variables. The data from six assessment measures consisting of two primary assessments (Thai and English inferential skills), three language skills (Thai and English vocabulary and Thai listening comprehension) measures in Thai and English and the Raven's Advanced Progressive Matrices, conducted with 220 Thai participants, was analysed.

Referring to the correlations within each language, the results demonstrated that Thai inferential skills were significantly correlated with Thai listening comprehension and Thai vocabulary, as well as the Raven's Advanced Progressive Matrices, whereas the English inferential skills measure was significantly correlated with the English vocabulary measure.

With regard to the relationships across languages between all predictor variables, the findings indicated that Thai inferential skills were positively correlated with English inferential skills. Both Thai and English inferential skills and vocabulary showed positive relationships across languages. Thai inferential skills were correlated with English vocabulary, and English inferential skills were also correlated with Thai vocabulary. However, there was no significant relationship between English inferential skills and Thai listening comprehension.

In addition, five types of questions in the Thai and English inferential skills were investigated: Literal Comprehension, Grammatical Connecting Inference, Vocabulary Related Meaning Inference, Text Coherence Inference, and Prior Knowledge Inference. The correlation analyses of these five types of questions indicated that there were significantly moderate correlations between the five types of questions. The correlation between Thai Text Coherence Inference and Thai Prior Knowledge Inference was slightly higher than that of other types of questions. All types of questions in the English inferential skills tests also demonstrated positive correlations between themselves, at small to moderate levels.

Furthermore, the correlation analyses across languages between the five types of questions in the inferential skills measures indicated that Thai Text Coherence Inference and Thai Prior Knowledge Inference were positively correlated with all five types of questions in the English inferential skills test, whereas only English Prior Knowledge Inference was positively correlated with all five types of questions in the Thai inferential skills test.

In conclusion, the findings for the first research question clearly indicated that there was a positive moderate relationship between inferential skills in Thai and English. This finding suggests that the development in inferential skills in one language has the potential to improve the ability of inferential skills when reading in other languages.

6.1.2. Inferential skills and reading comprehension in the same language

The second research question asked whether there was a significant relationship between inferential skills and reading comprehension within the same language (Thai or English) and examined whether inferential skills would predict variation of reading comprehension. Inferential skills—one of the higher level comprehension skills—are reported to be a significant predictor of reading comprehension ability (e.g., Granham & Oakhill, 1996; Hogan et al., 2011).

There are many studies on the influences of inferential skills on reading comprehension, mainly focusing on English as a first language. The current study was an attempt to further address the scarcity of such research in languages other than English, and to further investigate inference skills and reading comprehension in two languages—Thai as L1 and English as L2.

The correlation analyses were performed using the scores on the inferential skills and reading comprehension measures of Thai and English. The findings revealed that there was a significant positive relationship between inferential skills and reading comprehension within the same language. Furthermore, the findings from hierarchical regression analyses in this thesis indicated that the addition of inferential skill scores significantly increased the predictability of reading comprehension in the same language, after controlling for Thai language skills and non-verbal reasoning measures. English inferential skills predicted the addition of variability of English reading comprehension. Therefore, the findings in this thesis argue for the importance of inferential skills in successful reading comprehension in both Thai and English.

6.1.3. Inferential skills and reading comprehension across languages (between two languages)

The third research question aimed to investigate whether there were significant relationships between inferential skills and reading comprehension across languages (Thai and English) and examined whether inferential skills further contributed to any predictability to reading comprehension across languages.

The findings on the relationships between inferential skills and reading comprehension across languages showed that there was a positive correlation across languages between Thai inferential skills and English reading comprehension, and between English inferential skills and Thai reading comprehension. However, it was noted that the relationships between Thai

inferential skills and English reading comprehension was relatively low, whereas there was a higher relationship between English inferential skills and Thai reading comprehension.

In addition, the results from similar hierarchical regression analyses exploring the predictive ability of inferential skills across languages clearly demonstrated that the addition of English inferential skills scores predicted extra variability in Thai reading comprehension, after controlling for English and Thai language related skills and non-verbal reasoning measures. However, the addition of Thai inferential skills scores did not influence the level of prediction of English reading comprehension.

6.1.4. Five types of questions in the inferential skills measures as a predictor of reading comprehension

As regards the predictive ability within the same language, an analysis on the contribution of the five types of Thai questions to predict performance in Thai reading comprehension indicated that the Thai Text Coherence Inference was the only type of question which made a significant contribution to predicting Thai reading comprehension. As regards to predicting within the English language, English Grammatical Connecting Inference and English Text Coherence Inference were the only two types of English questions which predicted unique variance in English reading comprehension. Concerning the prediction across languages, surprisingly the analyses indicated that only Thai Vocabulary Related Meaning Inference predicted extra variability in English reading comprehension performance.

6.1.5. Analyses of the data from the participants' self-perceptions on reading comprehension strategies

6.1.5.1. Correlation between the participants' self-perceptions on reading comprehension strategies and reading comprehension scores

The data from the questionnaire on reading comprehension strategies and scores on the Thai and English reading comprehension measures were analysed using the Pearson coefficient correlation. In this study, the data of the participants from the questionnaire on reading comprehension strategies was not specific to either Thai or English, just to general reading skills.

The correlation analysis results showed the overall mean score of the questionnaire did not show a significant relationship with either the Thai or the English reading comprehension scores. With the respect to the correlation of individual question items, none of the questionnaire items showed a positive correlation with Thai reading comprehension performance, while only two questionnaire items on vocabulary showed a positive relationship with English reading comprehension score. Thus, a relatively similar pattern of correlation was found in these analyses.

6.1.5.2. Correlation between the participants' self-perceptions on reading comprehension strategies and inferential skills performance

The correlations between the questionnaire data and inferential skill scores, in both Thai and English, were further investigated. The results demonstrated a significant positive correlation between the overall mean scores of reading comprehension strategies reported with Thai inferential skills scores as well as English inferential skills scores.

Regarding the types of questions, the Thai Text Coherence Inference questions indicated correlation with four questionnaire items, which was more frequent than with the other four

types of questions; the English Text Coherence and Prior Knowledge Inference questions demonstrated correlations with a greater number of questionnaire items (2 items) than other English types of questions.

6.2. Theoretical implications of the findings

6.2.1. The correlations between predictor variables in this research

As comprehension is the ultimate goal of reading, and with text comprehension being a complex process, acquisition of skills which support successful reading is essential for readers (Cain & Oakhill, 2007). As a result, the central purpose of the correlation analyses was to answer the first research question on the relationships between inferential skills in Thai and English. Roughly, the correlations of six predictor variables were investigated in this section, namely, Thai inferential skills, English inferential skills, Thai listening comprehension, Thai vocabulary, English vocabulary, and the Raven's Advanced Progressive Matrices as a non-verbal reasoning ability measure. However, the English listening comprehension measure was not included in the analysis because the reliability of the test was very low. The findings on the relationships between inferential skills and some other predictor variables will be discussed below.

6.2.1.1 Inferential skills in two languages (Thai and English)

The investigation on the relationships between inferential skills in Thai and English was a research purpose in this study. The finding showed that there was a positive relationship between inferential skills in Thai and English, which are considerably different orthographic languages. Therefore, the reason for the positive relationships between inferential skills in Thai and English appeared are further discussed below.

The discussion of the characteristics of inferential skills may provide some supporting explanations for this finding. Inference is a significant higher level comprehension skill for successful reading comprehension (Currie & Cain, 2015; Granham & Oakhill, 1996; Hogan et al., 2011; M Singer, 1994). With respect to the higher level comprehension process of reading comprehension, inference making enables a reader to connect one part of the text to other parts of the text, and to background knowledge, in order to comprehend a meaningful and coherent mental representation (Kendeou et al., 2014; van den Broek, 1997). Thus, inferential skills are reasonably viewed as a constructive cognitive higher level comprehension skills (Kendeou et al., 2014). This is consistent with the argument that inference in reading comprehension is a constructive thinking process because the reader expands knowledge by proposing and evaluating competing hypotheses about the meaning of the text in an attempt to progressively refine understanding (Phillips, 1988). As inference making is considered as a cognitive higher level comprehension skill, the process of inference generation is likely to be similar in any language. Therefore, it is plausible to say that inferential skills in Thai and English share cognitive commonalities in reading comprehension processes, and that the process of generating inferences in Thai and English are relatively similar.

The participants themselves may also be of interest in discussions relating to the findings. The skills of inference and integration can develop and improve as age progresses (Casteel, 1993), including the ability to infer abstract connections, such as between themes, to characters' feelings. (Kendeou et al., 2014). According to the information from the questionnaire on reading comprehension strategies, the participants were all Thai native speakers. They were 18 to 19-year-old, second year university students, which indicated that they had entered the world of academia. Prior to entering tertiary education, they had attended formal education at both the primary and secondary levels for an average of 12 or 13 years in Thai schools. In Thai schools, all subjects are taught in Thai, except for foreign language learning instruction. Furthermore,

they had studied English for approximately 12 or 13 years, which seemed to be sufficient exposure to English. Therefore, based on the participants' ages and education backgrounds, it could plausibly be concluded that the participants in the current study were likely to have developed both Thai literacy as well as inferential skills which they might apply when reading in any language, including both Thai (L1) and English (L2).

With the respect of the correlation between inferential skills in Thai (L1) and English (L2), the theoretical perspectives of the Reading Universal Hypothesis by Goodman (1971) and the Common Underlying Proficiency hypothesis by (Cummins, 1981) seem to give some theoretical explanations related to this finding. Goodman (1971) proposed the Reading Universal Hypothesis that the reading process cannot vary from one language to another; there are commonalities in the general reading process in comprehending any language. Additionally, the Common Underlying Proficiency of Cummins (1981) suggests an underlying cognitive/academic proficiency exists common to all written languages. He states that when learners develop language skills, regardless of whether this is in L1 or L2, their language skills will improve in both languages. When applying this hypothesis to reading skills, a reading skill acquired in one language might be transferable as a skill in reading across languages.

Both the Reading Universal Hypothesis by Goodman (1971) and the Common Underlying Proficiency hypothesis by (Cummins, 1981) are likely to apply to this finding because the inferential skills of the participants in two languages appear as a single mutual common underlying proficiency skill due to the positive relationship between inferential skills in the two different languages, as well as the characteristics of inferential skills as discussed above.

When considering the reading skills across languages, the characteristics between L1 and L2 are worth consideration. When reading in L2, readers come with linguistic knowledge of their L1, this knowledge can either support reading skills in L2 or become a source of interference

(Grabe & Stoller, 2011). In this research, there are obvious differences between the linguistic properties of L1 (Thai) and L2 (English), for as Thep-Ackrapong (2005) pointed out, English grammar is perceived as being the most difficult aspect of learning English. Therefore, the influence of Thai (L1) tended to interfere with English (L2) reading rather than supporting it. L1 interference may influence the students' performance and development in the targeted L2 language (Hashim, 1999). It concurs with the arguments that if the orthographies of L1 and L2 are very different, this may place a particularly large burden on readers lower-level comprehension process. This may make the transfer of higher level comprehension skills more difficult than when the two languages are orthographically similar (Koda, 2005). Therefore, the positive relationship between inferential skills in two different language (Thai and English) seem to support the Reading Universal Hypothesis by Goodman (1971) and the Common Underlying Proficiency hypothesis by (Cummins, 1981) that there are some commonalties in some reading skills, even though there are considerable linguistic differences between these two languages.

In conclusion, based on all of the above explanations relating to the findings, there was a positive relationship between inferential skills in Thai (L1) and English (L2) and the inferential skills are reasonably assumed as a cognitive reading skill as well as a common underlying proficiency skill. It suggests that inferential skills in Thai and English share some commonalties, therefore developing inferential skills in one language might positively influence the level of inferential skills in another language.

6.2.1.2. Inferential skills and vocabulary within the same language

Two main comprehension skills are involved in the processes of text comprehension. These are lower level comprehension skills and higher level comprehension skills. The former are comprised of vocabulary and syntax, which allow the reader to activate word meanings and connect them into propositions. The latter are comprised of inferencing, comprehension

monitoring, and sensitivity to story structure, which facilitate the integration of information across sentences and paragraphs into a coherent situation model (Kintsch, 1998; Perfetti, Landi, & Oakhill, 2005). In this study, vocabulary was defined as a lower level comprehension skill, and inferential skills as a higher level comprehension skill. An interesting finding from this study is that there was a positive relationship between inferential skills and vocabulary within the same language, in either Thai (L1) or English (L2).

These findings argue for the significance of vocabulary knowledge in the process of applying inferential skills. This is consistent with the statement that comprehension of the information stated explicitly in the text is also essential to the construction of the situation model (Kintsch & Rawson, 2007) because without a secure representation of facts, the model would be incomplete and inferences could not be drawn (Currie & Cain, 2015). These findings concur with related previous works in L1 and L2. For an example, the results of Calvo's study (2004), which specifically investigated the role of vocabulary and working memory span in elaborative inferences with 81 undergraduates, indicated that the ability to generate inferences depends on vocabulary knowledge prior to any inferential step taking place. A study on the effect of vocabulary on the lexical inferential skill ability, which is an ability to infer new words from context, in L2 (Hebrew) by Prior et al. (2014), suggested that lexical inferencing from text in the L2 also depends on vocabulary knowledge. Furthermore, Aegpongpaow (2008) examined the use of metacognitive strategies with Thai undergraduates. Her results revealed that most of her participants reported that unknown words were their biggest problem in reading English texts, although they used various metacognitive strategies to help them to guess the meanings of the unknown words, such as finding relationships in the context around these words. In conclusion, it was difficult for them to guess the meaning of the targeted unknown words if their vocabulary knowledge of the contextual words was also inadequate. This concurs with the suggestion of

Attaprechakul (2013) that in order to read efficiently, Thai undergraduate students need to expand their vocabulary knowledge.

In the study of inferential skills on reading comprehension in Thai and English, the aspect of vocabulary size was investigated. As a result, these findings argue for the significance of vocabulary size in successful application of inferential skills. These results concur with previous research. Many previous research studies have demonstrated this in L1 and L2, further supporting this argument. For example, both the findings of Hatami and Tavakoli (2012) investigating L2 (English) lexical inferencing, and the study of Albrechtsen, Haastrup, and Henriksen (2008) focused on inferencing skills in Danish (L1) and English (L2), demonstrating that the success or failure with which a learner was able to infer the meaning of a word relies heavily on the learner's L2 vocabulary size.

Furthermore, previous studies showed that inferential skills are vital for vocabulary acquisition, which is another aspect of the relationship between vocabulary and inferential skills. Lexical inference demonstrated it to be vital for not only reading comprehension, but also for vocabulary acquisition (Barnett, 1990; Schmitt, 1997). The finding of Paribakht and Wesche (1999) indicated that their ESL university students, who were from a variety of L1 backgrounds, used inferencing in about 78% of all cases where they actively tried to identify the meanings of unknown words. This indicated that second language learners frequently use lexical inferencing to deal with unfamiliar words.

In conclusion, this study found that there was a positive relationship between vocabulary and inferential skills in Thai and English. Previous research indicated that vocabulary supports inference generation. Simultaneously, inferential skills also support vocabulary acquisition. According to these insights, the relationships between vocabulary and inferential skills within Thai or English may likely be bidirectional: word knowledge supports inference making, and

inference from context affords vocabulary learning from written and spoken texts (Cain et al., 2004).

6.2.1.3. Inferential skills and vocabulary across languages

In addition to the above within language relationships, the correlations across languages revealed that Thai inferential skills were positively correlated with English vocabulary, and English inferential skills showed a significant relationship with Thai vocabulary. These positive relationships between inferential skills and vocabulary in Thai and English are discussed below.

An interpretation of the positive interrelationships between inferential skills and vocabulary across languages may suggest that readers with good inference making in Thai are likely to have acquired a good knowledge of English vocabulary. Similarly, readers, who have good English inferential skills, tend to develop their Thai vocabulary knowledge in the same way. Further, concerning the other relationships of inferential skills and vocabulary across languages, there were positive relationships between Thai and English inferential skills, as per the details discussed in the previous section (see at section 6.2.1.1.). In addition, vocabulary in Thai and English also demonstrated a positive relationship.

These similar aforementioned patterns of positive relationships across languages may suggest there are common underlying language skills across languages, between inferential skills and vocabulary, which is consistent with a common underlying proficiency according to Cummins (1981). Another potential supporting fact to these relationships is that general cognitive processes of reading in any language are identical, including the processes of interaction between inferential skills and vocabulary in L1 and L2. Previous literature has explained this specifically in regards to lexical inferencing (e.g., Karlsson, 2014; Prior et al., 2014). Some researchers in L2 (Haynes & Baker, 1993; Wesche & Paribakht, 2010) suggest

that L2 readers mostly rely on meaning cues that are either part of the word itself or that appear in the near surrounding context, specifically in the same sentence. These processes are similar to aspects of lexical inferencing discussed in the L1 literature (Cain et al., 2003). Thus, it may be plausible to assume that a reader-acquired process of lexical inferencing seems to be related to their development of vocabulary acquisition in another language, as appeared in these findings.

In summary, all of these positive interrelationships between inferential skills and vocabulary across languages most likely emerged because there is a common underlying process interacting between inferential skills and vocabulary, in the two languages. This may extend our understanding of the processes whereby that such positive relationships across languages between inferential skills and vocabulary are likely to apply to any process of text comprehension in any language.

6.2.1.4. The correlations between five types of questions in the Thai and English inferential skills measures

Text comprehension requires the processing of text information at different levels: word, sentence, and text or discourse (Florit, Roch, & Levorato, 2006). The relationships between the five types of questions, which were at the sentence or discourse level in the inferential skills measures of both Thai and English, were investigated in this research. The first three types of questions, consisting of Literal Comprehension, Grammatical Connecting Inference and Vocabulary Related Meaning Inference, are at the sentence level, and other two types of questions, Text Coherence Inference and Prior Knowledge Inference, are referenced at the discourse level.

When speaking of the correlation within each language (Thai or English), there were positive correlations between the five types of questions in the Thai inferential skills measure.

The correlation between Thai Text Coherence Inference and Thai Prior Knowledge Inference was slightly higher than any other correlations. Likewise, all five types of questions in the English inferential skills test also demonstrated positive correlations between each other, from small to moderate levels. The correlation between English Literal Comprehension and English Grammatical Connecting Inference was at the highest level.

The better correlation between Thai Text Coherence Inference and Thai Prior Knowledge Inference may result from the fact that these two types of questions were considered at the discourse-level. To comprehend text at discourse level, the understanding of linguistic information, as well as higher language skills, is essential. In particular, higher level comprehension skills are concerned as specifically discourse skills (Cain & Oakhill, 2007; Oakhill & Cain, 2012; Silva & Cain, 2015). Three important skills necessary to achieving understanding at the discourse-level are inference and integration, comprehension monitoring, and narrative structuring skills (Cain et al., 2004). Comprehension of discourse goes beyond word- and sentence level understanding, and thus draws on both lower level and higher level skills (Hogan, Bridges, Justice, & Cain, 2011). In addition, readers need to apply more inferential skills, as well as background knowledge, to arrive the complete meaning of two or more sentences. As an example, background knowledge is heavily required in understanding Prior Knowledge Inference. To comprehend at the sentence-level, a simpler text comprehension process is likely to be needed. Generally, readers have to use morphosyntactic knowledge of sentences to identify their meanings. Linguistic knowledge, both at word and the sentence level, is necessary (Cain & Oakhill, 2007; Florit et al., 2006). Therefore, it might be reasonable to assume that readers need to apply more language knowledge and reading skills to comprehend these two types of questions, which are at the discourse level, than three other types at the sentence level.

With regard to correlation within English language, all five types of English questions were positively correlated between themselves. Similar to the pattern in Thai questions, English Text Coherence Inference and English Prior Knowledge Inference showed a positive relationship. One possible explanation for this correlation is that both English Text Coherence Inference and English Prior Knowledge Inference are at the discourse level. Both types of inference basically need to integrate skills in combining different units to form a coherence meaning of the text, although English Prior Knowledge Inference focuses on application of world knowledge. Furthermore, the correlation between English Literal Comprehension and English Grammatical Connecting Inference indicated the highest correlation among all the questions in English. This correlation between these types suggests that if a student comprehends well one type of question, he or she will be more likely to comprehend well in another type of question. This correlation finding may result from these two types of questions relying mainly on the same lower level comprehension process, which aims at decoding and interpreting explicit meanings of the text (Kendeou et al., 2014). Therefore, similar lower level comprehension skills, such as vocabulary and grammar, were necessary for these two types of questions. Syntactic and grammatical knowledge is crucial for understanding sentences and text (Poulsen & Gravggaard, 2016), particularly in L2 reading (Kaivanpanah & Alavi, 2008).

The correlation findings across languages of these five types of questions, between Thai and English, demonstrated that two types of Thai questions, Thai Text Coherence Inference and Thai Prior Knowledge Inference, were correlated with all five questions in English. In English types of questions, only English Prior Knowledge Inference indicated a positive relationship with all Thai questions, but other types of English questions demonstrated correlations with some types of Thai questions. Although the patterns of correlation across languages were not completely identical, there is one commonality that these two Thai types of questions and one type in English had which demonstrated a cross language correlation with all types of question in

another language, are all at the discourse level. A possible explanation is that the ability to achieve at the discourse level is generally a more complex skill, which requires both lower and higher comprehension skills. Therefore, the participants who achieved at the discourse level were likely to succeed in other types of questions at the sentence level as well. To sum up, the patterns of correlations demonstrated that the types of questions requiring similar linguistic knowledge and reading skills are likely to be correlated.

6.2.2. Impacts of inferential skills on predicting reading comprehension

Inferential skills have been considered to be a more crucial predictor of reading comprehension ability in older readers than lower level comprehension skills, such as word decoding (Catts et al., 2005). This study investigated whether inferential skills can predict reading comprehension both within each language (Thai and English) and across languages.

The findings of this study have found that inferential skills were the best predictor of reading in both Thai (L1) and English (L2). This indicated that the measure of inferential skills was a better predictor of reading comprehension than other additional measures (vocabulary, listening comprehension, and Raven's Advanced Progressive Matrices). This may be because in order to comprehend the measure of inferential skills, both lower and higher level comprehension skills must be considered. Lower level comprehension skills, such as vocabulary and grammar, are crucial for explicit text comprehension, while the higher level comprehension skills, such as inferential skills, consist of the skills which are necessary to construct a mental model of a text's meaning (Hogan et al., 2011) (see more at section 2.4. in chapter two). Similarly, both lower and higher level comprehension skills are necessary skills in the process of successful reading comprehension, as in Kendeou et al. (2014), which describes the cognitive processes of reading comprehension as roughly falling into two categories: (1) lower level comprehension processes that involve translating the written code into meaningful language

units, and (2) higher level processes that involve combining these units into a meaningful and coherent mental representation.

It should be noted in comparing the inferential skill measure with other predictive variables, that although vocabulary has been mentioned as a lower level comprehension skill, reading comprehension could not occur without knowledge of individual word meanings (Oakhill & Cain, 2012). In addition, Raven's Advanced Progressive Matrices investigated the non-verbal reasoning ability of the participants, counting it as a higher level comprehension skill. Vocabulary knowledge or Raven's Advanced Progressive Matrices seemed to focus on only one aspect of comprehension skills, as a result the inferential skills demonstrated a more predictive power than these two measures. Listening and reading comprehension may require both lower and higher level comprehension skills, and although, with the exception of decoding, the same language knowledge and skills support comprehension of both written and spoken discourse (Kendeou et al., 2009). Reading and listening comprehension skills are not all identical. Inferential skills and reading comprehension are both similar reading skills. In addition, inferential skills in this research also showed a better predictive ability to reading comprehension than listening comprehension did. Therefore, performance on inferential skills was demonstrated as the best predictor variable of reading comprehension in this study.

This finding on the predictive ability of inferential skills to reading comprehension in Thai (L1) is consistent with the related previous studies (e.g., Cain & Oakhill, 1999; Cain et al., 2001; Oakhill & Cain, 2012; Silva & Cain, 2015) because these results revealed that inferential skills in English (L1), particularly in school age children, are a significant component of reading comprehension. As an example, the study of Cain and Oakhill (1999) with such children revealed that good inference skills are a plausible cause of good reading comprehension ability.

Concerning related studies with adult learners, there has been limited research investigating inferential skills in adults (e.g., Cromley & Azevedo, 2007; Hannon & Daneman, 1998; Long et al., 1994; Purvis, 2014). Some of these studies focused on the differences in inferential skills between skilled and less skilled readers. Hannon and Daneman (1998) and Long, Oppy and Seely (1994) investigated the differentiation between skilled readers and less skilled readers. Both studies reported that the adults considered to be skilled readers make knowledge-based inferences spontaneously during reading, whereas adults considered to be less-skilled readers did not. They concluded that the groups of skilled readers can be differentiated from less skilled readers by their performance on tasks requiring them to make inferences. Furthermore, the finding of Purvis's study (2014) demonstrated that inferential skills were the strongest predictor of English reading comprehension with undergraduates who have English as a first language.

With respect to the role of inferential skills in reading comprehension across languages, the findings showed that the English inferential skills were predictive of Thai reading comprehension, but Thai inferential skills did not make any contribution to English reading comprehension. In other words, English (L2) inferential skills made a contribution to prediction of Thai (L1) reading comprehension, but Thai (L1) inferential skills were not predictive of English (L2) reading comprehension. This is line with Cummins's (1998) argument that "transfer is more likely to occur from minority to majority language because of the greater exposure to literacy in the majority language outside of school and the strong social pressure to learn it" This may explain the findings of the present study, confirming that it is possible for the minority language skills English (L2) inferential skills to transfer to use in reading comprehension of the majority language Thai (L1).

This is in accordance with the study of Gebauer et al. (2013), which investigated cross-language transfer between L1 and L2 reading fluency and reading comprehension in a group of 220 German elementary school students who were enrolled in English partial immersion programs. These findings are in line with previous results showing reciprocal transfer effects between L1 and L2 reading comprehension and reading fluency. In addition, the overall dominance of paths from L2 to L1 over paths from L1 to L2 may be attributable to the plentiful opportunities for academic reading in the L2 at school. Hence, skills necessary for successful reading can evidently be acquired in an L2 context and transferred to the L1. These findings underline the importance of cross-language transfer between reading skills in immersion programs. Although the participants in Geruer's study were primary students, the research in this thesis has focused on a different age group, adult readers. This shares the assumption that the positive of reading or related reading skills in L2 predicted reading comprehension in L1. There is little research in the transference of reading skills from L2 to L1.

In addition, another potential explanation was added as to why English inferential skills made a contribution to predicting Thai reading comprehension. It may be due to the fact that inferential skills were explicitly taught in the English classrooms. Generally, strategies in L2 have been explicitly taught in language classrooms. Similarly in English classrooms in Thailand, the study of Chen (2012) investigated non-native English language teachers at one university in Thailand. The results revealed that the teachers' use and practice of both metacognitive and cognitive reading strategies were at the high level. Chamot (2005) postulated that in order to learn strategy use, explicit or intentional learning should be implemented in language classrooms, rather than implicit or incidental learning, which does not involve conscious reflection. In this research setting, the participants were Thai native speakers, who were studying English as a foreign language. The participants may have acquired inferential skills in their EFL classrooms. Previous studies have shown that the explicit teaching of L2 learning strategies can

be beneficial for language acquisition (e.g., Cohen & Macaro, 2007; Graham, Santos, & Vanderplank, 2011; Lyster & Saito, 2010). In addition, the evidence from some research studies may support the benefit of explicitly teaching in L2 on strategies development in both L2 and L1. An interesting study in a similar context worth discussing, along with the present findings, Akkakoson (2011) investigated the efficacy of strategies-based instruction on the L2 (English) and L1 (Thai) reading proficiency with Thai tertiary students. A programme of strategy training in L2 (English) was introduced to an experimental cohort of Thai students, while a control group was taught using traditional teaching methods. The results showed a significantly higher gain in English and Thai reading abilities in the experimental cohort. A positive correlation between the English and Thai reading post-test scores of the experimental group may suggest a positive indication of strategies transfer. This suggests that students who acquired strategies from L2 strategies training may be able to use similar acquired strategies when reading in Thai (L1). Another study investigating strategies in two languages, Salataci (2002) investigated the explicit reading strategies of L2 on reading comprehension in L2 (English) and L1 (Turkish). The results indicated that strategy instruction had a positive effect on both Turkish and English reading strategies, and on reading comprehension in English. Furthermore, Aghaie and Zhang (2012) explored the impact of explicit teaching of cognitive and metacognitive reading strategies on English reading performance. ESL students in Iran were designed as a control group and a treatment group in order to test the effects of explicit teaching of strategies. Their findings revealed that the treatment group performance displayed significantly better results than the control group after four months of strategy-based instruction in L2 (English). The findings from think-aloud protocol analysis showed that students in the treatment group transferred metacognitive strategies, more than cognitive strategies, to both other languages and even to their L1 (Iranian).

In summary, as inferential skills made a contribution to the prediction in reading comprehension in both Thai and English, this may suggest that inference plays a critical role in the process of text comprehension in different languages. In addition, the predictive ability of English (L2) inferential skills in Thai reading comprehension extends our knowledge about the cognitive reading competency across languages, particularly from L2 to L1.

6.2.3. Impacts of five types of questions in the inferential skills measures on predicting reading comprehension

So far in this research, inferential skills measures have been investigated as predictor variables of reading comprehension. It was therefore interesting to further investigate the predictive ability of the five types of questions in the Thai and English inferential skills measures namely: Literal Comprehension, Grammatical Connecting Inference, Vocabulary Related Meaning Inference, Text Coherence Inference, and Prior Knowledge Inference. Some valuable findings, based on these five types of questions as predictors of reading comprehension, will be discussed in greater detail below.

Initially, the correlation analyses within the same language demonstrated that there were positive relationships between all five types of Thai questions and Thai reading comprehension. Four English question types (except English Vocabulary Related Meaning Inference) showed a positive relationship with English reading comprehension. Therefore, nine out of ten types of questions in Thai and English indicated a positive relationship with reading comprehension within the same language.

The hierarchical regression analyses, which further assessed unique contributions to reading comprehension, indicated that only one type of question made a significant contribution to predicting reading comprehension: the Thai Text Coherence Inference questions. As for the

five types of English questions, English Grammatical Connecting Inference and English Text Coherence Inference predicted unique variance in English reading comprehension. Thus, Text Coherence Inference was the only type of question type that showed predictive power for reading comprehension in both Thai and English. Further details will be discussed below.

6.2.3.1 Text Coherence Inference as a predictor of reading comprehension

Text Coherence Inference is necessary to establish cohesion between sentences, where readers are required to use their linguistic knowledge and integrate this information to draw connections within the text. Therefore, two main skills are required. First, linguistic knowledge plays an important role in comprehending explicit meaning of each sentence. Second, inferences are required to maintain a coherent story line by adding unstated but important information to explicit text. One potential explanation of the role of Text Coherence Inference in the prediction of reading comprehension in each language (Thai or English) in this study may be that this type of inference mainly relies on the linguistic and vocabulary knowledge which specifically appears in the two sentences. These inferences are necessary to establish cohesion between sentences and involve integration of textual information (Kispal, 2008). Additionally, previous research (e.g., Megherbi & Ehrlich, 2005; Oakhill, 1983; Oakhill & Yuill, 1986) also showed that children of varying reading comprehension skill levels differ in their understanding and use of their linguistic and vocabulary knowledge to integrate different propositions in a text. Therefore, if the participants could not comprehend both sentences, they would not arrive at the correct answer.

Another point worth discussion is that the participants were likely to apply additional language skills, using more than what had appeared in the two targeted sentences aiming for Text Coherence Inference. Since the two targeted sentences for Text Coherence Inferences appeared within a contextual reading text, the participants may need to use different comprehension skills to separate out other information prior to trying to comprehend the targeted

sentences. Therefore, the participants required the specific language skills needed to comprehend the two targeted sentences, as well as using various other language-skills which appeared in other parts in the text, in order to arrive at the two targeted sentences. It is plausible to conclude that, in order to comprehend Text Coherence Inference, readers need to use different comprehension skills, both as to language skills and inference, to a greater degree than what is merely required for the two targeted sentences themselves.

Furthermore, apart from the application of language skills, reading required the application of higher level comprehension, particularly inferential skills, to integrate and arrive at the coherence meaning of the text. In addition, in comparison with the four other question types, three types of questions (Literal Comprehension, Grammatical Connecting Inference, and Vocabulary Related Meaning Inference) were at the sentence level, and Prior Knowledge Inference depends heavily on the application of life experience and outside knowledge with the information presented in the text to fill in missing details. Text Coherence Inference is at the discourse level and needs the combination of language skills and inferential skills to arrive at the coherence meaning of the text. The skills to comprehend Text Coherence Inference were similar to the necessary skills for reading comprehension. As a result, Text Coherence Inference showed predictive ability for reading comprehension in both languages (Thai and English).

As the term Text Coherence Inference shares similarities with some other inference type terminologies developed by other researchers, such as text-connecting or inter-sentence inferences (Cain & Oakhill, 1999), coherence (Barnes et al., 1996; Bowyer-Crane & Snowling, 2005), and local coherent inference (Graesser et al., 1994), research relating to these inference types was discussed (see more at section 2.4.6 in chapter two). However, the majority of the relevant previous research has revealed differences in the number of inferences generated between good and struggling readers, particularly in the case of school age children, when

questions assessing those inferences were asked after reading was completed (e.g., Cain & Oakhill, 1999; Cain et al., 2001). Therefore, they were not completely similar studies as compared to the present research in this thesis.

The role of Text Coherence Inference is consistent with the results of Cain and Oakhill's study (1999) which was conducted with school age children. Their results demonstrated that skilled readers were more able to make text connecting inferences (equal to Text Coherence Inference in this study) than less skilled readers, but those same skilled readers were not significantly better than the less skilled readers on gap-filling inferences. However, other studies demonstrated different results. For example, the finding that good, average, and struggling readers perhaps do not differ in their use of text-based inferences emerged from the study of Carlson et al. (2014). Furthermore, Bowyer-Crane and Snowling (2005) found a similar result that there was no difference in achieving coherence inferences between skilled and less skilled comprehenders. In conclusion, the findings of previous research with school age children on the similar type of inferential skills has been diverse. However, there is little research on inferential skills in different languages. Therefore, further research on this area might be required.

6.2.4. The participants' self-perceptions on reading abilities

As the data from the questionnaire indicated that almost half of the participants evaluated themselves as only fair readers in Thai, their native language (see section 5.1.2), it may be useful to put these self-perceptions of overall reading ability in a cultural context.

As a native Thai, with many years of teaching Thai students, it is the researcher's informed and considered opinion that a tendency towards self-abasement in Thai culture might play a part in how some participants reported upon their reading ability. Thai students are likely to downplay their self-perceived skill level in various activities, including reading. In the Thai

culture, communications often emphasise understatement and indirect sentences, with speakers being reserved and sensitive listeners, and using non-verbal gestures and other kinds of body language (Gudykunst & Ting-Toomey, 1988; Knutson, Komolsevin, Chatiket, & Smith, 2003). Furthermore, this argument may be supported by the general lack of reading culture in Thailand. As discussed previously in this thesis, reading is not a favourite pastime for many Thai people (Wisaijorn, 2005). Thai people prefer to spend their leisure time with activities involving socially interaction rather than private reading. Recent reading statistics (Office of Knowledge Management and Development, 2008) reported that in 2015 the reading time amount of typical Thai young adult, ranging in age between 15-24 years old, was 94 minutes a day. Their favourite reading materials were online content, including social media, messaging and email. Ninety-four minutes daily seems to be sufficient reading time to improve reading abilities; however, if they spend most of their reading time with social networking, such as Facebook or Twitter, their reading proficiency may not adequately develop to meet the academic reading requirements at college level. Reading content and language used on these social networks are usually short and informal, aiming for social interaction. In conclusion, these two factors—the participants' self-abasement and the lack of reading culture--regarding the potential reasons for low self-perceptions in the reporting of reading ability in Thai may provide some additional insights into how Thai culture influences the self-perceived reading performances of the participants.

6.2.5. The participants' self-perceptions on inference generation

Inference skills are key to successful comprehension (Cain, 2010; Cain et al., 2001; Dole et al., 1991; Eason et al., 2012) and proficient readers are able to automatically use inferences to determine the meaning of a text (Graves & Philippot, 2009). Automatic behaviours are fast, accurate, not under conscious control, and seemingly effortless (Samuels & Flor, 1997).

Therefore, with automaticity in inferencing, skilled readers are able to infer quickly and accurately, with little effort.

The data from the questionnaire on reading comprehension strategies provided some (albeit limited) information on the participants' self-perceptions of their inference generation. In the process of inference making, readers construct a coherence meaning by generating inferences that make connections between different ideas in the text or between the text and their background knowledge (Graesser et al., 1995). As regards the data in the questionnaire, the average participants reported that they connected information in different sentences to find relationships among texts. This means that they were aware of the necessity of deriving coherent meaning by consolidating different pieces of information from the text they read. Furthermore, the results from the questionnaire demonstrated that the participants tried to interpret implicit meaning in the text, as well as regularly applying their prior knowledge, to help in understanding the reading text. Therefore, this indicates that the participants were aware of making inferences when they read. However, such self-reported questionnaire items cannot be used to determine whether the participants can generate inferences automatically. Indeed, the very fact of these being automatic suggests that individuals may not be entirely aware that they are making particular inferences, even if they understand the need to infer. Further information on how well or how automatically the participants made inferences will not be further discussed in this study because sufficient details on automaticity in inferencing did not result from this study. Future research assessing inference generation, including automaticity in inferencing, should be considered (see section 6.5).

6.2.6. Correlation between the participants' self-perceptions on reading comprehension strategies and their reading comprehension scores

The discussion in this section focuses on the data concerning the participants' self-perceptions of their reading comprehension strategies. The overall mean of the questionnaire on reading comprehension strategies completed by all participants at the beginning of the study was 3.17 out a total scale of five. This revealed that they were of average awareness of reading comprehension strategies. Correlation analyses were conducted to investigate the relationship between the participants' self-perceptions on strategies used and their reading comprehension performance. The results of correlation analyses showed that there was no positive relationship between the mean of the reading strategy questionnaire and the Thai reading comprehension performance. A similar finding was obtained for English; there was not positive correlation between the questionnaire and English reading scores.

Interestingly, the relationships found in this study were inconsistent with several previous studies, which had generally discovered that the use of language learning strategies improved language performance (e.g., Bruen, 2001; Clement, 2007; Cromley & Azevedo, 2006; Nakatani, 2005). For example, the study of Cromley and Azevedo (2006) showed that scores obtained on the reading comprehension measure were significantly correlated with reading strategy use by the participants. Furthermore, the study of Phakiti (2003) investigated the relationship between Thai undergraduate students' use of cognitive and metacognitive strategies, as it related to their English reading performance. Phakiti's findings suggests that the use of cognitive and metacognitive strategies had a positive relationship to the reading test performance.

One potential explanation for this contradictory phenomenon may be explained by the fact that, as in the use of other language skills or strategies, the number of strategies used, and their frequency of use, does not necessarily indicate whether a task will be successfully achieved

(Cohen, 1998). This is consistent with the results of some studies on individual differences between skilled and less skilled readers. As an example, Oranpattanachai's (2004) study, conducted on Thai undergraduate students majoring in engineering, suggested that low proficiency readers use certain strategies more frequently than did high proficiency readers when reading English texts. His study suggests that the low proficiency readers who attempted to understand the reading tasks used comprehension monitoring strategies more often than did the proficient readers. In addition, one recent study by Yaemtui (2015) investigated the reading strategies utilized by Thai high school students, categorized into skilled and less skilled English users, when reading English materials. The findings revealed that the average mean of the overall reading strategies utilized by the more capable English users and the less capable English users were not significantly different. However, the findings of some similar previous studies demonstrated different results. Their results (Monteiro, 1992; Zhang & Wu, 2009) found that skilled readers used reading strategies significantly more frequently than did the poor readers in L1 and L2. The findings of Akkakoson (2011) indicated that participants with higher-level reading proficiency demonstrated more frequent use of reading strategies than did their-peers with low-level reading proficiency. Therefore, it is plausible to say that the characteristics of good and poor readers varied in different research contexts.

Another potential explanation is that some readers may automatize their reading comprehension strategies when they read. As a result, they are unaware of the strategies they use or how often they had used some particular reading comprehension strategies in the process of text comprehension. In particular for L1 reading setting, readers may not monitor their reading carefully while reading texts in their native language (Pressley, Ghatala, Woloshyn, & Pirie, 1990; Schommer & Surber, 1986)., which may result from readers usually have tactical linguistic knowledge of their first language and are therefore typically unaware of their reading skills when reading in their native language (Koda & Reddy, 2008). This is consistent with the

argument that reading strategies are mental actions which are used either consciously or unconsciously to comprehend text (Davies, 1995). It could be plausibly concluded that when some readers are not consciously aware of and thusly apply their reading skills automatically, they apply their reading comprehension skills unconsciously. In addition, based on the data from the first section of the questionnaire, many students in this present study perceived themselves as good Thai readers. This may be explained by their familiarity with their mother tongue. As a result, they may not be aware of their reading comprehension strategies when reading in Thai.

In conclusion, the research investigating the relationship between reading comprehension strategies and reading comprehension performance showed various results. This may suggest that although reading comprehension strategies have been previously established as an important factor in reading comprehension performance, there are other factors which influence reading comprehension scores as well.

6.2.7. Correlation between the participants' self-perceptions on reading comprehension strategies and their inferential skills performance

Further correlation analyses to investigate the relationships between Thai and English inferential skills performance were conducted. The results demonstrated a significant positive correlation between the overall mean scores of the use of reading comprehension strategies and Thai inferential skills, as well as for English inferential skills scores. Both correlations were at low levels.

These positive relationships may have resulted from the questionnaire itself, as the questionnaire items were developed specifically based on strategies and skills needed in four types of inferential skills questions: grammar, vocabulary, background knowledge, and inferential skills. Strategies which the participants reported on the questionnaire items and skill

required to answer the inferential skills questions were relatively concurrent. This may lead to positive relationships between the participants' perception on the use of reading comprehension strategies and their inferential skills performance. However, the positive relationship between the participants' perception on the use of reading comprehension strategies and both their Thai and English inferential skills scores were at similarly low levels, accounting for a few percent of both Thai and English inferential skills scores. There was only a small correlation with both Thai (L1) and English (L2) inferential skills. In conclusion, the correlation between the questionnaire and the resulting reading comprehension and inferential skill scores suggested that the frequency of reading strategies use is not likely to track with academic performance, because either no correlation or only a small correlation were found in this study.

6.3. Practical implications of the findings

The current study investigated the influences of inferential skills on reading comprehension in two languages (Thai and English). Overall, there are several educational implications that stem from this research.

The relationship formed between inferential skills and reading comprehension in both Thai and English argue for the importance of inferential skills in reading comprehension in L1 and L2. Inference per se is not an inherently difficult task so it is essential that the development of the skill is encouraged (Markman, 1981). Explicit instruction should be used in inferential skill training (Yeh et al., 2012), and also that such training on inferential skills and practices can have positive effects on inferential success and reading comprehension (Walters, 2004, 2006). Therefore, explicit teaching of inferential skills within a normal classroom setting should be recommended in language classrooms. Teachers should teach inferential skills through explicit modelling, direct explanation and ample feedback, so that students have a clear understanding of what the inferential skills are, when they can be used, and how they are used.

A number of previous studies (e.g., McGee & Johnson, 2003; Winne et al., 1993; Yeh et al., 2012) on successful inference training guide some teaching methodologies of inferential skills. For example, Fritschmann et al. (2007) found their instruction in inference skills increased reading abilities of adolescents with learning disabilities. The successful inferential strategy training of Fritschmann et al. (2007) consists of five steps: interact with the passage and the questions, identify types of questions, classify the four types of inference questions (purpose, main idea/ summarization, prediction and clarification questions), find the clues, explore more details, and answer the questions (see section 2.4.5. in chapter two).

Another interesting finding is a positive relationship between inferential skills in Thai and English, which adds to our understanding on cross-language skills. This suggests there are some commonalties in inferential skills in Thai and English. Hence, another central implication which emerged from this finding is that inferential skills should be taught and practiced consistently in different classrooms. Collaborative lesson plans between lecturers may be more efficient in teaching inferential skills. Regular practice from similar teaching patterns of inference instruction from collaborative lesson planning may lead to student improvement in generating inferences. In the Thai educational context, English has been taught as a foreign language. The teaching of English reading is still influenced by passive and bottom-up models of the reading process, which results in the students concentrating heavily on the surface structure of the language rather than on other components of the reading process (Naranunn, 1998), as well as lacking the development of necessary reading comprehension skills (Akkakoson, 2011). Similarly, Thai undergraduate students also need to increase their higher reading skills in order to improve their Thai reading ability, because they lack critical reading skills to facilitate the full comprehension of the texts they read (Panniem, 2009).

Given the situation described above, teaching inferential skills consistently in Thai and English classrooms would be beneficial for both classrooms. Furthermore, syllabus design and activities between language teachers should be recommended because this would provide more opportunity for students to practice in drawing upon inferential skills in various contexts. With direct and explicit explanation and regular practice, it is likely that students will become long-term skilled readers (Gaskins, 1994).

The current study also demonstrated a positive relationship between inferential skills and vocabulary in Thai and English. These support the critical role of vocabulary knowledge in inferential skills and vice versa in different languages, because the ability to infer the meaning of unknown words also depends considerably on how many words in the overall context a student already knows; thus the explicit teaching of words that are frequent or relevant for the students can facilitate the students' future learning (Schmitt, 2000). Hence, an implication based on these findings is that the improvement of vocabulary and inferential skills is recommended in language classrooms.

Vocabulary size was the only dimension of vocabulary knowledge used in this study. The findings from this study may be relevant to the significance of vocabulary size. Therefore, this dimension of vocabulary knowledge may require more attention in language classrooms. Language teachers can play an essential role by guiding students as to how significant the vocabulary size they have acquired supports their reading proficiency, encouraging them to learn lexical items as well as providing guidance such as introducing which words to learn. There are a number of vocabulary lists and tests which will suit the various purposes of learners. Roughly, students may start with frequency based word lists and tests, such as vocabulary lists test (Schmitt, Schmitt, & Clapham, 2001), vocabulary size test (I. S. P. Nation & Beglar, 2007). High frequency words are very important words for the learners of any language. Learners need to

thoroughly know the high frequency words and their high frequency meanings to be able to easily understand the texts they hear and read. It is worthwhile for the teacher to spend time in class on these high frequency items as the learners will get a good return for any effort spent in learning them (I. S. P. Nation, 2001). Then, students may further focus on a specific vocabulary list which varies based on their personal interests, such as a vocabulary list for specific career which they would like to prepare for. Additionally, to achieve a large vocabulary, “students need the willingness to be active learners over a long period of time, for without this, they are unlikely to achieve any substantial vocabulary size, regardless of the quality of instruction” (Schmitt, 2008, p. 333). In sum, vocabulary size is worth taking into consideration, along with inferential skills instruction.

An additional implication of these findings is their relevance to teacher training in the instruction of inferential skills in a language classroom, as one of the most important factors in the student learning process is their teachers and the teaching methodologies they use, and teacher quality may outweigh other factors such as motivation, funding, and class size (Geringer, 2003). Similarly, successful inference instruction depends greatly on the methodology teachers use to teach inferential skills in their classrooms. Hence, providing teachers a training overview in inferential skills, the process of inference generation, skills involved in applying inferential skills, and teaching strategies would help teachers get ideas on how to teach inference in their classrooms. This is in line with the suggestion that teacher training programmes, workshops and conferences relating to teaching methodologies, particularly reading strategies, would be useful to help teachers integrate these into their instruction (Akkakoson, 2011; Zhang & Wu, 2009).

6.4. Limitations of this research

There appear to have been some limitations resulting from both the measures and the testing administration, which should be considered when drawing conclusions for future

research. The initial limitation involved with the measures. The mean score of the English vocabulary test was the relatively low ($M = 8.70$), compared to the total scores of 30 demonstrated that the overall test was difficult for the majority of participants although the test did not exhibit the floor effect. This may result from the selection method for 50 items from the total 100 items of the vocabulary size test (I. S. P. Nation & Beglar, 2007), which was employed as the English vocabulary measure in this study. The original 100 item vocabulary size test represents 20 frequency ranked lists. Each list (five words) presents 1,000 word families, therefore the entire test (100 items) reflects the knowledge of 20,000 words. In this study, fifty items were selected from the original items, so the test sampled from twenty word families. Consequently, the resulting test appeared to be relatively difficult for most participants due to the wide range of 20,000 words in the test. Alternatively, if the first fifty word items of the original 100 items had been chosen, it would have represented 1,000 word families. This may have been more accessible to the English ability of the majority of participants.

The second limitation is a lack of data for English listening comprehension, which was an independent variable of this study. Listening comprehension skills in Thai and English were an investigation aim in this study. Listening comprehension and reading comprehension have many similarities; with the exception of decoding, both written and spoken discourse need the same language knowledge and skills to support comprehension (Kendeou et al., 2009; Smith, 1994). Several studies have shown the impact of listening comprehension on reading comprehension (Cain & Oakhill, 2007; Macaruso & Shankweiler, 2010; Tilstra et al., 2009). As was mentioned earlier in this thesis, the data from the English listening comprehension measure did not show sufficient reliability, therefore it was not included in the main analyses of this study. Thus, if data of English listening comprehension could have been incorporated into the analysis, it would have provided more insights into the role of English listening comprehension in reading comprehension, as well as other variables in this study. In future research, the development of

the measure of English listening comprehension must be carefully considered in terms of test format and content.

Another limitation of the study lies in the length of test administration. Ten measures were administered to participants on two different days by the researcher. Each testing session took approximately 90 minutes with an interim break. Therefore, the total amount of testing and a break were approximately 120 minutes, which seemed to be appropriate for adult learners. However, it may be better if the test administration could be conducted in three or four different sessions on different days, which the amount of testing time would be 45 minutes or one hour per session, which might result in less potential for boredom and exhaustion in testing. For this thesis, due to time constraints, it was difficult to arrange more testing sessions. This may have resulted from the fact that the main testing took place during the short summer semester, during which all students had a busy timetable to complete many courses. Furthermore, there was a week-long holiday during the summer semester, making it difficult to arrange more suitable times for testing.

6.5. Suggestions for future research

There are still several aspects that need further research in order to obtain more beneficial information on inferential skills in L1 and L2. The current study focused on investigating the inferential skills performance in Thai (L1) and English (L2) of a group of second year university students. Further study could extend to students with younger age groups (e.g., primary and adolescent students). Such future research could be useful in understanding the utilization of inferential skills by different age groups. The information from different age groups will provide further insights into the development of Thai students, specifically at different stages of learning, which would be beneficial for teaching inference in language classrooms in Thailand in both L1 and L2.

The important role of inferential skills in the reading comprehension of two different languages and the positive relationships between inferential skills in Thai and English has been demonstrated in this study. This suggests that developing inference making ability will support reading comprehension. Without explicit training on inference making, it may be difficult for readers, particularly children, to answer inferential questions (Davoudi, 2005). Furthermore, despite the research efforts made in strategic reading instruction and in learners' reading strategies in L2 language classrooms (e.g., Akkakoson, 2011; Zhang, Gu, & Hu, 2008), similar research on inferential skills in L2 has been not conducted. There is little known about how the teaching of inferencing should be done in L2 classrooms (Lee, 2013). Therefore, in future intervention-based research, it may be worthwhile to look into the efficacy of inferential skill instruction upon Thai (L1) and English (L2) reading comprehension. The findings from such intervention research would provide more information about the effectiveness of inferential skills training in L1 or L2. It would add to the baseline knowledge as to whether and how the improvement of inferential skills from intervention in one language would relate to improvements in another language.

With respect to different types of inference generation (see section 2.4.3), these might also provide some additional ideas for future research on inferential skill training. Each type of inference requires specific skills which differ from those of other types of inference. For example, Gap-filling inferences (L. Baker & Stein, 1981; Cain & Oakhill, 1999) require information from the reader's existing background knowledge. Young children may have some relevant knowledge, but may not know how to integrate it into the process of inference making (Cain et al., 2001; Oakhill & Cain, 2007). Therefore, practice in how to integrate their background knowledge with the text to form a coherent representation of the meaning might be necessary for readers, particularly children. Therefore, future inference training aimed at

activating their background knowledge in primary school children would be worth further investigation.

Besides, Tennent (2015) mentioned the disconnection between the importance of inference as claimed by researchers and any transfer in how inference making is being taught in schools. Teachers may have some questions, such as which inferences to teach or when they should be taught. A future study on the efficiency of teacher training in how to teach inferential skills in a classroom may be beneficial. The results would provide insights in terms of the role of teachers in teaching inference. Teacher training on inferential skills may include introducing different types of inference types (see section 2.4.3), and practice generating questions relating to particular inference types. Questions are a major component of successful inference intervention (e.g., McGee & Johnson, 2003; Yuill & Oakhill, 1988).

As the present study reveals positive relationships between vocabulary (referred to as a lower level reading comprehension skill) and inferential skills (referred to as a higher comprehension skill) in the process of text comprehension, future research may also add a measure of grammatical knowledge, which is, in itself, a significant lower level comprehension skill. Lower level comprehension skills such as vocabulary and grammar, which are also referred to as foundational language skills (Lepola et al., 2012), are the means by which the readers activate word meanings and connect them into propositions (Poulsen & Gravgard, 2016). The information of grammatical knowledge in this future study would allow us to see how vocabulary and grammatical knowledge interact with higher level comprehension skills, particularly inferential skills, as well as in reading comprehension by adult learners. The knowledge from this study may be of benefit as to how to best teach these lower and higher level comprehension skills in an integrated manner in a language classroom.

Ability in automatic inference generation is likely to be one of significant components in differentiating between successful readers and struggling readers. Skilled readers can make inferences automatically as they read through a text, thereby maintaining a coherent representation of the text they have read, whereas those who are less skilled are more likely to be unable to use inference automatically, and so need training in how to make inferences (Graves & Philpott, 2009). Although studies have investigated how readers of varying ability generate inferences in their L1 (e.g., Calvo, 2004; Hannon & Daneman, 1998; Long et al., 1994), there is a scarcity of research conducted on differences in inference generation in two or more languages (e.g., Karlsson, 2014). This study reported in this thesis has provided additional understanding of the link between inference making and reading comprehension across languages. Furthermore, further research might separate high and low ability L1 and L2 readers. Basing this ability classification on a standardized measure of reading ability within an L1 and L2 context should be considered, in order to enable a comparison of different ability groups: e.g., high L1 and high L2, high L1 and low L2, or low L1 and low L2. Such groups should provide further data on the processes of inferencing within text reading as well as their potential cross-language interactions.

The findings from the questionnaire in this study indicated no positive relationship with Thai/English reading comprehension skills, and only a small correlation with Thai/English inferential skills performances. As concerns the 14 item questionnaire in this study, which aimed to investigate general reading comprehension strategies (not specific to any given language), it did not provide precise information as to how the participants apply their reading comprehension skills when reading in either L1 or L2. Therefore, further research is needed, using a questionnaire consisting of various reading comprehension strategies, such as the addition of comprehension monitoring strategies—those involving the ability to reflect on one's own comprehension capability and also including the ability to identify inconsistencies within a text and difficulties experienced while reading a text (Hogan et al., 2011). When the students'

perceptions of reading comprehension in L1 and L2 are explored separately, the data from such future research may provide insights into the reading comprehension strategies actually used when reading in different languages (L1/L2); this may explain the relationships between the reading strategies used and student academic performance, both as regards inferential skills usage as well as reading comprehension in both L1 and L2.

6.6. Conclusion

The current research indicated a significant relationship between inferential skills in Thai (L1) and English (L2), and supporting previous evidence for positive relationships between inferential skills and reading comprehension within the same language as well (e.g., Cain & Oakhill, 1999; Cain et al., 2001; Silva & Cain, 2015). This relationship was not explained by variability in L1 or L2 language proficiency and non-verbal reasoning. In addition, the research identified positive correlations between Thai inferential skills and English reading comprehension, and between English inferential skills and Thai reading comprehension. Furthermore, the current evidence argues for English inferential skills as predictors of unique variability in Thai reading comprehension; although the same cross-language relationships were not found between Thai inferential skills and English reading comprehension once language proficiency and non-verbal ability were controlled.

These findings were consistent with the findings of several previous studies, which have provided evidence for the importance of inference making in the development of reading comprehension (Kendeou et al., 2008; Oakhill & Cain, 2007). The findings within the same language suggest that inferential skills are worth teaching in language classrooms, within both L1 and L2 contexts. In addition, the cross-language results expand current perspectives on cross linguistic transfer effects. Inferential skills may be a common skill across languages/orthographies: once acquired they may be applied when reading in any language. Therefore, inferential skill

training in one language has the potential to be additionally useful in that it might be applied when reading in another language. Future research investigating how inferential skills interventions might be applied across L1/L2 would be useful, particularly under the conditions in which positive cross-language influences might be expected to occur. Overall, the findings should inform the development of theories of reading comprehension across languages and language contexts (i.e., L1 and L2) as well as the development of improved models for pedagogical practice.

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APPENDIX A

English Reading Comprehension Test

Test Instruction

1. The test administration will be 40 minutes.
2. The test consists of 40 multiple choice questions.
3. Mark the best choice for every question.

Example

If you visit Japan, you might choose to travel around the country by Shinkansen trains. These high-speed trains are nicknamed “bullet trains” because they go very fast and have pointy noses like a bullet.

1. Why are Shinkansen trains nicknamed “bullet trains”?

- | | |
|---------------------|----------------------|
| a. safety and shape | b. safety and timing |
| c. speed and shape | d. speed and timing |

English Reading Comprehension Test

Passage 1

Have you ever wondered why many kinds of Thai foods have names starting with “kaao (rice)”-- such as Kaaao Grip (rice crisps), Kaaao Mao (pounded unripened rice), or KaaaoLaam (glutinous rice roasted in bamboo joints)? Some of these kinds of food seem to hardly have any rice in them.

All of these foods are made from rice or rice flour. Rice flour and glutinous flour, products of our home country, Thailand, can be used to make various kinds of food. Unfortunately, these days, Thai adolescents are familiar with fewer Thai foods. They prefer food made from wheat flour. This has resulted in our country needing to import more food from other countries, even though food made from imported ingredients is more expensive than food made from domestic ingredients.

As Thai people, we should pay more attention to our own products, to learn what kinds of food they could be used to make. It would be better if we try to find more ways to process rice to make it more interesting. It might become an additional export product which would bring money to our country. This seems to be appropriate for a country which is already one of the world’s largest exporters of rice.

1. Why does Thailand import food from other countries?

- a. We cannot produce enough food to meet the needs of the Thai people.
- b. Most Thai people don’t like the taste of Thai food.
- c. Some Thai people prefer to eat imported food.
- d. Thai people don’t give much importance to the value of Thai food.

2. What is the most important purpose of this style of writing?

- | | |
|--------------------|----------------|
| a. To report facts | b. To compare |
| c. To explain | d. To persuade |

3. What is the main purpose of the passage?

- a. To give knowledge about Thai food
- b. To support a campaign against costly food
- c. To create awareness of the consumption of rice in traditional Thai food
- d. To emphasize the value of Thai foods made from Thai rice

4. What is the likely source of this reading passage?

- | | |
|-------------------------|---------------------|
| a. a short stories book | b. an encyclopaedia |
| c. a culture book | d. a travel book |

Passage 2

Nawarat Pongpaiboon was born on 26 March 1940 at PhanomThuan district, KanchanaBuri. He is a son of Sombat and Somjai Pongpaiboon. He was in the family where everyone loved Thai literature. His father was especially interested in Thai classical music and Thai poetry.

Sombat (Nawarat's father), with a few friends, enjoyed reading Thai poems interactively, with each of them reading a line of poetry in turn. The wooden walls of their home were covered with poems they had written. Their neighbours told us about the family's past life.

Nawarat's mother herself liked reading Thai literature. She also liked to share her enjoyment through the stories she read to her children. His father loved reading not only poems, but also other things, such as traditional Thai literature and contemporary stories.

5. What style of writing is this passage?

- | | |
|----------------|----------------------------|
| a. a biography | b. an interview |
| c. a report | d. a fictional short story |

6. What factors encouraged Nawarat Pongpaiboon to become a poet?

- | | |
|-----------------------------------|----------------------|
| a. Nawarat's personal interests | b. Nawarat's talents |
| c. Nawarat's teachers and friends | d. Nawarat's family |

7. Which saying is the most appropriate to describe Nawarat's circumstances?

- You reap what you sow.
- Like father, Like son
- If you associate with scholars, you will be a scholar.
- Love goodness, carry a gable; love evil, carry a post.

8. If you were making a speech about Nawarat, what occasion would be the most appropriate?

- | | |
|----------------|----------------------|
| a. Teacher Day | b. Family day |
| c. Youth day | d. Thai language day |

Passage 3

The survey of 700 businesspeople from 12 countries in Asia

While corruption in Asia countries in general is not uncommon, failure to deal with it has become an issue which reflects poorly on Thai public officials, Thai politicians and the whole image of Thai society.

Thailand ranks as the 5th most corrupt country in Asia, a fact that could only be a source of pride for corrupt officials. AFP news reported an index which ranks the level of corruption in Asia countries on a scale of 0-10. It showed that Vietnam was the most corrupt, with 9.75, followed by Indonesia (9.50), India (9.25), and the Philippines at 9. Thailand was fifth, with 8.55, while South Korea was at 7 and Malaysia and Taiwan were similarly ranked at 6.

Singapore has a minimal corruption problem with a score of 1.17, while Japan scored 2.50 and Hong Kong 3.77.

In Vietnam, Indonesia and the Philippines, corruption is widely evident. Corruption is also a common phenomenon in Thailand. Business people offer officials and politicians bribes to try to get benefits illegally, while the government budget is also a target for corruption.

The enormous amount of corruption was one of the primary causes of the economic crisis. After economic crisis in 1997 in the Asian region, one would have hoped that the problem of corruption would be solved. Unfortunately, it was found from this survey that it remains a crucial problem of Asian countries.

9. What style of writing is this passage?

- | | |
|------------------------------|-------------------------------------|
| a. a comparative description | b. an article expressing an opinion |
| c. an interview | d. a commentary |

10. In what area is Thailand most affected by corruption?

- | | |
|--------------------------|----------------------------|
| a. Finance and budgeting | b. business and investment |
| c. Export and import | d. tourism industry |

11. Which one was the cause of corruption?

- The investment from overseas is increasing in Asian countries.
- Business people didn't like to contact public officials.
- The government developed the economy too quickly.
- The government officials didn't strictly control public officials.

12. Why is the information about corruption useful for Thai economy?

- It will help Thai people improve trade with other Asian countries.
- The government will try to effectively manage corruption.
- It will help improve transport.
- It will help improve family relationships.

Passage 4

Nowadays the culture of information technology has been growing fast as a combination of technology and communication. There are both advantages and disadvantages to the convenience of communication these days. Positively speaking, it is the most effective way of searching for information, such as getting access to the information of world's institutions. On the other hand, it is easier to obtain pornography.

Learning how to use information technology is very important. Both technophobia (fear of technology) and technomania (crazy about technology) are extreme. The best solution for this is to think critically, so it can be seen what is good or bad.

13. The person who is “crazy” about technology is someone who _____.

- a. is interested in new technology
- b. uses technology every day
- c. likes searching information on computer
- d. cannot live without technology

14. What does the writer think about using the internet?

- a. The writer thinks that young people should be encouraged to use the internet.
- b. The writer thinks that the internet is the source of information.
- c. The writer thinks the internet should be used carefully.
- d. The writer thinks that internet has good and bad things.

15. Who applied the lesson from the reading?

- a. Udom checked information he got from the internet carefully.
- b. Nakorn doesn't trust any information from the internet.
- c. Jomjai stays connected to the internet all the time.
- d. Pong usually spends many hours viewing with the websites about movie stars.

16. How is the suggestion of this writer useful?

- a. This content actually occurs in our society.
- b. Teaching us to be thoughtful
- c. Giving good suggestion
- d. All are correct.

Passage 5

It is believed that the first cell was formed in the ocean around 590 million years ago and later developed to be other forms of living such as plants or animals. Land plants developed around 430 million years ago. The earliest animal which could breathe was likely to be of the spider family. The earliest known vertebrate is believed to have been a fish. The Devonian Period, from about 358 to 419 million years ago, was marked by the development of amphibians, and followed in turn by reptiles around 248-65 million years ago. Long after the extinction of the dinosaurs, the first humans appeared.

There were many millions of years in the development of the plant and animal kingdoms. Both humans and animals came from the same origin. But human brains have developed more than animal brains. Unfortunately, humans use their intelligence and wisdom principally to get what they desire rather than to develop their mind. There is no difference on this score between humans and animals. Concepts which can be used to differentiate among all living creatures are culture, tradition, ethics, religion, and law. All of these concepts have been thought of and accepted by humans. Nobody knows whether there might be other life forms on other planets which might classify humans as inferior to themselves.

17. What is the main idea of this passage?

- a. Humans are more intelligent than other kinds of animals.
- b. Humans and animals need to develop themselves for survival.
- c. Both humans and animals rely on each other.
- d. Humans should not think they are better than other animals.

18. Which of the following is the opinion of the writer?

- a. The first vertebrate is believed to have been the fish.
- b. The first cell in the world originated from the ocean around 590 million years ago.
- c. Human brains are more intelligent than animal brains.
- d. Humans use their wisdom to serve their own needs.

19. What style of writing is this passage?

- a. a comparative description
- b. a factual description
- c. an interview
- d. a commentary

20. What can we best learn from this passage?

- a. To learn about the evolution of humans and animals
- b. To learn how humans and animals are different
- c. To be aware that humans aren't better than animals
- d. To learn why humans shouldn't destroy animals

Passage 6

Doctors have warned of the dangers of sunlight in the summer, especially during the Songkran festival- the hottest period of the year.

Doctor Prawit Pisanbod, a doctor specializing in skin diseases and allergies, reported to the Kai Moo, a health magazine about how to “Prepare your skin for summer breezes”. He pointed out that Thai living styles in the old days protected the skin from the sun by various means, such as using marlstone or Ammonium Alum, wearing Thai traditional long sleeved shirts, and using umbrellas proves that the Thai people of old had wisdom in dealing with problems from extended sun exposure. They were already aware of the risks of too much sun exposure. Normally, Thai farmers wear a hat which is made from bamboo leaves. It can effectively protect them from the sun. Modern research also supports this idea that a hat made from rice straws or sugar palm leaves can be used to well protect the wearer from the sun. Wearing long sleeved cotton clothes, like Thai traditional long sleeved shirts, can protect our skins from the sun better than synthetic fabrics. It has also been found that the marlstone which our grandmothers used to rub their faces during the Songkran festival can protect our skin from the sun. It works like modern sun lotions.

21. What is the main idea of this reading passage?

- a. Things to be concerned during the Songkran festival
- b. Taking care of your health in the summer
- c. Dealing with sun exposure during the summer
- d. Skin protection of Thai women in the olden days

22. What would the writer like the readers to be most aware of?

- a. Healthy skin for summer
- b. Device for protecting the sun
- c. Safety economic and skin protection
- d. Using sun protection methods based on Thai wisdom

23. What did Thai people use as sun lotions in earlier times?

- | | |
|--------------|------------------------|
| a. Marlstone | b. hats |
| c. Fans | d. long sleeved shirts |

24. Why is this news helpful?

- | | |
|--|--|
| a. The source of the news is reliable. | b. The content is good for our health. |
| c. It's an opinion from a skin doctor. | d. This advice is not suitable for the present time. |

Passage 7**British council approved the law permitted human embryo cloning**

23 January 2001, a news agency reported that members of the British House of Commons voted for 212-92 to permit human embryo cloning solely for the purpose of curing diseases. The legislation aims to permit the use of embryo stem cells for transplanting into patients and embryo stem cells must be destroyed within 14 days. However, human or baby cloning is still not allowed.

25. What is the purpose of the permitting of human embryo cloning?

- a. For curing diseases
- b. For research
- c. For extending life expectancy
- d. For maintaining the human species

26. What were the British concerns when then gave permission for human embryo cloning?

- a. To be a medical research leader
- b. To develop new human species
- c. To prohibit human cloning
- d. To preserve the genetic characteristics of humans

27. Which of the following is an opinion?

- a. Human cloning isn't allowed.
- b. Destroying one life to save another life should be accepted.
- c. Human embryo cloning needs ten more years to be successful.
- d. Britain has allowed human embryo cloning

28. What is the main idea of this reading passage?

- a. the development of human embryo cloning
- b. A law about human embryo cloning
- c. Human cloning is not permitted.
- d. The arguments about human embryo cloning

Passage 8

“Stop....Nong X.....Don’t do that.” The scream of Salika, the maid of this house, interrupted his thinking.

“.....Giant kick.....” When he opened the door, his six year old boy, who was standing on the dinner table, suddenly jumped and kicked Salika. And Nong X also hit Salika’s head with a clothes hanger in his right hand.

“Oh..No..!” He shouted, but that didn’t help anything.

“You shouldn’t have done like this. Salika may get hurt. You are so naughty. —Go to your room!” He was very angry. His child was so aggressive. It’s not normal for children to play like this.

He and his wife have brought up his son according to the modern advice of doctors. They usually spend time together. They gave him love. They didn’t shout at or hit him because they were afraid that by so doing they would make him have a bad temper. They kept teaching him about generosity and other good things. Unfortunately, despite their efforts, Nong X seems to be getting more stubborn and violent. He bought Nong X a guitar, because he hoped to draw his son’s attention to music. But Nong X used the guitar as a gun instead.

29. Why was he angry at his son?

- | | |
|---------------------------------|-------------------------------|
| a. His son broke something. | b. His son doesn’t obey him. |
| c. His son played aggressively. | d. His son made a loud noise. |

30. What was likely to be the cause of Nong X’s behaviour?

- | | |
|------------------------------------|--------------------------------|
| a. The way his parents treated him | b. His own personality |
| c. The family environment | d. The influence of television |

31. What will “Nong X” probably be in the future?

- | | |
|---------------|--------------|
| a. An actor | b. A boxer |
| c. A gangster | d. A soldier |

32. Why is what he did with his son counter-productive?

- The child hasn’t done something wrong.
- The father hasn’t paid attention to his son.
- He was too emotional when complaining his son.
- His son is too young to understand.

Passage 9

As long as Kan could remember, he usually got a grade of “A” in Art. On the other hand, he wasn’t interested in his other subjects.

When Kan walked pass the movie theatre on the way to school, he liked to look at the movie poster drawings made by his Uncle Noi. The drawings of cowboys or policemen looked very exciting to Kan. This morning Uncle Noi went to Kan’s house and told him to draw a movie poster because Uncle Noi didn’t feel well today. Kan was so happy to hear that. He was confident that he would be able to do it well. Kan felt a bit surprised as to why Uncle Noi trusted him to draw because he has never done this type of drawing before.

While his friends were studying for university entrance exams, Kan spent his time drawing more movie posters, because he didn’t want to continue his studies after finishing Matayom 6. He knew that his mother wouldn’t agree with his idea. Anyway, he thought that he would try to talk to his mother about his reasons for not studying after high school.

“Why don’t you study for exams? You always hang out at the movie theatre,” his mother said to Kan.

“Mom, I really want to tell you that.... I don’t want to continue my studies,” Kan said softly.

“Are you crazy? Even if we aren’t rich, I have enough money to support you to study at a university. If you don’t study further, what will you do for a living?” his mother asked sarcastically.

“I know.....I think I’ll be a painter. I’ll sell my paintings. This is what I love. What I can do best.

“That kind of job isn’t stable. You will not be able to survive by following this dream,” Mom said, and then walked to the kitchen to give Kan time to think about it. What his mom said always made Kan give in and do as she wanted.

33. What is the conflict in this reading?

- a. Good and evil
- b. Hope and disappointment
- c. Freedom and gratitude to one’s mother
- d. His own desires and his mother’s desires

34. Which one is likely to lead to his mom’s happiness?

- a. Her son becomes an artist.
- b. Her son continues his studies.
- c. Her son has a stable job.
- d. Her son will become rich.

35. Which one best describes Kan?

- a. He knows what he wants to do.
- b. He is ambitious.
- c. He is determined.
- d. He behaves well.

36. Why is Kan's thought practical?

- a. He is not good at studying.
- b. He will choose to do what he likes.
- c. His mom won't work hard anymore.
- d. He can take care of himself.

Passage 10

In KusuBuri city, there was a poor Brahman named Sakawa. He had a pot full of flour people had given him. That evening when he looked at that pot hanging on the wall, he was thinking to himself that "I have a full pot of flour, so I can sell it for 100 Rupee to get some money. Then I can use the money to buy two female goats. I'll get baby goats more and more every 9 months. I will soon have a big flock of goats. After that, I can get 100 Rupee from selling some goats. I will be able to buy two mares also. Later on I will have a plenty of horses. I'll get a lot of money from selling those. I can build a house. I will get married to a beautiful wife and have a son. Sometimes I will probably go to do some reading in the stable. Suddenly my little two year old son may crawl to the stable. I will call my wife to take care of our son but if she doesn't hear that, I would be very angry at her and lift my foot to kick my wife. While Brahman was in his daydreaming, he suddenly kicked his pot of flour. His pot was broken and nothing left for him. Brahman was very sad.

37. What did this tale teach us?

- a. Morality
- b. To be imaginative
- c. To pay attention to what you are doing
- d. Wisdom

38. Which saying is the most appropriate to this reading?

- a. One bird in hand is better than two in the bush.
- b. Actions speak louder than words.
- c. You never miss the water till the well runs dry.
- d. Don't count your chickens before they are hatched.

39. Why is this tale useful?

- a. It teaches us that we may be disappointed if we expect too much.
- b. It teaches us that having a daydream may lead us troubles.
- c. It teaches us Indian culture.
- d. This story seems to happen nowadays.

40. Which one best describes Brahman?

- a. He is lazy.
- b. He is tricky.
- c. He is selfish.
- d. He is fanciful.

APPENDIX B

Thai reading comprehension test

แบบทดสอบทักษะการอ่านภาษาไทย

บทอ่านที่ 1

สถิติจากสถาบันมะเร็งแห่งชาติพบว่าคนไทยนอกจากไม่ค่อยเปลี่ยนพฤติกรรมการกินให้สร้างสรรค์ และมีประโยชน์แล้ว ยังไม่ค่อยชอบตรวจสุขภาพ กว่า 80% เป็นมะเร็งขั้นลุกลามแล้วจึงไปหาหมอ ผลก็คือ หมดโอกาสรักษาให้หาย

เป็นที่ทราบกันว่า มะเร็งตับ คือ อันดับหนึ่งที่เกิดขึ้นกับคนไทย สารไนโตรซามีน คือตัวร้ายที่ทำให้เกิดมะเร็งตับ และมะเร็งระบบทางเดินอาหาร โดยมันอยู่ในอาหารประเภทเนื้อสัตว์หมัก หรืออาหารที่มีดินประสิว (ไนเตรท) และไนไตรท์ในปริมาณที่มากเกินไป ซึ่งไม่พ่นอาหารยอดฮิตของชาวอีสานและชาวเหนือ เช่น ปลาร้า ปลาจ่อม ปลาต้ม และแหนม อย่างไรก็ตาม สารนี้สามารถถูกทำลายได้ด้วยความร้อน แต่ร่างกายของเราสามารถสร้างสารนี้ขึ้นมาได้อีกวิธีหนึ่ง คือการกินอาหารที่เกลือไนเตรทและไนไตรท์ประปนอยู่ ซึ่งมักอยู่ในอาหารอย่างเบคอน ไส้กรอก เนื้อเค็ม เนื้อกระป๋อง ปลาร้า และอื่นๆ วิธีป้องกันก็โดย ทานผักผลไม้มากขึ้น เพราะวิตามินซีจากสิ่งเหล่านี้จะช่วยได้

อีกสาเหตุหนึ่งที่น่าไปสู่ความเสี่ยงในการเกิดโรคมะเร็งก็คือ การประกอบอาหารโดยใช้ความร้อนที่อุณหภูมิสูง เช่น การปิ้งย่าง ทอด และรมควัน จะทำให้เกิดสารก่อกลายพันธุ์และสารก่อมะเร็งหลายชนิด จึงควรรับประทานอาหารในลักษณะนี้ให้น้อยลงจะดีกว่า

1. ตารางสำคัญของข้อความนี้คือข้อใด

- | | |
|------------------------------|---------------------------------------|
| ก. วิธีป้องกันโรคมะเร็ง | ข. อาหารที่ก่อให้เกิดโรคมะเร็ง |
| ค. สาเหตุของการเกิดโรคมะเร็ง | ง. ข้อเสนอแนะในการเลือกรับประทานอาหาร |

2. ข้อความนี้กล่าวในลักษณะใด

- | | |
|------------|------------|
| ก. บอกเล่า | ข. ดิเสียน |
| ค. เชิญชวน | ง. ชี้แนะ |

3. ผู้เขียนบทความนี้มีจุดประสงค์อย่างไร

- ก. เพื่อให้ตระหนักถึงอันตรายของโรคมะเร็ง
- ข. เพื่อสร้างจิตสำนึกในการเลือกรับประทานอาหารที่มีประโยชน์
- ค. เพื่อเชิญชวนให้เปลี่ยนพฤติกรรมมารับประทานอาหาร
- ง. เพื่อให้ความรู้เกี่ยวกับสาเหตุและการป้องกันโรคมะเร็ง

4. บุคคลใดน่าจะเป็นคนกล่าวข้อความข้างต้นนี้มากที่สุด

- ก. นักเทคนิคการแพทย์
- ข. นักสาธารณสุข
- ค. นักวิทยาศาสตร์
- ง. นักโภชนาการ

บทอ่านที่ 2

อาจารย์ระพี ศาคริก นอกจากจะให้ความรู้ทางด้านวิชาการแก่นักเล็งกล้วยไม้อย่างกว้างขวางแล้ว ท่านยังทำให้บรรยากาศของนักเล็งกล้วยไม้หลายกลุ่มทั้งในกรุงและต่างจังหวัดรวมเป็นอันหนึ่งอันเดียวกัน

อาจารย์ระพี “คุณพ่อ” แห่งมหาวิทยาลัยเกษตรศาสตร์ เคยกล่าวแก่ลูกๆ เกษตรกรเขียนวันหนึ่งว่า “ความฝันของพ่ออย่างหนึ่ง อยากจะเห็นนิสิตนักศึกษาที่พ่อมีความรู้สึกเหมือนกับลูกหลาน อยากจะสร้างให้เป็นคนดีมีคุณธรรม การฝึกฝนหรือความสนใจนี้เหมือนกับที่พ่อเล่นกล้วยไม้แล้วรู้สึกเพลิดเพลิน และเล่นโดยไม่ลืมนิ่งไม่เบื่อ เหมือนอย่างที่พ่ออยู่กับนิสิตนักศึกษาพ่อไม่เบื่อ อยู่นานเท่านั้นก็อยู่ได้ เพราะเรามีเป้าหมาย มีความสนใจและฝึกฝนว่า นี่เราจะสร้างเขาขึ้นให้เป็นคนดี เป็นพลังของสังคมเหมือนอย่างที่เราเป็น และให้ดีกว่าเราอีก พยายามแล้วทุกๆทาง ยิ่งมาเห็นสภาพสังคมปัจจุบันที่ผ่านมาแล้วก็ยิ่งหวัง ยิ่งพยายาม โดยขออาศัยหลักเดียวกับที่พ่อทำเรื่องกล้วยไม้”

5. ข้อความนี้จัดเป็นงานเขียนประเภทใด

ก. บทความ

ข. บทสัมภาษณ์

ค. ตำนาน

ง. เรื่องสั้น

6. จากข้อความนี้ อนุมานได้ว่าอาจารย์ระพี ศาคริก มีอุปนิสัยอย่างไร

ก. สร้างสรรค์

ข. รอบคอบ

ค. มุ่งมั่น

ง. เข้มแข็ง

7. หลักที่อาจารย์ระพี ศาคริกใช้ในการทำงาน ตรงกับคุณธรรมข้อใด

ก. โฉวาท 3

ข. พรหมวิหาร 4

ค. อิทธิบาท 4

ง. ฌราวาสธรรม 4

8. ข้อคิดที่ได้จากการเล็งกล้วยไม้ของท่าน นักศึกษาสามารถนำไปประยุกต์ใช้ได้อย่างดีในเรื่องใด

ก. การใช้จ่าย

ข. การคบเพื่อน

ค. การศึกษาเล่าเรียน

ง. การใช้ชีวิตนักศึกษา

บทอ่านที่ 4

ลูกเอ๋ย ก่อนจะเที่ยวไปขอบารมีหลวงพ่อก็คิด เจ้าจะต้องมีทุนของตัวเอง คือบารมีของตนลงทุนไปก่อน เมื่อบารมีของเจ้าไม่พอ จึงค่อยขอยืมบารมีของคนอื่นมาช่วย มิฉะนั้นเจ้าจะเอาตัวไม่รอด เพราะหนี้สินในบุญบารมีที่เที่ยวไปขอยืมจนพันตัว เมื่อทำบุญกุศลได้บารมีมา ก็ต้องเอาไปผ่อนใช้หนี้เขาจนหมด ไม่มีอะไรเหลือติดตัว แล้วเจ้าจะมีอะไรไว้ภพหน้า หมั่นสร้างบารมีไว้ แล้วฟ้าดินจะช่วยเอง

จงจำไว้นะ.....เมื่อยังไม่ถึงเวลา เทพเจ้าองค์ใดจะคิดช่วยเจ้าไม่ได้....ครึ่งถึงเวลา.....ทั่วฟ้าจบดินก็ด้านเจ้าไม่อยู่.....จงอย่าไปเร่งเทวดาฟ้าดิน เมื่อบุญเราไม่เคยสร้างไว้ จะมีใครที่ไหนมาช่วยเจ้า

13. ข้อใดเป็นคำกล่าวที่ไม่ถูกต้อง เกี่ยวกับข้อความข้างต้น

- | | |
|-------------------------------|---|
| ก. ทุกคนควรหมั่นสร้างความดี | ข. สิ่งศักดิ์สิทธิ์จะช่วยคนที่เดือดร้อน |
| ค. คนทำบุญ ผลบุญย่อมเกื้อหนุน | ง. ทุกคนควรช่วยตนเอง ก่อนที่จะขอความช่วยเหลือจากผู้อื่น |

14. ผู้เขียนกล่าวในเชิงใด

- | | |
|------------|--------------------|
| ก. เสนอแนะ | ข. สั่งสอน |
| ค. เชิญชวน | ง. แสดงข้อเท็จจริง |

15. ผู้ปฏิบัติตามข้อความข้างต้นนี้ น่าจะได้รับผลเช่นใด

- | | |
|-------------------|------------------------|
| ก. ชีวิตมีความสุข | ข. หน้าที่การงานมั่นคง |
| ค. มีฐานะดี | ง. เป็นที่รักของทุกคน |

16. ภาษานี้ น่าจะเป็นประโยชน์กับบุคคลใดมากที่สุด

- | | |
|-------------------|--------------------|
| ก. เด็ก และเยาวชน | ข. ผู้ใหญ่วัยทำงาน |
| ค. ผู้สูงอายุ | ง. ผู้คนทุกวัย |

บทอ่านที่ 5

วันนี้ชุมชนชนบทไทยมีทุกอย่างเพื่อ “ตอบสนองความฝัน” ของนักท่องเที่ยว มีภูมิประเทศ ทุ่งนา ป่าเขา วัฒนธรรม ความสนุกสนานและความสบาย มีข้าวปลาอาหาร โดยเฉพาะอาหารสุขภาพ ผักปลอดสารสมุนไพร เครื่องสำอาง การนวด การอบ การรักษาสุขภาพแบบพื้นบ้าน และวันนี้ “สุขภาพ” คือประเด็นที่คนทั่วโลกให้ความสนใจ หมู่บ้านไทยมีทุกอย่างที่โลกต้องการ

หากนักท่องเที่ยวมาเมืองไทยเพิ่มเป็นห้าหกเท่า เหมือนสเปน ฝรั่งเศส อิตาลี ซึ่งมีจำนวนนักท่องเที่ยวเกือบเท่าหรือมากกว่าประชากรของตนเอง ผลที่ตามมาคือ รายได้หลักของประเทศเพิ่มมากขึ้น นักท่องเที่ยวมากมาย จะทำลายสิ่งแวดล้อมประเพณีวัฒนธรรมท้องถิ่นหรือไม่ จำนวนคนคงไม่เกี่ยว ถ้าจัดการเป็น ไม่ต้องสามสิบล้านหรอก แค่สามแสนคน ก็ทำลายได้ ดูพัทยาและอีกหลายๆ เมืองเป็นตัวอย่าง แล้วทำไมเมืองใหญ่ๆ ในโลกที่มีนักท่องเที่ยวเป็นสิบล้าน ล้าน จึงไม่มีปัญหาอะไร

นี่คือชุมชนที่ยิ่งใหญ่ที่สุดและเป็นจริงที่สุดของไทย อย่างอื่นเราหมดโอกาสแข่งขันกับชาติอื่นๆ แล้ว ไม่ว่าจะเป็นอุตสาหกรรมหรือการเกษตร การเป็นอุตสาหกรรมบริการ เรามีศักยภาพสูงสุดและสามารถแข่งขันกับใครก็ได้ในโลก ไม่ว่าจะเป็นรอยยิ้ม อาหารอร่อย ธรรมชาติ ศิลปวัฒนธรรม “สนุกและสบาย”

แต่เราจะทำการท่องเที่ยวแบบนี้ได้และทำแบบยั่งยืนหรือไม่ คงต้องคิดเรื่องแนวทางการพัฒนาการท่องเที่ยวอย่างมีประสิทธิภาพต่อไป

17. ข้อความที่ยกมามีจุดประสงค์เพื่ออะไร

- | | |
|------------|----------------|
| ก. บรรยาย | ข. เปรียบเทียบ |
| ค. วิจารณ์ | ง. แสดงทัศนนะ |

18. ข้อใดเป็นความคิดเห็นของผู้เขียน

- ก. คนทั่วโลกให้ความสนใจในเรื่องเกี่ยวกับสุขภาพ
- ข. ไทยสามารถแข่งขันกับต่างชาติได้เป็นอย่างดีในด้านการบริการ
- ค. สิ่งแวดล้อมเมืองพัทยาลูกทำลายเพราะการท่องเที่ยว
- ง. เมืองที่สำคัญๆ ในฝรั่งเศสและอิตาลีมีรายได้หลักจากการท่องเที่ยว

19. ถ้าปฏิบัติตามที่ผู้เขียนเสนอแนะ ผลที่ตามมาจะเป็นเช่นไร

- ก. จำนวนนักท่องเที่ยวจากทั่วโลกเพิ่มขึ้น
- ข. การพัฒนาด้านการท่องเที่ยวเติบโตสอดคล้องกับความเป็นอยู่ของคนท้องถิ่น
- ค. การลงทุนด้านการท่องเที่ยวจากต่างชาติเพิ่มขึ้น
- ง. ทรัพยากรธรรมชาติอาจต้องสูญหายตามจำนวนนักท่องเที่ยว

20. ข้อเสนอแนะของผู้เขียนมีประโยชน์ต่อการพัฒนาประเทศหรือไม่ เพราะอะไร

- ก. มีประโยชน์ เพราะจะทำให้ประเทศไทยสามารถแข่งขันกับชาติอื่นได้
- ข. มีประโยชน์ เพราะจะสร้างรายได้เพิ่มมากขึ้นถ้ามีการจัดการดี
- ค. ไม่มีประโยชน์ เพราะจะทำลายวัฒนธรรมอันดีงาม
- ง. ไม่มีประโยชน์ เพราะยังขาดความพร้อมในหลายเรื่อง

บทอ่านที่ 6

นายแพทย์ หม่อมหลวงสมชาย จักรพันธุ์ รองอธิบดีกรมสุขภาพจิต กระทรวงสาธารณสุข เปิดเผย หลังจากที่เกิดคดีฆาตกรรมหมู่และฆ่าตัวตายรวม 8 ศพ ซึ่งเป็นเรื่องสะเทือนขวัญแก่คนทั่วไป จากการประเมินของจิตแพทย์พบว่า สาเหตุการฆาตกรรมหมู่ครั้งนี้เกิดจากโรคซึมเศร้า ซึ่งเกิดจากสารเคมีบางตัวในสมองผิดปกติ ทำให้ผู้ป่วยหดหู่ เบื่อโลก และมีอาการอื่นๆทางร่างกาย เช่น นอนไม่หลับ อ่อนเพลีย นอนทั้งวัน สมองคิดช้า เบื่ออาหาร น้ำหนักและความต้องการทางเพศลดลง รวมทั้งร้องไห้ง่าย โดยผู้ป่วยจะไม่ทราบว่าตนเองเป็นโรคดังกล่าว เพราะว่ายังสามารถดำเนินชีวิตได้ตามปกติ จึงเป็นเรื่องของญาติๆจะต้องให้ความสนใจ หากสังเกตพบว่าผิดปกติดังกล่าวติดต่อกันนาน 2 สัปดาห์ จะต้องนำผู้ป่วยไปพบแพทย์เพื่อตรวจวินิจฉัยและรักษาทันที มิฉะนั้นผู้ป่วยอาจหลงผิดและคิดในทางร้ายมากขึ้น

สำหรับแนวทางป้องกันนั้น คือ การขยายการให้บริการทางโทรศัพท์ รวมทั้งการดำเนินการเชิงรุก เช่น โครงการให้คำปรึกษาสำหรับคนที่คิดฆ่าตัวตาย และโครงการป้องกันโรคซึมเศร้า ที่ทำมากกว่า 3 ปีแล้ว สำหรับมาตรการระยะยาวคือ ทางกรมฯมีแนวคิดที่จะผลักดัน พ.ร.บ. สุขภาพจิต และการวินิจฉัยว่าผู้ใดมีอาการป่วยทางจิต เพื่อจะได้รับการรักษาให้ทัน่วงที และช่วยปัญหาสังคมอีกทางหนึ่งด้วย

21. สารสำคัญของข่าวนี้ คือข้อใด

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| ก. สาเหตุของโรคซึมเศร้า | ข. ผลกระทบจากปัญหาสุขภาพจิต |
| ค. ปัญหาสุขภาพจิตและแนวทางป้องกัน | ง. สาเหตุและการป้องกันการฆ่าตัวตาย |

22. ข่าวข้างต้นนี้ นำเสนอประเด็นสำคัญเกี่ยวกับเรื่องใด

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|------------------------|--------------------------|
| ก. การพัฒนาคุณภาพชีวิต | ข. การลดปัญหาสังคม |
| ค. การดูแลรักษาสุขภาพ | ง. การพัฒนาทรัพยากรบุคคล |

บทอ่านที่ 7

บะหมี่สำเร็จรูป อาหารแห่งศตวรรษที่ 21

เมื่อวันที่ 16 มีนาคม 2550 สมาคมผู้ผลิตบะหมี่นานาชาติได้จัดประชุมบะหมี่กึ่งสำเร็จรูประดับโลกครั้งที่ 3 ที่โรงแรมเซ็นทรัล พลาซ่า กทม นายพิพัฒ พะเนียงเวทย์ ประธานคณะกรรมการจัดงาน เปิดเผยว่าบะหมี่กึ่งสำเร็จรูปกำลังจะเป็นอาหารจำเป็นสำหรับศตวรรษที่ 21 สำหรับทุกครัวเรือน เนื่องจากภาวะที่ประชากรล้นโลก และพื้นที่เพาะปลูกน้อยลง อาหารขาดแคลนอย่างมาก ทำให้ตลาดบะหมี่เติบโตมาก คาดว่าภายในศตวรรษที่ 21 ยอดขายบะหมี่กึ่งสำเร็จรูปจะสูงถึง 1 แสนล้านซองต่อปี ส่วนที่มีการวิจารณ์กันว่ามีการใส่ผงชูรสในบะหมี่มากนักนั้น ไม่จริง เพราะใส่ต่ำกว่าที่สำนักงานคณะกรรมการอาหารและยา (อย.) กำหนด แต่ยอมรับว่ามีเกลือมากจริง อาจทำให้ผู้ป่วยโรคไตเกิดปัญหา ผู้ประกอบการกำลังแก้ไขอยู่

23. เรื่องนี้จัดเป็นข่าวประเภทใด

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|-----------------|-----------------|
| ก. ข่าวเศรษฐกิจ | ข. ข่าวการเกษตร |
| ค. ข่าวธุรกิจ | ง. ข่าวสังคม |

24. ข้อใดเป็นข้อเท็จจริง

- ก. สมาคมผู้ผลิตบะหมี่นานาชาติจัดประชุมระดับโลกครั้งที่ 3
- ข. บะหมี่สำเร็จรูปรสชาติเหมาะกับคนไทย
- ค. บะหมี่กึ่งสำเร็จรูปกำลังเป็นอาหารจำเป็นในศตวรรษที่ 21
- ง. คาดว่าในศตวรรษที่ 21 ยอดขายบะหมี่จะสูงถึง 1 แสนล้านซองต่อปี

25. ข้อใดกล่าวถูกต้องเกี่ยวกับการเสนอข่าวนี้

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| ก. เป็นข่าวที่ให้ประโยชน์กับผู้บริโภค | ข. ข่าวนี้ไม่สามารถตรวจสอบได้ |
| ค. การเสนอข่าวถึงเฉพาะประโยชน์ของคนกลุ่มเดียว | ง. ผู้เขียนข่าวมีอคติส่วนตัว |

บทอ่านที่ 8

บ่อยๆที่พ่อมักจะลืมของกินของใช้ที่แม่ฝากซื้อ เวลาที่พ่อออกจากบ้านไปไหนมาไหน แต่สิ่งที่พ่อคิดมีมาทุกครั้งราวกับสิ่งนั้นทาด้วยกาว กลับเป็นของที่พ่ออ้างหนักหนาว่า “อาหารสมองนะนี่” ที่สำคัญไม่ยิ่งหย่อนไปกว่า เราจะเห็นพ่อหนีบสิ่งพิมพ์ทุกอย่างบนแผงที่ขวางหน้าพ่อ ไม่ว่าจะเป็นรายวัน รายสัปดาห์ รายเดือน หรืออะไรก็ตามที่พ่ออยากอ่าน แม่ได้แต่ส่ายหน้า ทั้งจิวทั้งจัน

“เออ ดินะ วันหลังจะได้เอาไอ้ตัว ก ไก่ ข ไข่ นี่ชาวข้าวแทนข้าวสารหุงให้กินชะที ดูซิว่าจะอิมใหม่ ของคนอื่นเขามีเมียน้อยเป็นผู้หญิง ไอ้ของเรากลับมีเมียน้อยเป็นหนังสือ แถมยังหลงกันซะไม่ลืมหลืมดา”

แต่แม่ก็เป็นคนเดียวในบ้านที่คอยใส่ใจ ปัด เช็ด ดูแลบรรดา “เมียน้อย” ของพ่อให้เนื้อตัวขาวสะอาด ชำตาและนำจับต้อง ความรุ่มเย็นเป็นสุขในครัวเรือนของเราจึงมีอยู่แน่นอน เพราะความรู้จักปรองดอง สัมพันธภาพในระหว่างพ่อ แม่ และหนังสือของพ่อ

ฉันโตขึ้นมาในยุคที่เครื่องรับโทรทัศน์ยังเป็นของดินแดนแห่งใหม่ของยุค ตอนแรกพ่อยื่นกรานไม่ยอมซื้อเข้าบ้านเป็นท่าเดียว พวกเราจึงหนีไปดูทีวีบ้านย่า แต่ไม่ช้า พ่อไม่อาจแข็งขันค่านิยมทางวัฒนธรรมที่ทะลักเข้ามากับยุคสมัยได้ พ่อจับเราให้มานั่งดูรายการข่าวกันสลอนทุกคืน รู้เรื่องบ้าง ไม่รู้เรื่องบ้าง นอกนั้นพ่อจะอนุญาตให้เปิดดูเป็นเวลาและเฉพาะบางรายการเท่านั้นเอง พ่อให้เหตุผลว่า

“ผมไม่ยอมให้ลูกผมเอาทีวีมาเป็นลูกกะตาทั้งชีวิตหรอก เดี่ยวโตขึ้นก็จะกลายเป็นคนมองอะไรแบบใส่ซองสำเร็จรูปอยู่แค่ว่าเขาจับให้มองเท่านั้นเอง” แล้วพ่อก็ขยายให้หน้าเชื่อถือต่อไปว่า

“ลองเอาทีวีสักหมื่นเครื่องมาให้คนเป็นหมื่นดูปะไร ก็คนๆก็มองเห็นได้แค่ว่าเขาทำให้เห็นอยู่ในจอเท่ากันหมด” แล้วพ่อก็ชูสิ่งหนึ่งขึ้นมาเหมือนชูชัยชนะ “สู้นั่งสือเล่มเดียวก็ไม่ได้ ต่อให้อ่านกันเป็นแสนคนจ้างก็เห็นออกมาเป็นคนละเรื่อง คนละมโนภาพ ไม่มีซ้ำกันซักคน แล้วจะมาคุยว่าไอ้ทีวีมันนำมหัสจรรย์ไปได้ยังไง”

26. ผู้เขียนต้องการนำเสนอเกี่ยวกับเรื่องใด

ก. ความห่วงใยในครอบครัว

ข. ประโยชน์และโทษของโทรทัศน์

ค. งานอดิเรกที่พ่อรักเป็นชีวิตจิตใจ

ง. ความรักและเห็นคุณค่าของการอ่าน

27. “ฉัน” เล่าถึงพ่อด้วยความรู้สึกเช่นใด

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| ก. ไม่พอใจ | ข. น้อยใจ |
| ค. เห็นใจ | ง. ภูมิใจ |

28. พฤติกรรมของ “พ่อ” ที่ปฏิบัติต่อลูก ตรงกับสำนวนในข้อใด

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| ก. น้ำร้อนปลาเป็น น้ำเย็นปลาตาย | ข. รักยาวให้สั้น รักสั้นให้ต่อ |
| ค. หวานเป็นลม ขมเป็นยา | ง. กันไว้ดีกว่าแก้ |

29. การอบรมเลี้ยงดูลูกของ “พ่อ” ถูกต้องเหมาะสม เพราะเหตุใด

- ก. เหมาะสม เพราะพ่อเห็นว่าโทรทัศน์มีโทษต่อเด็ก
- ข. เหมาะสม เพราะพ่อหวังดีและเลือกสิ่งที่ดีให้ลูก
- ค. เหมาะสม เพราะเป็นการประหยัดค่าใช้จ่าย
- ง. เหมาะสม เพราะลูกจะได้มุ่งมั่นกับการเรียน

บทอ่านที่ 9

ทิดดี ทิดร้าย

ทิดดีทิดร้ายบวชอยู่วัดเดียวกัน เมื่อครบพรรษารับกฐินแล้ว ทั้งสองต้องการสึกเพื่อไปประกอบอาชีพของตน จึงไปหาสมภารให้ดูฤกษ์ยามเวลาสึกไปจะดีร้ายประการใด หลวงพ่อก็ตรวจดวงทิดดี เมื่อตรวจแล้วก็ว่า “เอ็งสึกได้ สึกไปแล้วดวงดีจริงๆ จะได้ภรรยา ร่ำรวย” ส่วนทิดร้ายก็ว่า “ปีนี้สึกไม่ได้ สึกไปแล้วไม่ดีลำบากลำบาก” แต่ทิดร้ายก็ตัดสินใจสึกตามทิดดีผู้เป็นเพื่อน พอสึกแล้วทิดดีก็ได้ภรรยา ร่ำรวย มีทรัพย์สินมาก ส่วนทิดร้ายไปรับจ้างเขา ขยันหมั่นเพียรเพราะรู้ว่าดวงไม่ดี จะขึ้นก็ขึ้นไม่ได้ อาจเป็นถึงขอทานได้ ตามที่อาจารย์ทนาย เจ้าของสวนที่มีลูกสาวเกิดความพอใจรักใคร่ก็ให้แต่งงานกับลูกสาวของตน

ทิดดี เมื่อได้ภรรยา ร่ำรวย มีทรัพย์สมบัติมากมาย และคิดว่าดวงชะตาตนเองไม่จน ก็ไม่ทำอะไร ใช้แต่ของเก่า เล่นการพนัน ในที่สุดของเก่าที่มีอยู่ก็ต้องถูกเจ้าหนี้มายึดเอาไป ส่วนทิดร้ายขยันทำมาหากิน เพราะรู้ว่าดวงตนไม่ดี ก็มีฐานะดีขึ้นเป็นลำดับ

30. ข้อใดคือแนวคิดที่ได้จากนิทานเรื่องนี้

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| ก. อย่าหมยน้ำบ่อหน้า | ข. โชคชะตาเป็นเรื่องที่ไม่น่าเชื่อถือ |
| ค. กระทำดียอมไม่ได้ กระทำชั่วยอมได้ชั่ว | ง. ความขยันหมั่นเพียรนำมาซึ่งความเจริญก้าวหน้า |

31. ข้อคิดจากเรื่องนี้น่าจะเป็นประโยชน์กับบุคคลใดมากที่สุด

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|---------------|--------------------|
| ก. นักศึกษา | ข. ผู้ใหญ่วัยทำงาน |
| ค. ผู้สูงอายุ | ง. ผู้คนทุกวัย |

บทอ่านที่ 10

คนเลี้ยงลิง

ในรัฐซ้อง มีคนเลี้ยงลิงคนหนึ่ง แกเป็นคนรักลิงมาก ไปไหนมาไหน จะมีลิงวิ่งตามเป็นพรวน ว่ากันว่าสามารถรู้ใจลิง และสื่อสารกันรู้เรื่องเป็นอย่างดี

ครอบครัวแยกากจนลง เนื่องจากมีเงินทองเท่าไร้ ก็นำไปซื้ออาหารมาเลี้ยงลิงจนหมดต่อมาไม่นาน แกจึงตัดสินใจเรียกยกประชุมลิง เพื่อปรึกษาหารือ ขอลดค่าเลี้ยงดู เมื่อวานรมาพร้อมหน้ากัน แกจึงเอ่ยขึ้น ขริมๆ ว่า “สหายทั้งหลาย พวกท่านคงเห็นแล้วว่า ขณะนี้ข้ายากจนลง อยากขอลดจำนวนอาหารเช้า เย็นของพวกท่าน สักเล็กน้อย มือเช้าให้ลูกเกาลัดสามผล มือเย็นให้ลูกเกาลัดตัวละสี่ผล ตกกลงหรือไม่?

ได้ยินดังนั้น บรรดาวานรส่งเสียงเจี๊ยกจ๊ากๆ แสดงอาการไม่พอใจ

“เอาล่ะ” เขาโบกมือห้าม

“ถ้าไม่ตกลง ข้าขอเปลี่ยนใหม่ เป็นมือเช้าสี่ มือเย็นสาม ตกกลงไหม?”

พวกมันเต้นหยองๆ ดีใจได้อาหารเพิ่ม

32. นิทานข้างต้น ชี้ให้เห็นความสำคัญของสิ่งใด

ก. การใช้เล่ห์เหลี่ยม

ข. ความรักเมตตาสัตว์

ค. การแก้ปัญหาอย่างสันติ

ง. การรู้จักใช้คำพูด

33. การกระทำของคนเลี้ยงลิงตรงกับคำกล่าวใด

ก. พลิกผัน

ข. พลิกเพลง

ค. พลิกฝ่ามือ

ง. พลิกหน้ามือเป็นหลังมือ

34. สาระที่ได้จากนิทานเรื่องนี้มีประโยชน์หรือไม่ อย่างไร

ก. สอนให้รู้จักใช้คำพูด

ข. สอนให้รู้จักรักษาผลประโยชน์ของตน

ค. ชี้แนะให้ใช้เล่ห์เหลี่ยม

ง. สอนให้เอาเปรียบผู้อื่น

35. ข้อใดกล่าวถึงการฟังของวานรได้ถูกต้องที่สุด

ก. ขาดการวิเคราะห์สิ่งที่ได้ฟัง

ข. ฟังโดยคำนึงถึงแต่ประโยชน์ของฝ่ายตน

ค. ขาดความรู้ในสิ่งที่ฟัง

ง. มีอคติในสิ่งที่ได้รับฟัง

APPENDIX C

English inferential skills test

Test Instruction

1. The test administration will be 28 minutes.
2. The test consists of 35 multiple choice questions.
3. Mark the best choice for every question.

Example

Tim was desperate to leave the classroom. He watched the clock wisely. It was only 12:30pm. He had to wait for an hour until the lesson was finished.

1. When can Tim leave the classroom?

- | | |
|-------------|------------|
| a. 12:30 pm | b. 1:00 pm |
| c. 1:30 pm | d. 2:00 pm |

English inferential skills test

Passage 1

Paul usually has a very long day because he spends forty minutes driving to work every day. He usually works eight hours a day. Today he wanted to buy something nice for Alice. When he got home in the late evening, with a bunch of lovely flowers, he took his muddy boots off on the steps of the front porch. Alice would get angry if his dirty items made it as far as the welcome mat. He also took off his dusty overalls and threw them into a plastic garbage bag. Alice leaves a new bag tied to the porch railing for him every morning. He went straight to take a shower as he had been instructed by Alice. Then, he joined her to eat dinner after he had made himself “presentable,” as Alice often said. Alice prepared Paul’s favorite drink. He sat comfortably and grabbed a can of beer.

1. How long does Paul take to travel to work?

- a. every day
- b. every evening
- c. forty minutes
- d. eight hours

2. Where does Paul put his overalls?

- a. on the front porch
- b. on the welcome mat
- c. in a garbage bag
- d. in the washing machine

3. How often does Alice change the plastic garbage bag?

- a. daily
- b. every two days
- c. every week
- d. when the bag is full

4. What did Paul like?

- a. flowers
- b. beer
- c. driving
- d. having dinner

5. What type of job does Paul have?

- a. a librarian
- b. a manager
- c. a doctor
- d. a labourer

Passage 2

This morning Amber woke up with a strange feeling while her husband was still in bed. She looked out of the window. The road was empty. There weren't any buses or vans. Then, a car came to the front of Amber's house. She was wondering because it seemed to be too early for any visitors. It might be a surprise visit by her sister's family. Three soldiers stepped out of the car. She went to see them and one of them handed her a letter.

Amber opened up the letter. It was from the Defence Department. She felt the pit of her stomach drop to the bottom of the earth before she even opened it. She knew it was news about Sam. As she read the first line, she thought of all the lunches she had packed him and all the nights she tucked him in his bed and warded off the night time monsters. The man carrying the flag put his hand on her shoulder. She thought of the day that Sam signed up for the military. She stopped reading after the first line. Her tears wet the letter.

6. How did the soldiers travel to Amber's house?

- a. on foot
- b. by car
- c. by bus
- d. by van

7. Where was the letter sent from?

- a. the Defense Department
- b. her sister's family
- c. her son
- d. three soldiers

8. How did Amber feel when she woke up?

- a. surprised
- b. bored
- c. disappointed
- d. unusual

9. Who comforted Amber while she was reading the letter?

- a. a soldier
- b. her son
- c. her husband
- d. Sam

10. What is Amber's relationship to Sam?

- a. mother
- b. daughter
- c. girlfriend
- d. friend

Passage 3

Alan was annoyed that the teacher made the new kid sit with him. He liked to sit by himself, and he didn't want to make any friends, neither boys nor girls. While the teacher was passing out papers, the new kid made the first move, "Hi, my name's Charles." Alan replied brusquely, "That's nice." without looking up from the notebook in which he was doodling. Charles ignored Alan's lack of manners. Instead, he stole a glance at the notebook in which Alan was doodling. Charles noticed that Alan was drawing a guitar with skulls on it. Charles asked politely, "What's your favorite band?" Alan ignored him. Charles continued, "The Lords of the Desert is awesome." Alan looked up at him for the first time. "Hello, Charles, my name is Alan. I believe that we are going to be great friends." Charles smiled.

11. Why did Charles sit next to Alan?

- a. The teacher thought Charles looked friendly.
- b. Charles wanted to sit next to Alan.
- c. The teacher told Charles to sit beside Alan.
- d. Alan wanted to have a new friend.

12. Choose the true statement.

- a. Alan didn't want anyone to sit beside him.
- b. Alan wanted a girl to sit beside him.
- c. Alan didn't want any boy sitting next to him.
- d. Alan wanted to his best friend sitting beside him.

13. What was Alan doing when Charles talked to him?

- a. He was drawing.
- b. He was smiling.
- c. He was passing papers.
- d. He was writing.

14. What was "Lords of the Desert"?

- a. It was a musical group.
- b. It was another name for Alan.
- c. It was a drawing.
- d. It was a guitar.

15. Where did Alan and Charles first meet?

- a. in the cafeteria
- b. in the classroom
- c. at the playground
- d. at the gym

Passage 4

Jim is a neighbor of mine. He is 60 years old and lives alone because his wife died a couple of years ago. He loves gardening. His garden is beautiful and everyone in our neighborhood loves his garden. In the evening George and I usually take a walk in the park and we love to drop by his lovely garden. Unfortunately, Jim has a very serious health problem. He suffers from cancer. The doctors say he should have an operation. He will be in hospital for at least two months. The operation will prolong his life for a while. It cannot cure him; it will relieve him from being in pain.

Jim does not want the operation because he worries about his plants. He hates hospitals and says people die in them. His landlord is awkward and will nag at him to give up the house if he is away from it for a long time. He says that houses with gardens are difficult to get and he won't live long anyway so he would rather not bother with the operation.

16. What was Jim's favorite activity?

- a. walking
- b. gardening
- c. socializing with neighbors
- d. taking care of his house

17. What is the writer's favorite place while taking a walk?

- a. Jim's garden
- b. the hospital's garden
- c. Jim's house
- d. the park

18. What would the landlord do if Jim wasn't at home for a long time?

- a. He would be concerned.
- b. He would complain.
- c. He would reduce the rent.
- d. He would get angry at Jim.

19. What will happen to Jim after he has an operation?

- a. His illness will be gone.
- b. His illness will recover gradually.
- c. His pain will disappear.
- d. His suffering will be reduced.

20. What will Jim do about having the operation?

- a. Jim will be thinking about it.
- b. Jim will definitely have it.
- c. He won't have it.
- d. He will talk to the doctor about it.

Passage 5

Instead of being at her office as usual, Helen sat hopelessly by the fountain in the park for several hours. She was crying mournfully and repeating a name, “Oh... Robert...” Her memories that she spent with him at their favorite restaurant and on many trips still were vivid for her. Jane, her best friend, was worried about her. Jane brought Helen some foods-- a sandwich, some salad and cookies. Unfortunately, Helen didn't feel hungry although she hadn't had anything since morning. Jane handed her favorite treat that she usually was unable to resist at all. This time she turned away from that piece of chocolate cake. Suddenly, Helen's cell phone beeped. Her hand ran into her purse and her heart fluttered. The text message was from Robert. She opened up the message and read the few bare words, “I need to get my jacket back from you.” Helen threw her head into her arms and continued sobbing.

21. Where was Helen?

- a. in the park
- b. at John's house
- c. in her office
- d. Jane's house

22. What had Helen eaten before Jane came?

- a. nothing
- b. cookies
- c. some salad
- d. a cake

23. How did Helen feel about the memories she had with Robert?

- a. They were insignificant.
- b. They were crystal clear.
- c. They were wonderful.
- d. They were hazy.

24. What does Helen love to eat?

- a. salad
- b. cookies
- c. cake
- d. sandwich

25. What was Robert's relationship to Helen?

- a. her boyfriend
- b. her cousins
- c. her classmate
- d. her colleague

Passage 6

Rose and Matthew were first year undergraduate students and both were in Mr. Morton's reading class. Mr. Morton wasn't too strict about deadlines. Matthew took advantage of that so he never bothered to complete Mr. Morton's reading assignments, figuring that he could complete them later. Rose, on the other hand, completed each assignment Mr. Morton assigned the night that he assigned it. She had to stay up a little later but she didn't want to get a penalty for turning in her reading work late. Rose knew reading was a core subject and she expected to get an above "C" grade. When the semester almost ended, Rose and Matthew both planned on going to the Disney amusement park but Mr. Morton called Matthew about the assignments that he hadn't submitted.

The two weeks were horrible for Matthew because he had to stay up until 2:00 AM every night. Unfortunately, he couldn't even finish every assignment for the next week. Finally, he finished every assignment in another week. Meanwhile, Rose had a great time at the Disney Amusement Park, watched movies late at night, and enjoyed the whole week free of stress and pressure. At the end of the semester, Matthew was lucky to get a "C" while Rose earned an "A". Unfortunately, Matthew still hasn't learned his lesson from Mr. Morton's class.

26. What did Mr. Morton teaching?

- a. a main subject
- b. reading
- c. a summer course
- d. assignments

27. Who was Mr. Morton's students?

- a. Rose
- b. Matthew
- c. Rose and Matthew
- d. none of them

28. How long did Matthew take to complete all his assignments?

- a. fortnight
- b. until 2 PM
- c. half of a semester
- d. several hours

29. How did Matthew probably feel about his grade?

- a. Matthew seemed to be satisfied with his grade.
- b. Matthew wasn't happy about his grade.
- c. Matthew thought he should have got an "A".
- d. Matthew was surprised with his grade.

30. What was an important lesson that Matthew didn't learn from Mr. Morton's class?

- a. Mr. Morton was a kind teacher.
- b. Matthew could have gotten a better grade if he was more responsible.
- c. Matthew's grade from Mr. Morton's class wasn't bad at all.
- d. Mr. Morton's reading class was easy for him.

Passage 7

Mr. and Mrs. Grey have two children, David and Janet, aged now 17 and 15 years old. David wants to have a motorbike, so he can ride it to school by himself. His parents, Mr. Grey and Mrs. Grey haven't seemed to agree with his idea. Mr. Grey used to ride a motorbike, but after trivial accidents he decided he was lucky to be alive and sold it. Now they worry that there is even more traffic on the road and David may not be safe riding a motorbike.

David has tried hard to convince his parents that he can take care of himself. He completed a motorcycling course at school. However, Mrs. Grey still insists that teenagers are not careful enough when riding motorbikes. They think driving a car may be a better choice. David wonders how old he will have to be before an adult will listen to his opinion. Both David and his parents are having problems understanding each other's points of view. Neither David nor his parents can see the other's point of view.

31. What does David want to have?

- a. a car
- b. a motorbike
- c. a motorbike course
- d. holiday

32. What is "true" statement about Mr. Grey?

- a. He wants to sell his motorbike.
- b. He no longer owns a motorbike.
- c. He still rides a motorbike.
- d. He has a motorbike.

33. Why did Mr. Grey decide to sell his motorbike?

- a. He had some minor accidents.
- b. He had some serious accidents.
- c. He had some fatal accidents.
- d. He had some primary accidents.

34. What is the relationship between James and his parents?

- a. James appreciates his parents' concerns about him.
- b. His parents agree with James' opinion.
- c. They don't seem to understand each other's thought.
- d. They respect each other's ideas.

35. Who would James tend not to talk to when having a problem?

- a. his best friend
- b. his teacher
- c. his parents
- d. his sister

APPENDIX D

Thai inferential skills

แบบทดสอบทักษะการอนุมานภาษาไทย

คำชี้แจงในการทำข้อสอบ

1. เวลาในการแบบทดสอบ 20 นาที
2. แบบทดสอบประกอบด้วยข้อสอบตัวเลือก จำนวน 45 ข้อ
3. เลือกคำตอบที่ถูกต้อง

ตัวอย่าง

เด็กไทยเรียนพิเศษตั้งแต่อายุเจ็ดขวบ จนกระทั่งเข้ามหาวิทยาลัย เพราะเด็กไทยกลัวว่าตัวเองไม่เก่งมากพอ เพื่อเข้ามหาวิทยาลัยให้ได้

1. ข้อความใดสามารถอนุมานได้จากบทอ่านนี้

- | | |
|------------------------------------|---|
| ก. การเรียนทางวิชาการเป็นสิ่งที่ดี | ข. การเข้ามหาวิทยาลัยให้ได้เป็นเรื่องสำคัญมาก |
| ค. เด็กไทยมีความรู้รอบด้าน | ง. ธุรกิจกวตวิชาช่วยส่งเสริมเด็กไทย |

แบบทดสอบทักษะการอนุมานภาษาไทย

บทอ่านที่ 1

บารัก โอบามา เป็นใคร? ใครๆ ก็รู้ว่าเป็นประธานาธิบดีสหรัฐอเมริกา บารัก โอบามา นับถือศาสนาอะไร หลายคนย่อมตอบได้ว่าเขานับถือศาสนาคริสต์ แต่มีคนจำนวนไม่น้อยที่ตอบว่าเขานับถือศาสนาอิสลาม เชื่อหรือไม่ว่าคนกลุ่มหลังนี้ส่วนใหญ่ไม่ได้อยู่ที่ซาอีร์หรือรวันดา ในแอฟริกา หรือที่ห่างไกลจากสหรัฐอเมริกา หากอยู่ในสหรัฐอเมริกานี้เอง คนเหล่านี้ไม่ใช่คนระดับรากหญ้า คนเหล่านี้อ่านหนังสือพิมพ์ ฟังวิทยุ ดูโทรทัศน์ ท่องเน็ต คำถามจึงมีว่าเหตุใดจึงมีคนเชื่อข้อมูลเท็จกันมากมายทั่วประเทศ ทั้งที่ร่ายล้อมด้วยข่าวสารข้อมูลมหาศาล

คำถามดังกล่าวเกิดขึ้นเพราะเรามีสมมุติฐานว่าข่าวลือกับยุคข้อมูลข่าวสาร น่าจะเป็นสิ่งตรงข้ามกัน แต่ความจริงแล้วมันเกี่ยวกันด้วยซ้ำ ทุกวันนี้ข้อมูลมีความหลากหลายมาก แม้เทคโนโลยีจะเอื้อให้เราเข้าถึงข้อมูลได้ง่ายขึ้น แต่คนส่วนใหญ่ใช้เทคโนโลยีเพื่อคัดกรองข่าวสารข้อมูลมากกว่า เมื่อ ๒๐-๓๐ ปีก่อน ริโมคคอนโทรลช่วยให้เราสามารถคัดกรองรายการโทรทัศน์นับร้อยนับพันออกไป ทำให้เราเลือกดูรายการที่สนใจได้สะดวกขึ้น ทุกวันนี้เทคโนโลยีที่พัฒนาขึ้นมาอีกมากมายเพื่อคัดกรองข่าวสาร จนเหลือแต่ข่าวสารที่อยู่ในความสนใจของเราหรือถูกใจเรา ผลก็คือยังมีข่าวสารข้อมูลมากเท่าใดก็ยังมีข่าวสารถูกคัดกรองออกไปมากเท่านั้น

(ดัดแปลงจาก พระไพศาล วิสาโล. (มกราคม 2554). ความสุดโต่งในยุคข่าวสารข้อมูล. นิตยสารสารคดี.)

1. คนจำนวนมากที่เชื่อข่าวลือเกี่ยวกับบารัก โอบามาอาศัยอยู่ที่ไหน

- | | |
|-----------------|------------|
| ก. สหรัฐอเมริกา | ข. รวันดา |
| ค. ซาอีร์ | ง. แอฟริกา |

2. คนที่เชื่อข่าวลือเกี่ยวกับบารัก โอบามา คือคนกลุ่มใด

- | | |
|-----------------------|------------------------------------|
| ก. คนยากจนไร้การศึกษา | ข. คนไม่ค่อยติดตามข่าวสาร |
| ค. คนปฏิเสธเทคโนโลยี | ง. คนที่ติดตามข่าวสารอย่างสม่ำเสมอ |

3. ข่าวลือในยุคข่าวสารข้อมูลเป็นอย่างไร

- | |
|---|
| ก. ผู้คนสามารถตรวจสอบข่าวลือได้ตลอดเวลา |
| ข. ข่าวลือมีน้อยลง เพราะข้อมูลข่าวสารมีมากมายจนคนจำไม่ได้ |
| ค. ข่าวลือเพิ่มมากขึ้น ตามปริมาณข้อมูลข่าวสารที่มีมากมาย |

ง. ปริมาณข่าวลือไม่มีความแตกต่างกับยุคก่อนข่าวสารข้อมูล

4. ลักษณะการรับข้อมูลของคนในปัจจุบันมีลักษณะอย่างไร

ก. รับข้อมูลที่หลากหลายแง่มุม

ข. สนใจข้อมูลแง่มุมใดแง่มุมหนึ่งเท่านั้น

ค. รับข้อมูลที่ทันต่อสถานการณ์

ง. คัดกรองข่าวลือกับข้อเท็จจริงได้อย่างรวดเร็ว

5. ลักษณะผู้คนในยุคข่าวสารข้อมูลน่าจะมีลักษณะเป็นเช่นใด

ก. มีแนวคิดสุดโต่งมากขึ้น

ข. เป็นคนละเอียดรอบคอบ

ค. เป็นคนมีความคิดเห็นรอบด้าน

ง. เป็นคนเก็บตัวไม่คบกับใคร

บทอ่านที่ 2

เมื่อลมหนาวมาเยือน หลายคนบอกว่ารับประทานอาหารอะไรก็ดูอร่อยไปหมด แตกต่างจากหน้าร้อน อากาศอบอุ่น จึงทำให้เราอยากดื่มแต่น้ำเย็นๆ พาลให้นึกเมื่อหน้าอาหารไปด้วย อาหารที่นิยมรับประทานใน หน้าหนาวนี้มีหลายอย่างทั้งของคาวและของหวาน หนึ่งในจำนวนนั้นคือขนมเบื้อง อาหารไทยที่จัดได้ว่าเป็น อาหารที่ต้องใช้ฝีมืออยู่สักหน่อย และในอดีตเป็นที่นิยมทำในการพระราชกุศลด้วย

เหตุที่ขนมเบื้องเป็นอาหารที่ทำได้ยากคงเป็นเพราะการทำขนมเบื้องเป็นศิลปะในการทำอาหารที่คน ไทยสมัยก่อนให้ความสำคัญ ถ้าสตรีใดสามารถละเลงแป้งทำขนมเบื้องได้บางและกรอบ จัดได้ว่าเป็นผู้มี ความสามารถในการเรื่องทำอาหารคนหนึ่ง การทำขนมเบื้องจะนิยมทำในเดือนอ้ายตามปฏิทินไทยเดิม เพราะ ในช่วงนี้ค้นหาได้ง่ายและมีมันมาก ฤดูนี้จึงเหมาะสำหรับรับประทานกุ้งแม่น้ำอย่างยิ่ง

(ที่มา: วราภรณ์ จิวชัยศักดิ์. (12-18 มกราคม 2547). คอลัมน์ “พินิจไทย” เนชั่นสุดสัปดาห์.)

6. ขนมเบื้องนิยมทำกันเมื่อไหร่

- | | |
|--------------------|--------------|
| ก. วันที่อากาศหนาว | ข. ฤดูหนาว |
| ค. เฉพาะในงานพิธี | ง. ทุกฤดูกาล |

7. ข้อใดกล่าวได้ถูกต้องเกี่ยวกับขนมเบื้อง

- | | |
|---------------------------------|---|
| ก. อาหารที่รสชาติถูกปากคนทุกวัย | ข. อาหารโบราณที่กำลังจะหายไป |
| ค. อาหารที่ต้องใช้ฝีมือในการทำ | ง. ดั้งเดิมเป็นอาหารสำหรับราชวงศ์เท่านั้น |

8. ขนมเบื้องนิยมทำกันในเดือนไหน

- | | |
|--------------|---------------|
| ก. พฤศจิกายน | ข. ธันวาคม |
| ค. มกราคม | ง. กุมภาพันธ์ |

9. จากข้อมูลในบทความ ความสามารถในการทำอาหาร สามารถสังเกตได้จากสิ่งใด

- | | |
|------------------------------|----------------------------|
| ก. ขั้นตอนการทำขนมเบื้อง | ข. รสชาติของขนมเบื้อง |
| ค. วัตถุดิบที่ใช้ทำขนมเบื้อง | ง. ศิลปะการตกแต่งขนมเบื้อง |

10. จากบทความนี้สามารถอนุมานได้ว่าอาหารไทยชนิดต่างๆ ในแต่ละฤดูกาลขึ้นอยู่กับสิ่งใด

- | | |
|---------------------------|-----------------------------|
| ก. วัตถุประสงค์ในธรรมชาติ | ข. รสชาติให้เหมาะกับฤดูกาล |
| ค. ความประณีตในการทำ | ง. เวลาในปรุงอาหารชนิดต่างๆ |

บทอ่านที่ 3

คนเราเมื่อมีความรัก สิ่งที่น่าความทุกข์มาให้เราคือ ความปรารถนาของเราให้คนรักจะต้องเป็นไปตามที่ตนต้องการ ดังนั้นการมีความรัก โดยไม่ให้เป็นทุกข์ ก็คือยอมรับสิ่งต่างๆตามความเป็นจริง ในฐานะคนรัก คุณควรยอมรับและเคารพในความเป็นตัวตนของกลุ่มครอง และเห็นคุณค่าในความแตกต่างของเขา เป็นสิ่งสำคัญ

ตามหลักจิตวิทยานี้ คนเราทุกคนล้วนมีลักษณะเฉพาะแตกต่างกันไป ไม่มีใครเหมือนกันเลยในโลกนี้ หากเราเริ่มชีวิตรักของเรา ด้วยการยอมรับความแตกต่างอย่างจริงจัง ดังนั้นทั้งสองฝ่ายก็จะไม่พยายามเปลี่ยนแปลงอีกฝ่ายหนึ่งให้มาเป็นเหมือนตนเอง เปิดโอกาสให้คนรักของตนเป็นอิสระที่จะเป็นของตัวเองอย่างจริงจัง เมื่อทำอย่างนี้แล้ว เราก็ไม่ต้องเสียพลังงานไปในการเปลี่ยนแปลงอีกฝ่าย

การยอมรับความต่างของกันและกัน เราจะได้ประโยชน์จากความแตกต่าง เพราะสามารถดำเนินชีวิตไปด้วยมุมมองที่รอบด้านยิ่งขึ้น และมีพลังใจในการเรียนรู้ นำสิ่งที่ดีงาม หรือจุดแข็งของอีกฝ่ายมาพิจารณา เรียนรู้ให้เกิดประโยชน์ ส่งเสริม และเป็นกำลังใจให้พัฒนาจุดด้อยของกัน ทำให้ทั้งคู่เติบโตงอกงาม เต็มเต็มในชีวิต มีความชื่นชมในความเหมือนและความแตกต่างกัน

(ที่มา: กรรณิการ์ นลราชสุวจน์. (23 กุมภาพันธ์ 2547). ที่ว่ารัก รักนั้นเป็นฉันทะ: ควันหลังจากวันวาเลนไทน์ คอลัมน์พินิจไทย. เนชั่นสุดสัปดาห์.)

11. ข้อแนะนำจากบทความนี้ เราควรปฏิบัติต่อคู่ครองอย่างไร

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|-------------------------------------|--|
| ก. เคารพในตัวตนของกลุ่มครอง | ข. ควรปรับปรุงตัวเองให้ดีเสมอคู่ครอง |
| ค. เอาใจใส่ความเป็นอยู่ของกลุ่มครอง | ง. ให้ความสำคัญกับจิตใจมากกว่าสิ่งภายนอก |

12. ผลที่จะได้รับจากการปฏิบัติตามคำแนะนำของบทความข้างต้น คือข้อใด

- | | |
|-------------------------------------|--------------------------------|
| ก. เป็นคนที่มีมุมมองที่กว้างไกลขึ้น | ข. เป็นคนที่ยอมคนอื่นมากเกินไป |
| ค. แสดงความเป็นตัวเองได้เต็มที่ | ง. เป็นคนที่มีความอดทนมากขึ้น |

16. แม่ให้ลูกชายไปทำอะไร

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|------------------------|-------------------|
| ก. แลกเงิน 10 รูปี | ข. ซืื่อน้ำมันพืช |
| ค. ซื้ขอขวดมาใส่น้ำมัน | ง. วิ่งไปตลาด |

17. ข้อใดกล่าวถูกต้องเกี่ยวกับลูกคนที่สอง

- | | |
|-------------------------|---------------------|
| ก. เป็นคนช่างฝัน | ข. มองโลกในแง่บวก |
| ค. เป็นคนยอมรับความจริง | ง. เป็นคนหลอกตัวเอง |

18. การที่ลูกคนที่สามมีมุมมองแบบนักวิปัสสนา ถือว่ามีมุมมองอย่างไร

- | | |
|---|-------------------------------|
| ก. มองสิ่งต่างๆ ตามธรรมชาติของสิ่งนั้นๆ | ข. มองสิ่งต่างๆ ด้วยความเมตตา |
| ค. มองสิ่งต่างๆ ด้วยใจที่เบิกบาน | ง. มองสิ่งต่างๆ ด้วยมุมมองบวก |

19. ข้อใดสื่อถึงลักษณะนิสัยของลูกคนแรก แตกต่างจากลูกอีกสองคน

- | | |
|-----------------------|--------------------|
| ก. ไม่มีความรับผิดชอบ | ข. มองโลกในแง่ร้าย |
| ค. ซื่อตรงเปิดเผย | ง. ยอมรับความจริง |

20. ข้อคิดสำคัญจากนิทานเรื่องนี้คืออะไร

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|--------------------------------------|-------------------------------|
| ก. มองปัญหาด้วยความคิดแง่บวก | ข. คนแต่ละคนมีนิสัยแตกต่างกัน |
| ค. ควรจะดำเนินชีวิตด้วยความไม่ประมาท | ง. ปัญหาเกิดขึ้นได้กับทุกคน |

บทอ่านที่ 5

ชีวิตคนเรานั้นแสนสั้น วันเวลาผ่านไปอย่างรวดเร็ว ปีหนึ่งๆ ผ่านไปเร็วเหมือนสายฟ้าแลบ ในวันฝนตกฟ้าคะนอง มาแค่ช่วงอึดใจและหายไป เมื่อชีวิตเป็นเช่นนี้ เรายังเอาชีวิตของเราไปทำตามความปรารถนาของคนอื่น โดยละเลยความฝันของตนเอง คนส่วนใหญ่ๆ ดำเนินชีวิตไปตามค่านิยมของสังคมที่ผูกติดความสุขไว้กับปัจจัยภายนอก เช่น หน้าตาทางสังคม โดยที่ตัวเองหลงลืมว่าสิ่งที่ตัวเองต้องการจริงๆ คืออะไร แค่พริบตาก็มาถึงวัยกลางคน แต่ทำไมหลายคนยังรู้สึกที่ชีวิตยังไม่มีความสุข เพราะพวกเขาไม่เคยฟังเสียงจากหัวใจตนเอง ชีวิตจึงรู้สึกโหยหาตลอดเวลา หรือบางคนก็รับรู้ว่าสิ่งที่ตนเองต้องการคืออะไร แต่ไม่กล้าพอที่ออกมาทำตามสิ่งที่ต้องการ เพราะกลัวจะแปลกแยกจากคนส่วนมาก แล้วชีวิตที่แสนสั้นกำลังจะผ่านไป พร้อมกับหัวใจที่อ่อนล้ามาตลอดชีวิต กับคำถามที่ค้างคาใจว่า เราใช้ชีวิตของเราคุ้มค่ากับการเกิดมาแล้วหรือไม่

21. ชีวิตคนเราเปรียบเหมือนอะไร

- | | |
|------------------------|-------------------|
| ก. สายฟ้าแลบ | ข. หน้าตาทางสังคม |
| ค. เสียงของหัวใจตัวเอง | ง. ฝนตกฟ้าคะนอง |

22. เหตุใดบางคนไม่กล้าทำตามความต้องการของตนเอง

- | | |
|-------------------------|-----------------------------|
| ก. สถานะทางการเงินไม่ดี | ข. กลัวแตกต่างจากคนส่วนใหญ่ |
| ค. กังวลกับความมั่นคง | ง. มองไม่เห็นความก้าวหน้า |

23. ความสุขของคนส่วนใหญ่ขึ้นอยู่กับสิ่งไหน

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|----------------------|-------------------|
| ก. ความดี | ข. ตำแหน่งหน้าที่ |
| ค. ทำสิ่งที่ตนเองรัก | ง. ครอบครัว |

24. คนวัยกลางคนหลายคนยังรู้สึกไม่มีความสุขเพราะสาเหตุใด

- | | |
|---|-------------------------------------|
| ก. ขาดปัจจัยพื้นฐานในการดำเนินชีวิต | ข. ไม่ได้ทำสิ่งที่ตนเองต้องการจริงๆ |
| ค. ไม่ประสบความสำเร็จกับสิ่งที่ตนเองต้องการ | ง. กังวลกับวัยที่ล่วงเลย |

25. เราควรดำเนินชีวิตอย่างไร ถึงจะได้ประโยชน์สูงสุดจากบทความนี้

- | | |
|------------------------------------|--|
| ก. เราใช้ชีวิตตามความปรารถนาของเรา | ข. เราควรพัฒนาตนเองอยู่ตลอดเวลา |
| ค. เราควรวางแผนชีวิตอย่างรอบคอบ | ง. เราควรสร้างความมั่นคงในชีวิตให้เร็วที่สุด |

บทอ่านที่ 6

คุณตื่นมาแล้วรู้สึกว่าจะไรมันขวางหูขวางตาไปเสียทุกอย่างใหม่ ฉันรู้สึกแบบนั้นสำหรับวันนี้ เสียงฝนตกอย่างฝนไล่ช้างพังกหายไป ฉันงัวเงียลุกขึ้นนั่งบนเตียง มองไปทางไหนรู้สึกหงุดหงิด เสียงโทรศัพท์มือถือดังขึ้น แต่ฉันยังเหม่อมองไปนอกหน้าต่าง ปล่อยให้เสียงนั้นเงียบหายไป น้องสาวมาเกาะประคองพร้อมพูดว่า “นนท์โทรมา” ให้ฉันไปรับโทรศัพท์ที่ชั้นล่างด้วย ฉันตอบกลับไปทันที “อย่ามายุ่ง ไปให้พ้น ไม่รับโทรศัพท์ใครทั้งนั้น” พอพูดไปแล้ว หลายครั้งที่ฉันอยากย้อนกลับไปแก้ไขที่สิ่งที่ฉันพูดกับพ่อ แม่ และคนอื่นๆ ในบ้านด้วย ฉันรู้สึกว่ามันไม่น่าพูดอย่างนั้นเลย ภาพของนนท์กับแฟนเก่าในงานสังสรรค์ ยังวนเวียนอยู่ในหัวของฉัน มันคงยังรู้สึกแสบเหมือนเมื่อคืนก่อน

26. ใครมาเรียกผู้เขียน

- | | |
|------------|-------------|
| ก. น้องสาว | ข. พ่อ |
| ค. แม่ | ง. คนในบ้าน |

27. ผู้เขียนรู้สึกอย่างไรกับวันนี้

- | | |
|----------------------|-------------------|
| ก. วันที่ดี | ข. วันที่ไม่ดี |
| ค. วันที่น่าตื่นเต้น | ง. วันที่น่าเบื่อ |

28. ฝนไล่ช้างมีลักษณะอย่างไร

- | | |
|---------------------------|-----------------------------|
| ก. ฝนตกหนักมากเป็นเวลานาน | ข. ฝนตกหนักมาเพียงครู่เดียว |
| ค. ฝนตกพริ้วๆ เป็นเวลานาน | ง. ฝนตกๆ หยุดๆ |

29. เหตุการณ์อะไรที่น่าจะเกิดขึ้นเมื่อคืนก่อน

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|-----------------------------|-----------------------------|
| ก. นนที่ไม่ยอมคุยกับแฟนเก่า | ข. นนที่กับแฟนเก่าทะเลาะกัน |
| ค. นนที่สนิทสนมกับแฟนเก่า | ง. แฟนเก่าไม่ทักทายนนท์ |

30. นนที่น่าจะมีความสัมพันธ์อะไรกับผู้เขียน

- | | |
|---------------|------------|
| ก. ญาติสนิท | ข. น้องชาย |
| ค. เพื่อนสนิท | ง. คนรัก |

บทอ่านที่ 7

ปาลิษาและเพื่อนๆ กลุ่มใหญ่ในชุดลำลอง พร้อมสัมภาระ นั่งระเกะระกะอยู่ริมถนนหน้าป้ายคณะ คณะของพวกเขาอยู่ด้านหลัง ห้องสมุดและสนามกีฬา ถนนสายเล็กนี้ หากเป็นถนนสายหลักของสถานที่แห่งนี้ สายตาของพวกเขาจะมีประกายมุ่งมั่น กับกิจกรรมภาคฤดูร้อนที่กำลังจะไปนั้น ปาลิษาเอง รู้สึกตื่นเต้นไม่แพ้เพื่อนๆ กับกิจกรรมแรกๆ ที่ไปต่างจังหวัดด้วยกันกับเพื่อนๆ หลังจากใช้ชีวิตสุขทุกข์ร่วมกันมาหนึ่งปีของการเรียนที่นี่ แคมป์ยังได้เป็นการทำประโยชน์อีกด้วย

31. ปาลิษาและเพื่อนนั่งอยู่ที่ไหน

- | | |
|----------------|--------------|
| ก. มหาวิทยาลัย | ข. ห้องสมุด |
| ค. สนามกีฬา | ง. ร้านอาหาร |

32. คนที่ร่วมเดินทางไปด้วยกันมีจำนวนเท่าไร

- | | |
|-------------|--------------|
| ก. หนึ่งคน | ข. สองสามคน |
| ค. สามสี่คน | ง. สิบกว่าคน |

33. วันนี้ปาลิษาน่าจะแต่งตัวอย่างไร

- | | |
|-------------------|------------------------------|
| ก. ชุดนักศึกษา | ข. ชุดฝึกงาน |
| ค. เสื้อยืดสีสดใส | ง. เสื้อที่เคยใส่ไปงานเลี้ยง |

34. กิจกรรมสำหรับภาคฤดูร้อนของพวกเขาจะเป็นกิจกรรมใด

- | | |
|--------------------------------|------------------------------|
| ก. การเที่ยวต่างจังหวัดด้วยกัน | ข. การไปเยี่ยมบ้านเพื่อน |
| ค. การสร้างห้องสมุดให้กับชุมชน | ง. การไปทัศนศึกษาในวิชาเรียน |

35. คนส่วนใหญ่ในเรื่องนี้อายุประมาณเท่าไร

- | | |
|-------------|-------------|
| ก. 15-16 ปี | ข. 18-19 ปี |
| ค. 21-22 ปี | ง. 23-24 ปี |

บทอ่านที่ 8

เขานี้คนขี้ตื่นตื่นด้วยความรู้สึกกระส่ำระสายที่บอกไม่ถูก ยืนมองตัวเองอยู่หน้ากระจกอยู่พักใหญ่ พร้อมกับนึกในใจว่า วันนี้เป็นวันสุดท้ายของภาระหน้าที่ที่เขาทำมาอย่างคู้้นเคยเป็นเวลาสามสิบปี เวลาเหมือนติดปีกงานของเขาใครๆ ก็บอกว่าเป็นงานที่มีเกียรติ เปรียบเสมือนแสงเทียนส่องทางให้คนได้ดิบได้ดีมาแล้วมากมาย การเปลี่ยนแปลงครั้งยิ่งใหญ่อีกครั้งในชีวิตของเขา กำลังจะเริ่มขึ้น ใครๆ ก็พากันยกยอเหย้าพร้อมทั้งแซวเขาว่า “สบายแล้วล่ะที่คนขี้ เดี่ยวจะได้พักผ่อนแล้ว ได้เที่ยวได้ทำอะไรตามใจชอบแล้วล่ะ” แต่สำหรับคนขี้แล้ว วันพรุ่งนี้ตื่นขึ้นมาจะรู้สึกอย่างไร เขาเองก็ยังตอบตัวเองไม่ได้เหมือนกัน

36. ข้อใดกล่าวได้ถูกต้องกับงานของคนขี้

- | | |
|------------------------|--------------------------------|
| ก. คนขี้อยากเปลี่ยนงาน | ข. คนขี้ไม่ค่อยถนัดกับงานที่ทำ |
| ค. คนขี้ทำงานนี้มานาน | ง. คนขี้ลี้แลกับงานที่ทำอยู่ |

37. คนขี้รู้สึกอย่างไรกับภาระหน้าที่ของเขา

- | | |
|--|--|
| ก. เวลาในการทำงานของเขาผ่านไปอย่างรวดเร็ว | ข. เขาอยากให้แต่วันทำงานของเขาผ่านไปอย่างรวดเร็ว |
| ค. เขายังไม่ค่อยมีความสุขกับการทำงานเท่าไร | ง. ภาระหน้าที่ของเขาเป็นงานหนัก |

38. ดนัยตื่นขึ้นมาด้วยความรู้สึกเช่นไร

- | | |
|----------|-----------|
| ก. กังวล | ข. เศร้า |
| ค. ปลงตก | ง. เก็บกด |

39. อาชีพของดนัยคืออะไร

- | | |
|-----------------------|----------------------|
| ก. อาจารย์ | ข. ข้าราชการ |
| ค. นักวิชาการการศึกษา | ง. นักสังคมสงเคราะห์ |

40. การเปลี่ยนแปลงอะไรที่กำลังจะเกิดขึ้นกับชีวิตของดนัย

- | | |
|------------------------------|------------------------------|
| ก. ดนัยกำลังจะเปลี่ยนงานใหม่ | ข. ดนัยกำลังเข้าสู่วัยเกษียณ |
| ค. ดนัยเลื่อนตำแหน่งงาน | ง. ดนัยลาออกจากงาน |

บทอ่านที่ 9

นุชแวะมาเยี่ยมครอบครัวพี่สาวเช่นเคย แต่กับครอบครัวพี่ชาย น้องสาว น้องชายนั้น นุชรู้สึกไม่ค่อยได้ไปมาหาสู่กันมากนัก คิดถึงขายนิดหลานที่ทิ้งรักและเป็นห่วง กำลังจะมักจะเม่นอ่านหนังสือเตรียมสอบเข้ามหาวิทยาลัยปีหน้า แต่นุชก็อดเป็นห่วงของหลานไม่ได้ เพราะพี่สาวประคบประหงมขายนิดเสียเหลือเกิน อย่างวันนี้ นิดอยากกินข้าวผัดกุ้ง แม่ก็ทำให้และใส่จานมาให้ถึงห้องนอนนิด ซึ่งเหตุการณ์ประมานนี้เกิดขึ้นเป็นประจำอยู่แล้ว บางครั้งก็อดนึกสงสัยไม่ได้ว่าถ้าเกิดวิกฤตการณ์การอะไรกับครอบครัวนี้ แล้วนิดจะสามารถประคองตัวเองได้หรือไม่ นี่เองที่เขาเรียกว่าพ่อแม่รังแกฉัน

41. นุชใกล้ชิดกับครอบครัวใดมากที่สุด

- | | |
|--------------------|----------------------|
| ก. ครอบครัวน้องสาว | ข. ครอบครัวพี่สาว |
| ค. ครอบครัวพี่ชาย | ง. ครอบครัวของเพื่อน |

42. นิดกำลังเรียนอยู่ระดับไหน

ก. นักเรียนชั้นม.3

ข. นักเรียนชั้นม.4

ค. นักเรียนชั้นม.5

ง. นักเรียนชั้นม.6

43. การกระทำใดเปรียบได้กับ “พ่อแม่รังแกฉัน” ในเรื่องดังกล่าว

ก. พ่อแม่ตีลูกเป็นประจำ

ข. พ่อแม่ไม่ฟังความเห็นของลูก

ค. พ่อแม่ปล่อยปะละเลยลูก

ง. พ่อแม่ทำทุกอย่างแทนลูก

44. นุชคิดอย่างไรกับวิธีการเลี้ยงลูกของพี่สาว

ก. เป็นแม่ที่เอาใจใส่ลูกดีมาก

ข. พี่สาวให้ลูกอยู่กรอบมากเกินไป

ค. เป็นแม่ที่เลี้ยงลูกแบบทนุถนอมเกินไป

ง. พี่สาวเป็นแม่ที่หุ้มเทเพื่อลูก

45. จากการเลี้ยงดูของครอบครัว นิดน่าจะมีบุคลิกอย่างไร

ก. เป็นคนไม่ค่อยมีความมั่นใจในตัวเอง

ข. เป็นเด็กที่ใส่ใจในการเรียน

ค. เป็นคนที่เก็บกตความรู้ดี

ง. เป็นคนที่ใกล้ชิดกับครอบครัว

APPENDIX E

English listening comprehension test

Passage 1

Kim is 17 years old. She is going to finish high school next month. She wants to have a party for her graduation. She'd like to enjoy the party with her friends so she doesn't want her parents to be there.

- Question 1.** Is Kim 17 years old?
Question 2. Does Kim want to have a back to school party?
Question 3. Is Kim going to finish school soon?
Question 4. Does Kim want her parents to be at the party?
Question 5. Does Kim probably say to her parents "You'll have a great time at my graduation party."?

Passage 2

Jane and Jessica are twins. They are in the same class. They look identical. People always get them confused. Teachers always get them mixed up at school. Even their father has trouble telling them apart. Their mother doesn't, though.

- Question 1.** Are Jane and Jessie in different classes?
Question 2. Can their mother identify each of her children?
Question 3. Are Jane and Jessie at the same age?
Question 4. Are there many people who have trouble telling Jane and Jessica apart?
Question 5. Is it likely that Jane and Jessica have different hair styles?

Passage 3

It was a Tuesday morning in April. Ana got up early. She was so anxious because she was going to have a Math test today.It took over two hours. After the test was over, she was so confident about the test. She thought to herself, "Today was a great day!"

Question 1. Was it Thursday?

Question 2. Was the test more than an hour?

Question 3. Did Ana feel nervous before doing the test?

Question 4. Was she uncertain about the result after the test?

Question 5. Was Ana happy on that day?

Passage 4

Peter wanted to have a pet. He wanted any one, big or small. But Mrs. Brown, the landlady, didn't allow pets in the apartment building. Mrs. Mckay, Peter's mom, bought him some fuzzy stuffed bears and a plastic cat. However, he wanted a live pet.

Question 1. Is Mrs. Brown the landlady?

Question 2. Did Peter get some toys from his landlady?

Question 3. Does Peter still want to have a toy animal?

Question 4. Did Peter get what he really wanted?

Question 5. Is Peter happy now?

Passage 5

Hello, this is Tony from Community Charities. We accept donations of clean used clothing; curtains and blinds; and blankets and bedding. We also need small household appliances such as toasters and microwave ovens and cooking utensils. We'd like to let you know we'll have a truck in your area on the 7th May. If you would like to donate, please put your items in front of your house by 10.a.m. Thank you, and have a great day!

- Question 1.** Does Tony work for a company?
- Question 2.** Will the organization provide a truck to bring us to the community's office?
- Question 3.** Does the organization need cooking tools?
- Question 4.** Does the organization require anything for donation?
- Question 5.** Is the event voluntary?

Passage 6

There was so much to do before Pong left for his university in Bangkok. The last-minute packing was done. It was sad visiting friends he had known since he was in high school. He doesn't know when he will see them again. Everyone promised to keep in touch via their email and facebook. He will miss being with his family. He could not cope with all the goodbyes. He was uncertain about his new life.

- Question 1.** Is Pong going to see his family?
- Question 2.** Is Pong likely to see all of his high school friends next year?
- Question 3.** Will Pong and his friends contact each other regularly?
- Question 4.** Was Pong happy to leave home?
- Question 5.** Was Pong going to be a student in Bangkok?

Passage 7

Kate rolled over for ten minutes in her bed as she felt the sunlight warm on her face. She heard her sister, Jane, calling "get up". She struggled to open her eyes and looked up at the clock. "8:00 a.m.," she shouted, "Holy cow!" Kate jumped out of bed quickly and threw on the first outfit that she grabbed. Next, she brushed her teeth in two swipes, threw her Math assignment for her final exam into her backpack, and then ran out the door.

- Question 1.** Did Kate get up at 8:00?
- Question 2.** Was Kate first awake because of the warmth of the sun?
- Question 3.** Did Kate get out her bed as soon as she woke up?
- Question 4.** Did Kate get dressed as quickly as she could?
- Question 5.** Is Kate likely to go to work?

Passage 8

Good morning, I'm Andy Johnson from Radio 100. Welcome to today's scientific tip. We've known for some time that playing a musical instrument is good for us. The scientific findings showed that playing a musical instrument can improve how our brain works. It doesn't matter whether you play a guitar, a piano, a horn, or a drum. And what kind of music you play is not important. Just play it! It'll do good things for your brain.

- Question 1.** Is the show a radio program?
- Question 2.** Does playing music best help scientists?
- Question 3.** Does playing a musical instrument help how a human brain works?
- Question 4.** Is playing a drum better for our brain than playing guitar?
- Question 5.** Does the message from the show is that we should listen more music?

APPENDIX F

Thai listening comprehension

แบบทดสอบทักษะการฟัง

บทฟังที่ 1

วันนี้แม่รู้สึกไม่ค่อยดี ครั้นเนื้อครั้นตัว เจ็บคอ สงสัยจะโดนไข้หวัดเล่นงานซะแล้ว เมื่อเข้าทานยา แต่อาการก็ยังไม่ดีขึ้น เดียวจะโทรไปลางานก่อน และคงต้องไปหาคุณหมอแล้วละ

คำถามที่ 1. ผู้พูดคิดว่าตัวเองอาจเป็นไข้เลือดออกใช่หรือไม่

คำถามที่ 2. ผู้พูดจะไปทำงานก่อนซักครูใช่หรือไม่

คำถามที่ 3. ผู้พูดรู้สึกหนาวๆ ร้อนๆ ใช่หรือไม่

คำถามที่ 4. ผู้พูดรู้สึกดีขึ้นหลังทานยาใช่หรือไม่

คำถามที่ 5. ผู้พูดกำลังจะไปโรงเรียนใช่หรือไม่

บทฟังที่ 2

ตอนนี้เที่ยงคืนแล้ว หนูนึกกำลังข่มตาให้หลับ แต่ยังทำไม่ได้ เฝ้าแต่ครุ่นคิดกลับไปมา ว่าตัวเองจะเลือกสาขา นิเทศศาสตร์ที่ตนเองชอบ หรือจะเรียนบริหารธุรกิจตามที่พ่อแม่ต้องการ ลูกคนอื่นๆ ก็ไม่เคยทำให้พ่อกับแม่ ผิดหวัง เธอไม่อยากทำให้พ่อแม่ผิดหวังเช่นกัน ชีวิตมันช่างยากลำบากจริงๆ เลย

คำถามที่ 1. หนูนึคอยากเรียนนิเทศศาสตร์ใช่หรือไม่

คำถามที่ 2. หนูนึคอยากเรียนทั้งนิเทศศาสตร์และบริหารธุรกิจใช่หรือไม่

คำถามที่ 3. หนูนึครู้สึกสับสนใช่หรือไม่

คำถามที่ 4. หนูนึคอยากให้พ่อแม่สมหวังในตัวเธอเพราะเธอเป็นลูกคนเดียวใช่หรือไม่

คำถามที่ 5. หนูนึคกำลังจะศึกษาต่อระดับปริญญาตรีใช่หรือไม่

บทฟังที่ 3

อรุณสวัสดิ์ค่ะ ดิฉัน กรรติน มาพบท่านผู้ฟังที่น่ารักทุกท่าน กับรายการธรรมะในชีวิตประจำวัน ชีวิตคนเรานั้น เปรียบดั่งน้ำค้างบนหยดหญ้ามาชั่วพริบตาและหายไป การวางแผนชีวิตเป็นเรื่องสำคัญ ดังที่พระพุทธเจ้าได้ อบรมสั่งสอนไว้ว่าทรัพย์สินที่ได้จากการประกอบกิจการต่างๆ ควรแบ่งเป็น 4 กองเท่าๆ กัน กองที่หนึ่ง สะสม ไว้ในยามขัดสน กองที่สอง ทดแทนผู้มีพระคุณ กองที่สาม ใช้เพื่อความสุขส่วนตัว กองที่สี่ ใช้เพื่อสร้างสรรค์ ความดีงาม ผাগเป็นข้อคิดในการดำเนินชีวิตของท่านผู้ฟังทุกท่านด้วยค่ะ พบกันใหม่วันพรุ่งนี้ สวัสดิ์ค่ะ

คำถามที่ 1. ผู้ดำเนินรายการชื่อกรรตินใช่หรือไม่

คำถามที่ 2. คนเราควรจัดสรรทรัพย์สินต่างๆ ตามความต้องการส่วนบุคคลใช่หรือไม่

คำถามที่ 3. ทรัพย์สินกองที่หนึ่งควรเก็บใช้ในยามยากลำบาก

คำถามที่ 4. รายการนี้สามารถรับฟังได้ตลอดทั้งวันใช่หรือไม่

คำถามที่ 5. ข้อคิดสำคัญที่สุดจากรายการนี้คือชีวิตคนเรานั้นแสนสั้นใช่หรือไม่

บทอ่านที่ 4

อันที่จริงหญิงกับชายย่อมหมายรัก

มิใช่จักตัดทางที่สร้างสม

แม้จักรักรักไว้ในอารมณ์

อย่ารักชมนอกหน้าเป็นราศี

ดั่งพุกษาต้องวายุพัดโบก

เขื่อน โยกก็แต่กิ่งไม้ทิ้งที่

จงยับยั้งชั่งใจเสียให้ดี

เหมือนจามรีรู้จักรักษากาย

คำถามที่ 1. ผู้ชายและผู้หญิงยอมมีใจต่อกันเป็นเรื่องปกติ ใช่หรือไม่

คำถามที่ 2. การแสดงออกที่เหมาะสมควรเป็นเหมือนต้นไม้ยามโดนลม ใช่หรือไม่

คำถามที่ 3. ผู้เขียนแนะนำให้ผู้่านรักษาตนเองเหมือนกับจามรีซึ่งเป็นสัตว์ปีกชนิดหนึ่ง ใช่หรือไม่

คำถามที่ 4. เมื่อรักใคร เราไม่ควรแสดงออกให้เขารับรู้ ใช่หรือไม่

คำถามที่ 5. บทกลอนนี้น่าจะเหมาะกับการเตือนใจหญิงสาว ใช่หรือไม่

บทฟังที่ 5

ใครๆ ก็ทราบถึงความร้ายแรงของโรคมะเร็ง ที่คร่าชีวิตคนไทยเป็นจำนวนมากในแต่ละปี และมีแนวโน้มที่เพิ่มขึ้นทุกปี ในปี 2555 คนจำนวน หกแสนกว่าเสียชีวิตด้วยโรคมะเร็ง ส่วนสาเหตุของการเกิดโรคมะเร็งค่อนข้างซับซ้อนและหลากหลาย ยังไม่มีหลักฐานแน่ชัดว่าเกิดจากสาเหตุใดสาเหตุหนึ่งอย่างชัดเจน เท่าที่ทราบ สามารถบอกได้ว่าอะไรบางอย่างที่อาจเป็นปัจจัยเสี่ยงในการก่อให้เกิดโรคมะเร็งได้ เช่น ปัจจัยด้านอาหาร เช่น อาหารที่มีไขมันสูง หรือ เค็มจัด การสูบบุหรี่ การสัมผัสรังสี

คำถามที่ 1. คนเสียชีวิตในปี 2555 มีจำนวนห้าแสนคน ใช่หรือไม่

คำถามที่ 2. จำนวนของคนเสียชีวิตด้วยโรคมะเร็งมีแนวโน้มสูงขึ้น ใช่หรือไม่

คำถามที่ 3. สิ่งเป็นสาเหตุส่งเสริมก่อให้เกิดโรคมะเร็งเสมอ ใช่หรือไม่

คำถามที่ 4. ปัจจุบันสาเหตุของโรคมะเร็งยังไม่สามารถอธิบายได้อย่างชัดเจน ใช่หรือไม่

คำถามที่ 5. เราจะปลอดภัยจากโรคมะเร็งอย่างแน่นอน ถ้าเราดูแลตัวเองอย่างดี ใช่หรือไม่

APPENDIX G

English vocabulary test

Test Instruction

1. The test administration will be 15 minutes.
2. The test consists of 40 multiple choice questions.
3. Mark the best choice for every question.

Example 1. see : They <saw it>.

a. closed it tightly
c. looked at it

b. waited for it
d. started it up

English Vocabulary Test

1. shoe: Where is <your shoe>?

- | | |
|-----------------------------------|-------------------------------------|
| a. the person who looks after you | b. the thing you keep your money in |
| c. the thing you use for writing | d. the thing you wear on your foot |

2. basis: This was used as the <basis>.

- | | |
|--------------|-------------------------|
| a. answer | b. place to take a rest |
| c. next step | d. main part |

3. drawer: The <drawer> was empty.

- | | |
|---------------------------------|------------------------------|
| a. sliding box | b. place where cars are kept |
| c. cupboard to keep things cold | d. animal house |

4. pave: It was <paved>.

- | | |
|---------------------------------|--------------------------------|
| a. prevented from going through | b. divided |
| c. given old edges | d. covered with a hard surface |

5. allege: They <alleged it>.

- | | |
|-------------------------------|---|
| a. claimed it without proof | b. stole the ideas for it from someone else |
| c. provided facts to prove it | d. argued against the facts that supported it |

6. remedy: We found a good <remedy>.

- | | |
|---------------------------|-------------------------|
| a. place to eat in public | b. way to fix a problem |
| c. way to prepare food | d. rule about numbers |

7. dash: They <dashed> over it.

- | | |
|------------------|-------------------|
| a. moved quickly | b. moved slowly |
| c. fought | d. looked quickly |

8. bacterium: They didn't find a single <bacterium>.

- a. small living thing causing disease
- b. plant with red or orange flowers
- c. animal that carries water in lumps on its back
- d. thing that has been stolen and sold to a shop

9. authentic: It is <authentic>.

- | | |
|---------|------------------|
| a. real | b. very noisy |
| c. old | d. like a desert |

10. scrub: He is <scrubbing it>.

- a. cutting shallow lines into it
- b. repairing it
- c. washing it energetically
- d. drawing simple pictures of it

11. accessory: They gave us< some accessories>.

- a. papers giving us the right to enter a country
- b. official orders
- c. ideas to choose between
- d. extra pieces

12. compost: We need some<compost>.

- a. strong support
- b. help to feel better
- c. hard stuff made of stones and sand stuck together
- d. plant material fertilizer

13. fen: The story is set in<the fens>.

- a. a piece of low flat land partly covered by water
- b. a piece of high, hilly land with few trees
- c. a block of poor-quality houses in a city
- d. a time long ago

14. bristle: The<bristles> are too hard.

- a. questions
- b. short stiff hairs
- c. folding beds
- d. bottoms of the shoes

15. perturb: I was<perturbed>.

- a. made to agree
- b. worried and puzzled
- c. corruptly sexual
- d. very wet

16. peasantry: He did a lot for the<peasantry>.

- a. local people
- b. place of worship
- c. businessmen's club

17. hallmark: Does it have a <hallmark>?

- a. stamp to show when it should be used by
- b. stamp to show the quality
- c. mark to show it is approved by the royal family
- d. mark or stain to prevent copying

18. yoga: She has started <yoga>.

- a. handwork done by knotting thread
- b. a form of exercise for the body and mind
- c. a game where a cork stuck with feathers is hit between two players
- d. a type of dance from eastern countries

19. psychotherapy: She wanted <psychotherapy>.

- a. the mutual operation of two things
- b. the ability to govern
- c. an unfriendly reaction
- d. treatment for a mental illness

20. heyday The town was<in its heyday>.

- a. at its peak of success
- b. on top of the hill
- c. very wealthy
- d. admired very much

21. mystique: He has lost <his mystique>.

- a. his healthy body
- b. the secret way he makes other people think he has special skill
- c. the woman he dated while he was married to someone else
- d. the hair on his top lip

22. communique: Have you seen their<communique>?

- a. critical report about an organization
- b. garden owned by many members of a community
- c. printed material used for advertising
- d. official announcement

23. spleen: His <spleen> was damaged.

- a. knee bone
- b. organ found near the stomach
- c. pipe taking waste water from a house
- d. respect for himself

24. caffeine: This contains a lot of <caffeine>.

- a. a substance that makes you sleepy
- b. strings from very tough leaves
- c. ideas that are not correct
- d. a substance that makes you excited

25. jovial: He was very <jovial>.

- a. low on the social scale
- b. likely to criticize others
- c. full of fun
- d. friendly

26. dingy: It was a <dingy> place.

- a. cold, damp
- b. poorly lit
- c. delightful
- d. hot, dry

27. kindergarten: This is a good<kindergarten>.

- a. activity that allows you to forget your worries
- b. place of learning for children too young for school
- c. strong, deep bag carried on the back
- d. place where you may borrow books

28. skylark: We watched a <skylark>.

- a. show with planes flying in patterns
- b. human-made object going round the earth
- c. person who does funny tricks
- d. small bird that flies high as it sings

29. beagle: He owns two <beagles>.

- a. fast cars with roofs that fold down
- b. large guns that can shoot many people quickly
- c. small dogs with long ears
- d. houses built at holiday places

30. gauche: He was <gauche>.

- a. talkative
- b. flexible
- c. awkward
- d. determined

31. cordillera: They were stopped by <cordillera >.

- a. a special law
- b. an armed ship
- c. a line of mountains
- d. the firstborn son of the king

32. instantiate: you need to <instantiate that>.

- a. make that happen quickly
- b. put that into the correct place
- c. give a real example of that
- d. explain that

33. landfall: The days after the <landfall > were busy.

- a. ceremony to bless the land for a church
- b. bike event on a mountain
- c. acceptance of foreign control after a war
- d. the seeing of land after a journey by sea or air

34. headstrong: He was a <headstrong child >.

- a. very clever child
- b. child who has been given too many good things
- c. very fat child
- d. child that is determined to do what it wants

35. torpor: She sank into <a torpor>.

- a. a deep soft chair
- b. an inactive state
- c. a very unhappy state
- d. a bed cover filed with feathers

36. sputnik: He told them about the <sputnik>.

- a. rare animal like a rabbit found in cold countries
- b. trap set by the police
- c. object that travels high in the sky round the earth
- d. secret organization with evil plans

37. vitreous: These rocks are <vitreous>.

- a. very heavy
- b. easy to break
- c. full of small holes
- d. like glass

38. muff: This <muff> belonged to my mother.

- a. tube of animal hair for keeping the hands warm
- b. cover for a teapot
- c. long rope of feathers to wear around the neck
- d. bed cover made from squares of material sewn together

39. ablution: He <performed his ablutions>.

- a. did his exercises to stay healthy
- b. played his very difficult piece of music
- c. did all his duties as a church minister
- d. washed himself to get ready

40. serviette: Where is my <serviette>?

- a. girl who helps in the house
- b. piece of glass which makes things look bigger
- c. large flat plate
- d. piece of cloth or paper for wiping your mouth

APPENDIX H

Thai vocabulary test

แบบทดสอบคำศัพท์ภาษาไทย

คำชี้แจงในการทำข้อสอบ

1. เวลาในการแบบทดสอบ 12 นาที
2. แบบทดสอบประกอบด้วยข้อสอบตัวเลือก จำนวน 50 ข้อ
3. เลือกคำตอบที่ถูกต้อง

ตัวอย่าง 1. สมโภช : พุ่มนี้มีงานสมโภชพระประธาน

ก. อนุรักษ์

ข. ซ่อมแซม

ค. ฉลอง

ง. สร้าง

แบบทดสอบคำศัพท์ภาษาไทย

1. ขมิขมัน แดงช่วยคุณครูยกหนังสืออย่างขมิขมัน

- | | |
|----------------------------------|-------------------------------|
| ก. ยกหนังสืออย่างสนุกสนาน | ข. ยกหนังสืออย่างเหน็ดเหนื่อย |
| ค. ยกหนังสือด้วยความกระตือรือร้น | ง. ยกหนังสืออย่างเสียไม่ได้ |

2. ขุนพล เขาทำตัวราวกับเป็นขุนพล

- | | |
|-----------------------|----------------|
| ก. หัวหน้ากองทัพ | ข. นายทหารเรือ |
| ค. หัวหน้าฝ่ายวิชาการ | ง. นายพลทหาร |

3. ความถนัด ประกาศรับสมัครงานผู้ที่มีความถนัดทางคอมพิวเตอร์

- | | |
|---------------------|------------------------|
| ก. มีความรักในงาน | ข. มีความต้องการทำงาน |
| ค. มีความชำนาญในงาน | ง. ทำการงานได้ทุกอย่าง |

4. คำปฏิญาณ พวกเขาอ้างกล่าวคำปฏิญาณ

- | | |
|----------------------------|-----------------------------------|
| ก. คำกลอนในงานพิธี | ข. คำส่วนมนต์หลังเลิกเรียน |
| ค. คำกล่าวสุภาพในงานชุมนุม | ง. คำรับรองซึ่งให้ไว้กับบุคคลอื่น |

5. แคระแกร็น ต้นพริกแคระแกร็น

- | | |
|-----------------------|---------------------------|
| ก. เตี้ย เล็กกว่าปกติ | ข. พริกมีแต่ใบไม่ออกเมล็ด |
| ค. เจริญเติบโตได้ดี | ง. มีเมล็ดพริกเต็มต้น |

6. กราย เขาเดินกรายเข้าไปในห้องประชุม

- | | |
|---------------------|-----------------|
| ก. เดินอย่างรวดเร็ว | ข. เดินก้มหน้า |
| ค. เดินอย่างมีท่าที | ง. เดินเซิดหน้า |

7. กัลยาณี เธอเป็นกัลยาณี

- | | |
|--------------|---------------------|
| ก. หญิงงาม | ข. หญิงที่เรียบร้อย |
| ค. หญิงสุขุม | ง. หญิงอ่อนช้อย |

8. กุพชกะ ดอกไม้โปรดของฉันคือกุพชกะ

- | | |
|----------------|--------------|
| ก. ดอกมะลิ | ข. ดอกกุหลาบ |
| ค. ดอกกระดังงา | ง. ดอกจำปี |

9. จัตุบาท นวลและเก่งคู่กันเรื่องจัตุบาท

- | | |
|-----------------|--------------|
| ก. ข้อกำหนด | ข. บทบัญญัติ |
| ค. สัตว์สี่เท้า | ง. บทเรียน |

10. ชามเบญจรงค์ นิชาได้รับของขวัญเป็นชามเบญจรงค์

- | | |
|---------------------------|--------------------------------|
| ก. ชามใช้ในพระราชวัง | ข. ชามโบราณใช้สมัยรัชกาลที่ 5 |
| ค. ชามที่ชนชั้นสูงนิยมใช้ | ง. ชามเขียนลายด้วยแม่สีทั้งห้า |

11. ดาวดิ่งสี่ บารมีวาดภาพดาวดิ่งสี่

- | | |
|------------------|---------------------|
| ก. ดาวชนิดหนึ่ง | ข. สวรรค์ชั้นที่สอง |
| ค. ป่าในเทพนิยาย | ง. อุทยานในสวรรค์ |

12. ตราลิน ปายวันนี้ขอออกไปแจ้งตราลินในจังหวัด

- | | |
|-----------------------------|--------------------------------|
| ก. บอกกับ พ่อ-แม่ ให้รับรู้ | ข. บอกกับกำนันหรือผู้ใหญ่บ้าน |
| ค. บอกกับนายกเทศบาล | ง. แจ้งความไว้เพื่อเป็นหลักฐาน |

13. ทรรศนะ กรณีลักษณะทรรศนะ

- | | |
|------------|------------|
| ก. โดดเด่น | ข. เลวร้าย |
| ข. พิเศษ | ง. แปลกแยก |

14. ทาบตาม สุณิมาทาบตามสุพักตร์

- | | |
|-----------------------|-------------------------|
| ก. สอบถามความเป็นอยู่ | ข. ทักทายหลังจากห่างหาย |
| ค. เจรจาเพื่อดูท่าที | ง. ซักชวนไปทำงานด้วย |

15. บรรพชา สมพลจะบรรพชาพຸ່ງนี้

- | | |
|--------------------------|----------------|
| ก. ศึกษาธรรมะและวิปัสสนา | ข. บวชพระ |
| ค. บวชเณร | ง. บวชชีพรหมณ์ |

16. เบิกความ ศาลมีคำสั่งให้สมศักดิ์ไปเบิกความที่ศาลธนบุรี

- | | |
|-----------------------------------|-------------------------------|
| ก. ให้ถ้อยคำต่อศาลในฐานะโจทก์ | ข. ให้ถ้อยคำต่อศาลในฐานะจำเลย |
| ข. ให้ถ้อยคำต่อศาลในการพิจารณาโทษ | ง. ให้ถ้อยคำต่อศาลในฐานะพยาน |

17. ประชวร พระองค์ชายทรงพระประชวร

- | | |
|------------------------|------------------|
| ก. ทรงเสียใจ | ข. เจ็บป่วย |
| ค. ให้โอวาทแก่รัฐมนตรี | ง. แปรพระราชสถาน |

18. ปรีทนต์ คนเราต้องดูแลรักษาปรีทนต์

- | | |
|------------|-----------------|
| ก. หัวเข่า | ข. เหงือกและฟัน |
| ค. สายตา | ง. สุขภาพ |

19. ปักยี พวกเราต้องช่วยกันอนุรักษ์ปักยี

ก. นก

ข. ผีเสื้อ

ค. สัตว์ปีก

ง. แมลง

20. พยัคฆ์ ลุงทิมเป็นคนดูราวกับพยัคฆ์

ก. สิงโต

ข. ช้างป่า

ค. เสือ

ง. หมี

21. พราน นิสาแต่งตัวใส่เครื่องประดับพรานไปทั้งตัว

ก. สดใส

ข. สวยงาม

ค. ราคาแพง

ง. มายมาย

22. กินทนะ กินทนะเป็นอันตรายต่อการอยู่ร่วมกัน

ก. การใส่ร้าย

ข. การเอาเปรียบ

ข. การแตกแยก

ง. การใส่ร้ายป้ายสี

23. มหรสพ คี้นี้มีมหรสพที่วัดภูเขาทอง

ก. การละเล่นเพื่อความรื่นเริง

ข. การออกร้านขายของ

ค. การเทศน์ประจำปี

ง. การสาธิตการแกะหนังตะลุง

24. ลินลาต ชลเดินผ่านออกไปด้วยท่าทางลินลาต

ก. ก้มหน้าก้มตา

ข. ซ้ำๆ

ค. งดงาม

ง. ร้อนรน

25. สกัต์ วิชาจึงรีบเข้าไปสกัต์ชลณีไว้ก่อน

ก. ห้ามปราบ

ข. แยกออกมา

ค. ตรงกลางวงล้อม

ง. นั่งลง

26. สาธุชน ศิริพรถือว่าเป็นสาธุชนคนหนึ่ง

ก. คนที่มีภูมิปัญญาดี

ข. คนที่มีคุณงามความดี

ค. คนฝึกไฟในศาสนา

ง. คนที่สืบสานวัฒนธรรม

27. วัลลภชน เธอมีวัลลภชนที่ดี

ก. คนสนิท

ข. คนคอยเอาใจ

ค. คนรัก

ง. เพื่อน

28. พินาศ เกิดความพินาศหลังพายุผ่านพ้นไป

ก. ความชุ่มชื้น

ข. ความโศกเศร้า

ค. ความเสียหาย

ง. ความวิตกกังวล

29. วิโยค ความวิโยคอาจเกิดขึ้นตลอดเวลา

ก. อุทกภัย

ข. ความเสียหาย

ค. การพลัดพราก

ง. วาทภัย

30. สวมหน้ากาก คนบางคนชอบสวมหน้ากาก

ก. แกล้งจำกันไม่ได้

ข. เก็บความรู้สึก

ค. เกิดความกลัว

ง. เสแสร้งเข้าหากัน

31. องคุลี ตัดเชือกให้ยาวเท่ากับองคุลี

ก. หนึ่งนิ้ว

ข. นิ้วมื่อ

ค. สองนิ้ว

ง. สามนิ้ว

32. อลงกต สนามหลวงเกิดการอลงกตครั้งยิ่งใหญ่

ก. การชุมนุมประท้วง

ข. การจลาจล

ค. การตกแต่งประดับประดา

ง. การแสดง

33. หิตะ วันนี้ครูสอนเรื่องหิตะ

ก. ความสามัคคี

ข. ความดูแลทรัพย์สิน

ค. การใฝ่หาความรู้ให้ตนเอง

ง. ความเกื้อกูล

34. อปราชัย เมื่อทีมฟุตบอลไทยได้รับอปราชัย

ก. การพ่ายแพ้

ข. ชัยชนะ

ค. การต้อนรับ

ง. การลงโทษ

35. กระจะจะ พระจะไปซื้อกระจะจะจันท

ก. ดอกกุหลาบชนิดหนึ่ง

ข. สมุนไพรรักษาโรค

ค. ของขบเคี้ยวสมัยก่อน

ง. ผงเครื่องหอมต่างๆ

36. กระจะบาล เธอมีกระจะบาลเหมือนกับลิง

ก. ศรีษะ

ข. ความฉลาด

ค. นิสัย

ง. ความซุกซน

37. คู่จูน้ำ สร้อยฟ้าบอกว่าพันคูน้ำข้างหน้าโน้นก็ถึงบ้านแล้ว

ก. ส่วนเว้าโค้งของฝั่งน้ำ

ข. คลังริมฝั่งน้ำ

ค. ทำนําริมฝั่งน้ำ

ง. ส่วนที่มีน้ำวนของแม่น้ำ

38. โจทก์ วันนี้ฉันไปในฐานะโจทก์

ก. บุคคลผู้ตั้งคำถาม

ข. บุคคลตั้งคำถามและคำตอบ

ค. บุคคลผู้ฟ้องคดีต่อศาล

ง. บุคคลตัดสินการแพ้หรือชนะ

39. ชนก รจนามองเห็นชนกอยู่ในสวน

ก. นกแก้วสีเขียว

ข. ชะนี

ค. น้อยสาว

ง. บิดา

40. ญาติ พวกเราต้องการญาติเพื่อตัดสินใจ

ก. หัวข้อเรื่องที่ทำ

ข. เนื้อหาที่ถูกต้องที่สุด

ค. ข้อเสนอเพื่อลงมติ

ง. ปัจจัยและสิ่งแวดล้อม

41. ตรีกตรา แม่ศรีกำลังตรีกตราเกี่ยวกับปัญหาของเธอ

ก. แก้วใบ

ข. สับสน

ค. คิดเล่ห์กลอุบาย

ง. คิดทบทวน

42. นฤบาล นฤบาล บพิตรเฝ้า ภูวนายกเส

ก. ภาษาบาลี

ข. ชัยชนะ

ค. พระราชา

ง. บรรยาย

43. อารานา พงษ์อารานาคีลในงานพิธีเมื่อวาน

- | | |
|--------|-------|
| ก. รับ | ข. ขอ |
| ค. สวด | ง. นำ |

44. เวฬุ วัตน์มีต้นเวฬุเป็นจำนวนมาก

- | | |
|-------------|------------|
| ก. ต้นมะขาม | ข. ต้นไผ่ |
| ค. ต้นตาล | ง. ต้นลำพู |

45. ศตวรรษ เหตุการณ์เกิดขึ้นครั้งนี้ในศตวรรษ

- | | |
|-----------|-------------|
| ก. สิบปี | ข. ห้าสิบปี |
| ค. ร้อยปี | ง. พันปี |

46. สังสารวัฏ อาจารย์อธิบายเรื่องสังสารวัฏ

- | | |
|-----------------------------|-------------------------|
| ก. การเวียนว่ายตายเกิด | ข. การมีเมตตาต่อผู้อื่น |
| ค. การปฏิบัติตนให้บริสุทธิ์ | ง. การแผ่แผ่ต่อสัตว์โลก |

47. โสมนัส วันนี้พรูฐิกโสมนัสเป็นอย่างมาก

- | | |
|--------------|-------------|
| ก. เสียใจ | ข. ตกใจ |
| ค. ปลาบปลื้ม | ง. ตื่นเต้น |

48. หิริโอตฺตปะปะ คนสมัยนี้ไม่ค่อยมีหิริโอตฺตปะปะ

- | | |
|-------------------|----------------------|
| ก. การสมาณสามัคคี | ข. การมีน้ำใจต่อกัน |
| ค. ความจริงใจ | ง. การเกรงกลัวต่อบาป |

49. รโหฐาน เขาอยู่ในที่รโหฐาน

ก. ที่สาธารณะ

ข. ที่ส่วนบุคคล

ค. ที่ทำงาน

ง. ที่ชุมนุม

50. พระอันตะ พระองค์เข้ารับการรักษากับพระอันตะ

ก. ตำใ้ใหญ่

ข. ปอด

ค. ท้อง

ง. กระดูก

APPENDIX I

Questionnaire on reading comprehension strategies

Instruction:

The purpose of this questionnaire is to investigate the strategies that you use to lead to successful reading. Please answer the following statements and choose one (from 1 to 5) that best characterizes what you do when reading. Note the code:

1	2	3	4	5
‘I never do this’	‘I seldom do this’	‘I sometimes do this’	‘I regularly do this’	‘I always do this’

I never do this.	I seldom do this.	I sometimes do this.	I regularly do this.	I always do this.
------------------	-------------------	----------------------	----------------------	-------------------

- | | | | | | |
|---|---|---|---|---|---|
| 1. I apply my learned grammatical knowledge while reading. | 1 | 2 | 3 | 4 | 5 |
| 2. I look for grammatical patterns in the reading passage. | 1 | 2 | 3 | 4 | 5 |
| 3. I analyse grammatical cues in the sentences. | 1 | 2 | 3 | 4 | 5 |
| 4. I skip unknown words that I cannot understand even if I know every word in it. | 1 | 2 | 3 | 4 | 5 |
| 5. I choose the meaning of vocabulary that best suits with its context. | 1 | 2 | 3 | 4 | 5 |
| 6. I try to guess the meaning of the word or expression. | 1 | 2 | 3 | 4 | 5 |
| 7. I link the content with what I already know to help me understand the text. | 1 | 2 | 3 | 4 | 5 |
| 8. I use my prior knowledge to help understand the reading text. | 1 | 2 | 3 | 4 | 5 |
| 9. I use the title to help to understand the contents. | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|---|---|---|---|---|---|
| 10. I react emotionally to the text. | 1 | 2 | 3 | 4 | 5 |
| 11. I try to connect or relate information presented in different sentences or parts of the text. | 1 | 2 | 3 | 4 | 5 |
| 12. I go back and forth in the text to find relationship among ideas in it or go over difficult parts several times to double-check and correct my understanding of the text. | 1 | 2 | 3 | 4 | 5 |
| 13. I try to interpret hidden meaning in the text | 1 | 2 | 3 | 4 | 5 |
| 14. I try to make an inference or draw a conclusion based on information not explicitly stated in the text. | 1 | 2 | 3 | 4 | 5 |

Questionnaire on reading comprehension strategies

(Thai Version)

แบบสอบถามการใช้ทักษะการอ่าน

คำชี้แจงในทำแบบสอบถาม :

อ่านข้อความดังต่อไปนี้ และเลือกหนึ่งหมายเลข (หมายเลข 1 ถึง 5) ที่แสดงถึงสิ่งที่คุณทำขณะที่อ่านบทอ่านต่างๆ

1	2	3	4	5
ฉันไม่เคยทำ	ฉันแทบจะไม่ทำ	ฉันทำบางเป็นบางครั้ง	ฉันทำเป็นประจำ	ฉันทำอย่างสม่ำเสมอ
			ฉันไม่เคยทำ	ฉันแทบจะไม่ทำ
			ฉันทำบางเป็นบางครั้ง	ฉันทำเป็นประจำ
			ฉันทำเป็นประจำ	ฉันทำอย่างสม่ำเสมอ

1. ฉันอ่านออกเสียงซ้ำอีกครั้งในส่วนที่ยาก เพื่อช่วยให้ฉันเข้าใจมากขึ้น

1 2 3 4 5

แบบสอบถามการใช้ทักษะการอ่าน

แบบสอบถามนี้เป็นส่วนหนึ่งของงานวิจัยเรื่องผลกระทบของทักษะการอนุมานต่อทักษะการอ่านของภาษาไทย (ภาษาที่หนึ่ง) และภาษาอังกฤษ (ภาษาที่สอง) จุดมุ่งหมายของแบบสอบถามนี้เพื่อศึกษากลิวิธีและทักษะต่างๆ ในการอ่านอย่างประสบความสำเร็จ

คำชี้แจง : กรุณาอ่านคำสั่งอย่างรอบคอบและตอบคำถามแต่ละข้อให้ตรงตามความเป็นจริงที่สุด แบบสอบถามนี้ จะถือเป็นความลับและไม่มีการนำออกไปเผยแพร่โดยเลือกหนึ่งหมายเลข จาก หมายเลขหนึ่งถึงห้า ซึ่งสามารถสื่อได้ดีที่สุดถึงทักษะที่คุณ ใช้ขณะที่อ่านบทอ่านต่างๆ

	1 ฉัน <u>ไม่เคย</u> ทำ	2 ฉัน <u>แทบจะ</u> ไม่ <u>ทำ</u>	3 ฉันทำบางเป็น <u>บางครั้ง</u>	4 ฉันทำเป็น <u>ประจำ</u>	5 ฉันทำอย่าง <u>สม่ำเสมอ</u>					
				ฉัน ไม่เคยทำ	ฉัน แทบจะไม่ เคยทำ	ฉัน ทำเป็น บางครั้ง	ฉัน เป็นประจำ	ฉัน เป็นประจำ สม่ำเสมอ	ฉัน ทำเป็นประจำ	ฉัน ทำเป็นประจำ สม่ำเสมอ
1	ฉันได้นำความรู้ทางหลักไวยากรณ์ที่ได้เรียนมาใช้ในการอ่าน			1	2	3	4	5		
2	ฉันมองสำรวจหาโครงสร้างทางไวยากรณ์ที่ปรากฏในบทอ่าน			1	2	3	4	5		
3	ฉันวิเคราะห์ตัวบ่งชี้ทางไวยากรณ์ในประโยค			1	2	3	4	5		
4	ฉันคิดว่าการเข้าใจคำศัพท์ทุกคำในบทอ่านเป็นเรื่องจำเป็น			1	2	3	4	5		
5	ฉันเลือกความหมายของคำศัพท์ที่เหมาะสมกับบริบทในบทอ่านนั้น			1	2	3	4	5		
6	ฉันพยายามที่จะคาดเดาความหมายของคำศัพท์หรือ กลุ่มคำที่ฉันไม่เข้าใจ			1	2	3	4	5		
7	ฉันเชื่อมโยงเนื้อหาในบทอ่านกับความรู้ที่ฉันได้เคยเรียนรู้แล้ว เพื่อช่วยให้ฉันเข้าใจบทอ่านนั้นๆ			1	2	3	4	5		

		ฉันไม่เคยทำ	ฉันแทบไม่เคยทำ	ฉันทำเป็นบางครั้ง	ฉันทำเป็นประจำ	ฉันทำอย่างสม่ำเสมอ
8	ฉันใช้ความรู้ที่มีอยู่เดิมของฉันเพื่อช่วยในการเข้าใจบทอ่าน	1	2	3	4	5
9	ฉันใช้ชื่อเรื่องของบทอ่านเพื่อช่วยทำความเข้าใจเนื้อหาของบทอ่าน	1	2	3	4	5
10	ฉันพยายามที่เชื่อมโยงข้อมูลที่ปรากฏในประโยคต่างๆ เข้าด้วยกัน	1	2	3	4	5
11	ฉันอ่านกลับไปมาเพื่อหาความสัมพันธ์ระหว่างสิ่งนำเสนอในเนื้อหา หรืออ่านซ้ำในส่วนที่ยากอีกหลายรอบ เพื่อตรวจสอบและทำความเข้าใจเนื้อหาของบทอ่านได้อย่างถูกต้อง	1	2	3	4	5
12	ฉันพยายามที่จะแปลความหมายที่ซ่อนอยู่ในเนื้อหา	1	2	3	4	5
13	ฉันพยายามที่อนุมานหรือสรุปจากข้อมูลที่ได้กล่าวเป็นนัยๆ ในบทอ่าน	1	2	3	4	5
14	ฉันมีความรู้สึกร่วมกับเนื้อหาในบทอ่าน	1	2	3	4	5

APPENDIX J

Test Administration

Test administration of the questionnaire

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students' interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the questionnaires and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another's work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.
6. Distribute the questionnaires to the students.
7. Read out the instruction to the students, while asking students to follow what you say.

คำชี้แจงในการแบบสอบถาม :

อ่านข้อความดังต่อไปนี้ และเลือกหนึ่งหมายเลข (หมายเลข 1 ถึง 5) ที่แสดงถึงสิ่งที่คุณทำขณะที่อ่าน

1	2	3	4	5
“ฉันไม่เคยทำ”	“ฉันแทบจะไม่ทำ”	“ฉันทำบางเป็นบางครั้ง”	“ฉันทำเป็นประจำ”	“ฉันทำอย่างสม่ำเสมอ”

‘ดีมาก’	‘ดี’	‘พอ’	‘น้อย’	‘ไม่ดี’
‘มากที่สุด’	‘มาก’	‘ปานกลาง’	‘น้อย’	‘น้อยที่สุด’

- | | |
|--|------------------------------|
| <p>1. ฉันอ่านออกเสียงซ้ำอีกครั้งในส่วนที่ยาก เพื่อช่วยให้ฉันเข้าใจมากขึ้น</p> <p>8. Make sure that the students understand how they are expected to choose one number (from 1 to 5) that best characterizes what you do when reading before the administration of the test by asking “Did you understand what I said?”</p> <p>9. No simplifications or explanations for any words or asking any other questions during administration are allowed.</p> <p>10. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questionnaire.”</p> | <p>1 2 3 4 5</p> |
|--|------------------------------|

Test administration of Thai listening comprehension

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the answer sheets and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.
6. Distribute the answer sheets to students and make sure the instruction page of the test face up.
7. Read out the instruction to the students, while asking students to follow what you say.

คำชี้แจงในการทำข้อสอบ

1. เวลาในการแบบทดสอบนาที
2. นิสิตจะได้ฟังบทฟัง เพียงรอบเดียวเท่านั้น
3. แบบทดสอบประกอบด้วยคำถาม “ใช่” หรือ “ไม่ใช่” จำนวน 50 ข้อ
4. เลือกคำตอบ “ใช่” หรือ “ไม่ใช่”

ตัวอย่าง ใช่ ไม่ใช่

กรุณาฟังอย่างตั้งใจ

หนังสือสารคดีสำหรับเด็กที่เขียนโดยคนไทยนั้น ยังมีอยู่เป็นจำนวนน้อย

1. คนไทยส่วนใหญ่ไม่นิยมผลิตหนังสือสารคดีสำหรับเด็ก ใช่ ไม่ใช่

คำตอบคือ ไม่ใช่ เพราะมีอยู่เป็นจำนวนน้อย

8. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
9. No simplifications or explanations for any words or asking any other questions during administration are allowed.
10. Read the listening passages and questions to the students **once only** with your normal speed. Allow ample time for students to choose their answers.
11. Tell the students to start answering the test. Say “Please turn over the next page and the listening test will begin”

Test administration of Thai vocabulary test

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.

General testing guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another's work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.
6. Distribute the questions and the answer sheets to students and make sure the instruction page of the test face up.
7. Read out the instruction to the students, while asking students to follow what you say.

คำชี้แจงในการทำข้อสอบ

1. เวลาในการแบบทดสอบ 20 นาที
2. แบบทดสอบประกอบด้วยข้อสอบตัวเลือก จำนวน 45 ข้อ
3. เลือกคำตอบที่ถูกต้อง

ตัวอย่าง

เด็กไทยเรียนพิเศษตั้งแต่อายุเจ็ดขวบ จนกระทั่งเข้ามหาวิทยาลัย เพราะเด็กไทยกลัวว่าตัวเองไม่เก่งมากพอ เพื่อเข้ามหาวิทยาลัยให้ได้

1. ข้อความใดสามารถอนุมานได้จากบทอ่านนี้

- | | |
|------------------------------------|---|
| ก. การเรียนทางวิชาการเป็นสิ่งที่ดี | ข. การเข้ามหาวิทยาลัยให้ได้เป็นเรื่องสำคัญมาก |
| ค. เด็กไทยมีความรู้รอบด้าน | ง. ธุรกิจกวตวิชาช่วยส่งเสริมเด็กไทย |

คำตอบที่ถูกต้อง คือ ข้อ ข. เพราะสามารถอนุมานได้จากบทอ่านดังกล่าว

8. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
9. No simplifications or explanations for any words or asking any other questions during administration are allowed.

10. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questions.”

Test administration of Thai reading comprehension

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.
6. Distribute the questions and the answer sheets to students and make sure the instruction page of the test face up.
7. Read out the instruction to the students, while asking students following what you say.

คำชี้แจงในการทำข้อสอบ

1. เวลาในการแบบทดสอบ 25 นาที
2. แบบทดสอบประกอบด้วยข้อสอบตัวเลือก จำนวน 35 ข้อ
3. เลือกคำตอบที่ถูกต้อง

ตัวอย่าง

สังคมไทยเป็นสังคมแห่งน้ำตาในทุกๆ ด้าน ทุกอย่างต้องดูดีและสวยงาม แม้อาจไม่เหมาะกับฐานะการเงินของตนเองก็ตาม

1. ผู้เขียนต้องการอธิบายด้านไหนของสังคมไทย

ก. ค่านิยม ข. เศรษฐกิจ ค. จริยธรรม ง. ความเป็นศิลปิน

คำตอบที่ถูกต้องคือ ข้อ ก. เพราะผู้เขียนอธิบายลักษณะการปฏิบัติในสังคม ถือเป็นค่านิยมของสังคม

8. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
9. No simplifications or explanations for any words or asking any other questions during administration are allowed.
10. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questions.”

Test administration of Raven’s Advanced Progressive Matrices

(AMP)

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

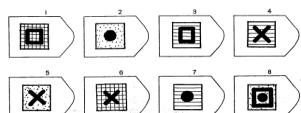
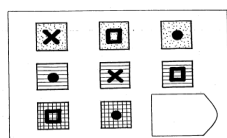
General Testing Guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment. Go to the classroom.
5. Distribute the questions and the answer sheets to students and make sure the instruction page of the question face up.
6. Read out the instruction to the students, while asking students to follow what you say.

Test Instruction

1. The test administration will be 10 minutes.
2. The test consists of 12 items of non-verbal, multiple choice questions.
3. Choose the missing element that completes a pattern.

Example: From picture 1-6, choose the picture that best completes this pattern.



Answer : The picture 6 is correct. The elements in picture 6 matches with the characteristics of the pattern.

7. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
8. No simplifications or explanations for any words or asking any other questions during administration are allowed.
9. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questions.”

Test administration of English listening comprehension

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the answer sheets and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.

6. Distribute the answer sheets to students and make sure the instruction page of the test face up.
7. Read out the instruction to the students, while asking students to follow what you say.

Test Instruction

1. The test administration will be 15 minutes.
2. You will hear the passages once only.
3. The test consists of 40 Yes or No questions.
4. Mark 'Yes' or 'No' on your answer sheet.

Let's practice

Example: Yes No

Listen carefully.

Every Friday evening after work, Nick usually spends a few hours at a bakery enjoying a cup of coffee and a nice chocolate cake before heading home.

Question Does Nick go home directly after work?

Then you mark Yes or No based on information from the listening. The correct answer is "No" because Nick stops at a bakery after work.

8. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking "Did you understand what I said?"
9. No simplifications or explanations for any words or asking any other questions during administration are allowed.
10. Read the listening passages and questions to the students **once only** with your normal speed. Allow ample time for students to choose their answers.
11. Tell the students to start answering the test. Say "Please turn over the next page and the listening test will begin"
12. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking "Did you understand what I said?"
13. Read the listening passages and questions to the students **once only** with your normal speed. Allow ample time for students to choose their answers.

14. Tell the students to start answering the test. Say “Please turn over the next page and the listening test will begin”

Test administration of English vocabulary

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.
6. Distribute the questions and the answer sheets to students and make sure the instruction page of the test face up.
7. Read out the instruction to the students, while asking students to follow what you say.

Test Instruction

1. The test administration will be 15 minutes.
2. The test consists of 40 multiple choice questions.
3. Mark the best choice for every question.

Example

1. see : They <saw it>.
 - a. closed it tightly
 - b. waited for it
 - c. looked at it
 - d. started it up

The correct choice is c. It is the right meaning of the word “see”.

8. No simplifications or explanations for any words or asking any other questions during administration are allowed.

9. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
10. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questions.”

Test administration of English inferential skills

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General testing guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment. Go to the classroom.
5. Distribute the questions and the answer sheets to students and make sure the instruction page of the test face up.
6. Read out the instruction to the students, while asking students to follow what you say.

Test Instruction

1. The test administration will be 28 minutes.
2. The test consists of 35 multiple choice questions.
3. Mark the best choice for every question.

Example

Tim was desperate to leave the classroom. He watched the clock wisely. It was only 12:30pm. He had to wait for an hour until the lesson was finished. He was learning math - algebra.

1. When can Tim leave the classroom?

- a. 12:30 pm b. 1:00 pm c. 1:30 pm d. 2:00 pm

You mark the best choice. The answer is “C” 1:30 pm. You need to combine information from two sentences to get the answer.

7. No simplifications or explanations for any words or asking any other questions during administration are allowed.
8. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
9. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questions.”

Test administration of English reading comprehension

It is very important to establish and maintain rapport with the students you test. Establishing and maintaining a good rapport facilitates the students’ interest and co-operation during the administration of the test.

General Testing Guidelines

1. Prepare the questions, the answer sheets, and the watch.
2. You will need a watch to record the maximum time taken to complete the test by the majority of students.
3. The seating arrangements should be comfortable and appropriate for the test but arranged so the participants cannot see one another’s work.
4. Strictly control distractions during the administration of the assessment.
5. Go to the classroom.
6. Distribute the questions and the answer sheets to students and make sure the instruction page of the test face up.
7. Read out the instruction to the students, while asking students following what you say.

Test Instruction

1. The test administration will be 30 minutes.
2. The test consists of 40 multiple choice questions.

3. Mark the best choice for every question.

Example

If you visit Japan, you might choose to travel around the country by Shinkansen trains. These high-speed trains are nicknamed “bullet trains” because they go very fast and have pointy noses like a bullet.

1. Why are Shinkansen trains nicknamed “bullet trains”? a. safety and shape
b. safety and timing c. speed and shape d. speed and timing

You mark the best choice. The answer is “C” based on information in the reading passage.

8. No simplifications or explanations for any words or asking any other questions during administration are allowed.
9. Make sure that the students understand how they are expected to mark their answer sheets for the best choice before the administration of the test by asking “Did you understand what I said?”
10. Tell the students to start answering the test. Say “Please turn over the next page and start answering the questions.”