The Improvement of Reading Comprehension of Secondary School Students Using Web-based Instruction and KWL-Plus

Tiparporn Vaisean

A Thesis Submitted in Partial Fulfillment of Requirements for
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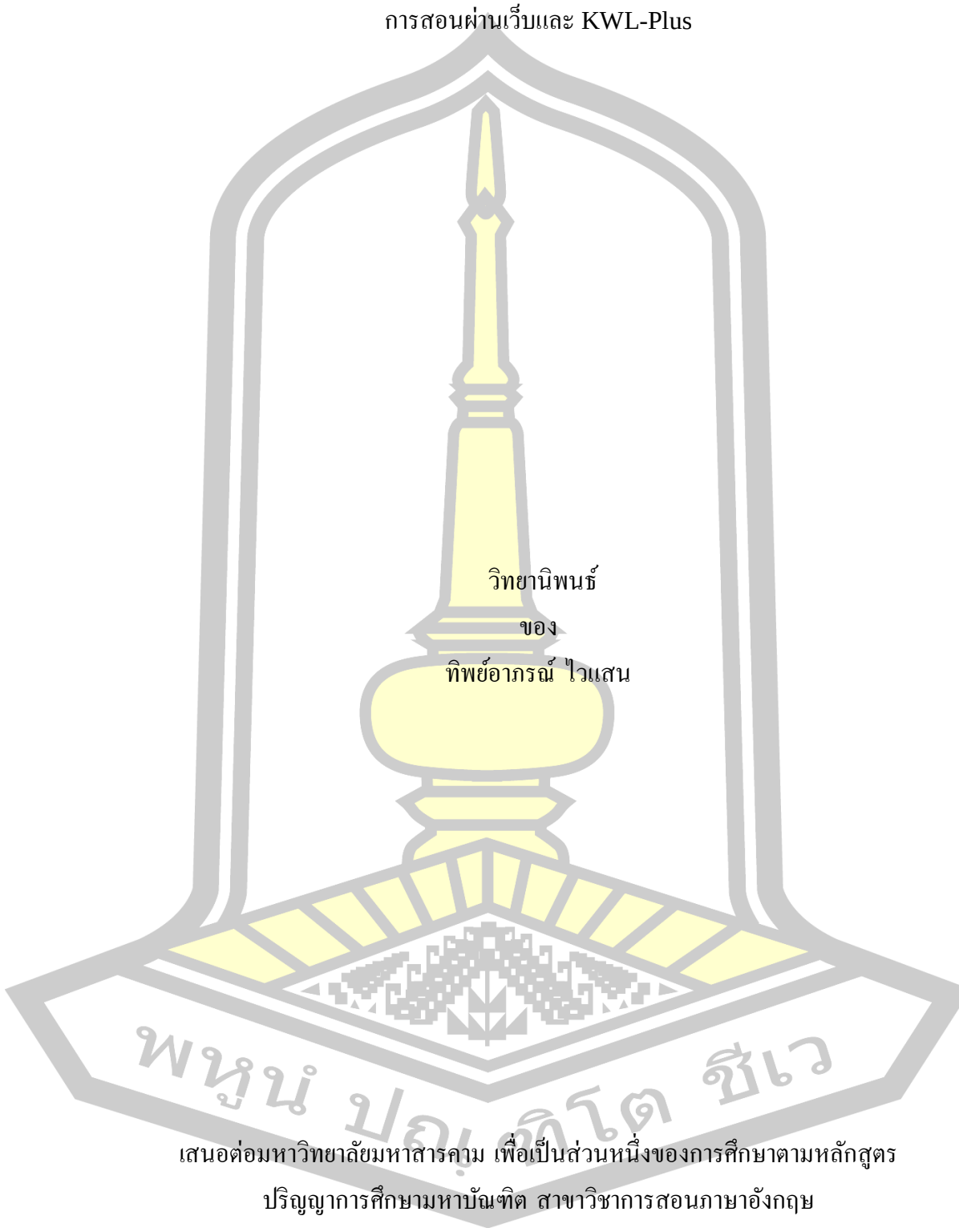
การพัฒนาการอ่านเพื่อความเข้าใจของนักเรียนระดับมัธยมศึกษาโดยใช้การบูรณาการจัดการเรียนการสอนผ่านเว็บและ KWL-Plus



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The examining committee has unanimously approved this Thesis, submitted by Miss Tiparporn Vaisean , as a partial fulfillment of the requirements for the Master of Education English Language Teaching at Mahasarakham University

Examining Committee

.....Chairman
(Asst. Prof. Apisak Sukying , Ph.D.)

.....Advisor
(Pilanut Phusawisot , Ph.D.)

.....Committee
(Asst. Prof. Intisarn Chaiyasuk , Ph.D.)

.....External Committee
(Assoc. Prof. Supong Tangkiengsirisin , Ph.D.)

Mahasarakham University has granted approval to accept this Thesis as a partial fulfillment of the requirements for the Master of Education English Language Teaching

....

(Assoc. Prof. Nittaya Wannakit , Ph.D.)
Dean of The Faculty of Humanities and Social Sciences

(Assoc. Prof. Krit Chaimoon , Ph.D.)
Dean of Graduate School

TITLE The Improvement of Reading Comprehension of Secondary School Students Using Web-based Instruction and KWL-Plus

AUTHOR Tiparporn Vaisean

ADVISORS Pilanut Phusawisot , Ph.D.

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ABSTRACT

The growing of technology had contributed to language learning; especially the use of Web-based instruction (WBI) had been increased in the language classroom. WBI has recognized its' effects on the students' language skills such as listening, speaking, writing, and reading. However, technology could not replace teachers in class, for the fact that it was a lack of human interaction and inspiration for the students. The current study attempted to investigate the integration technology and teacher instruction by adopting WBI and KWL- Plus to improve secondary school students reading comprehension at a literal level as well as the students' attitudes towards WBI and KWL-Plus. The participants were seventh-grade students consisted of twenty students in the secondary school in the Northeast of Thailand. The implementation of the current study lasted eighteen hours. The web-based lesson was designed based on KWL-Plus procedures and scaffolding instruction through web-based instruction. According to data collection, the researcher adopted reading comprehension pretest and posttest, questionnaire, and semi-structured interview. The findings of the study showed that there was a significant difference between the overall mean scores of students reading comprehension pre-test and posttest at the 0.01 level and students expressed a positive attitude towards the integration of Web-based instruction and KWL-Plus at a very high level. In addition, the qualitative data obtained from the semi-structured interview indicated that the majority of the students enjoyed performing reading with the integration of Web-based Instruction and KWL-Plus.

Keyword : Reading Comprehension, Web-based Instruction, KWL-Plus

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Tiparporn Vaisean

TABLE OF CONTENTS

Page

List of Tables

Page

List of Figures

Page

CHAPTER I
INTRODUCTION

1.1 Background

Reading is considered an essential skill for English language learning and teaching. It can be viewed as an interactive process between the readers and a text that contributes to fluency in reading. To interact with the reading texts, the readers attempt to comprehend the meaning and elicit various kinds of knowledge. Grabe and Stroller (2002) state that if a person is not trained to read, in one way or another, that person is not able to read. Not only can the readers who can read well in English gain more knowledge, but also they are equipped with the foundation literacy for studying in higher education. Likewise, Wijekumar and Meyer (2006) propose that learners in elementary and middle schools are required to read and comprehend information to achieve upcoming provided activities. However, the readers read for various purposes, but the comprehension becomes prerequisites of what they have read. Although reading comprehension is considered to be the main outcome of the reading, the majority of students still encounter some difficulties in their reading class. In a typical reading classroom, most of the students translate word by word and get stuck with unknown words which may be essential to the general understanding of the texts. This problem thus prevents the students from grasping the essence of the text (Torki, Kasmani, and Valipour, 2014). Moreover, Saiyod (2009) advocates that students tend to pay much attention to grammar and vocabulary rather than the meaning of the text while the teacher-based teaching environment was assumed to be impractical in teaching reading. This causes the students to lose interest in their reading. Abdulkarim (2003) adds that this is because the teaching and learning reading mostly focused on the textbook, and all readings were done in the form of intensive reading, which eventually demotivated students to learn to read.

In my supplementary English reading class, the seventh-grade students also face difficulties with their English reading comprehension. They are unable to identify the fundamental information. Moreover, they do not have the ability to answer what directly asked from the reading passages. To be specific, literal comprehension, which is the ability to comprehend the primary meaning of the texts, is one of the problems in my classroom context. Broadly speaking, literal comprehension refers to the basic level

of reading, which requires a low level of thinking skills and the ability to answer simple questions. This is a very important level of understanding as it offers the basis for more advanced comprehension. If the students do not reach this level, they cannot go to a higher level. Moreover, a teacher-centered environment and no variety of teaching styles bring about passive and demotivated students (Saiyod, 2009), and this problem is the starting point of this study.

Several studies attempted to investigate the teaching instructions, which raise students' motivation and assist the students with the appropriate approach to improve their reading comprehension (Dehghanpour & Hashemian, 2015; Gómez, López, & Marin, 2011; Karim, 2011; Peck & Dorricott, 1994). Web-based instruction approach (WBI) is chosen as the main technology in these studies. Previous studies investigated the implementation of WBI in students of advanced level and found that it could somewhat help promote the students' motivation and enhance their reading skills. However, because of the implementation of only WBI, the instruction did not work as anticipated. Peck and Dorricott (1994) argue that though technology offers students rich and authentic resources, it cannot teach students to question and scrutinize the information and inspire them to learn. In other words, there is no teacher-student interaction. Therefore, online language teaching and learning lacks the teacher-student interaction, which is generally presented in a face-to-face classroom. Gómez, López and Marin (2011) propose that WBI is considered an appropriate approach to teaching reading comprehension. However, WBI could be implemented effectively by combining it with teacher-fronted instruction. WBI should be utilized as a tool because it cannot replace a teacher in class. However, research to date has not yet determined the impact of the integration of Web-based instruction and teacher instruction in improving students' reading comprehension especially in an EFL context like Thailand.

Several researchers have attempted to find an effective way to improve students' literal comprehension using several techniques including KWL, KWL-Plus, SQ3R, strategy-based instruction, metacognitive strategies-based instruction (Mohammad, 2014; Ogle & Carr, 1987; Salam, Mustofa, & Apriliaswati, 2012; Ulusoy & Dedeoğlu, 2015; Yee, 2014). One of the interesting techniques is KWL-Plus because the technique has been proved to help elicit the students' prior knowledge, monitor and reflect their understanding. KWL-Plus was initially developed by Ogle and Carr (1987). They

proposed that the KWL-Plus technique help encourage the students to become better readers and increase the interaction in reading class. Moreover, they also list the advantages of KWL-Plus and suggest that the techniques help encourage the students to gain a better understanding of the topic and encourage teachers to be more interactive in their reading class. The teachers could check the students' understanding, and questioning would be used while and after reading. KWL-Plus is presented with three letters. The letter "K" stands for "What I KNOW," "W" for "What I WANT to know", and the last letter "L" for "What I LEARNED". The last stage is Plus which stands for the summary of the texts in their language, including writing and mapping (Mohammad, 2014). The method is expected to help improve the students' ability as well as knowledge of reading, and eventually, they are able to improve their presentation ability by simplifying reading (Yee, 2014).

This research adopts two cycles of action research to carry out the study. The integration of KWL-Plus and WBI are specifically designed (1) to help improve secondary school students' reading comprehension and (2) to investigate the students' attitudes towards the integration of KWL-Plus and Web-based instruction in enhancing the students' reading comprehension with teacher's scaffolding techniques.

1.2 Purpose of the study

The study attempted to:

1. Investigate the impact of the integration of WBI and KWL-Plus on the improvement of secondary school students' reading comprehension; and
2. Examine the students' attitudes towards the integration of WBI and KWL-Plus.

The study aimed to address the following research questions:

1. Does the integration of WBI and KWL-Plus have an impact on secondary school students' reading comprehension?
2. What are the students' attitudes towards the integration of WBI and KWL-Plus?

1.3 Scope of the study

The present study investigated the effectiveness of the integration of Web-based instruction and KWL-Plus in developing reading skills at a literal comprehension level.

The participants of the study were twenty seventh-grade students in one intact class, which mixed abilities and genders. The study lasted eighteen hours. In the last period of the study, the questionnaire was administered to all participants together with the semi-structured interview. The four reading passages were adopted from the supplementary English book titled “Maximize Your Score: Reading 1”, which was based on the indicators of grade seven Thai Core Curriculum (Ministry of Education, 2008).

1.4 Significance of the study

The current study provided more in-depth insight into the integration of Web-based instruction and KWL-Plus in secondary level education in Thailand for students, teachers, and educators. Firstly, students’ reading comprehension skills were promoted during the implementation, which was useful for the students to apply those reading techniques to their reading. Secondly, since the implementation shifted teachers-fronted to student-centered class, which made the reading class more exciting and pleasurable, teachers can design the reading course more effectively. Finally, the educators could apply the implementation and findings of the current study in developing curriculum design, which adopted the integration of technology and teacher’ scaffolding into the class at other educational levels.

1.5 Definitions of terms

1.5.1 Reading comprehension is defined as the ability to comprehend the ideas explicitly stated in the written text at a literal level of comprehension. At this level, students can answer simple questions.

1.5.2 KWL-Plus refers to a reading activity that is developed by Ogle and Carr (1987). The activity is divided into four stages. Stage 1, the students activate their own prior knowledge of what they know about a text (K). Stage 2, students brainstorm and raise some questions about what they want to know (W). Stage 3, students note down keywords and what they learn from a text (L). The last stage, the plus stage, requires students to summarize a text by creating the semantic mapping.

1.5.3 Web-based instruction (WBI) is defined as the online reading instruction, which is conducted via google classroom. Before starting a lesson, reading passage, reading exercises, and quizzes uploaded on the google classroom include four chapters. The students can read online via google classroom during the class with the teacher's scaffolding.

1.5.4 The integration of web-based instruction (WBI) and KWL-Plus refers to the implementation of Web-based instruction and KWL-Plus combined with scaffolding instruction. The teacher, as a researcher, guide students during the implementation in the intensive reading class.

1.5.5 Students' attitudes refer to the students' reaction to the integration of WBI and KWL-Plus include three components: cognitive, affective, and behavioral. The cognitive component refers to the students' beliefs, thoughts, or viewpoints. The affective component refers to an individual's feelings and emotion, preferences. The behavioral component includes the tendency to adopt the integration of WBI and KWL-Plus (Wenden, 1991).

1.5.6 Teachers' scaffolding refers to teachers' assistance to the students to achieve the tasks, which is beyond their ability.

1.5.7 Secondary school students refer to the students who are studying in grade seven, aged 12-13 years old, at a government secondary school in northeastern Thailand.

1.6 Outline of the Study

The current study consists of three chapters.

Chapter I presents the background of the current study. The chapter includes background of the study, purposes of the research, scope of the research, the significance of the study as well as the definitions of terms.

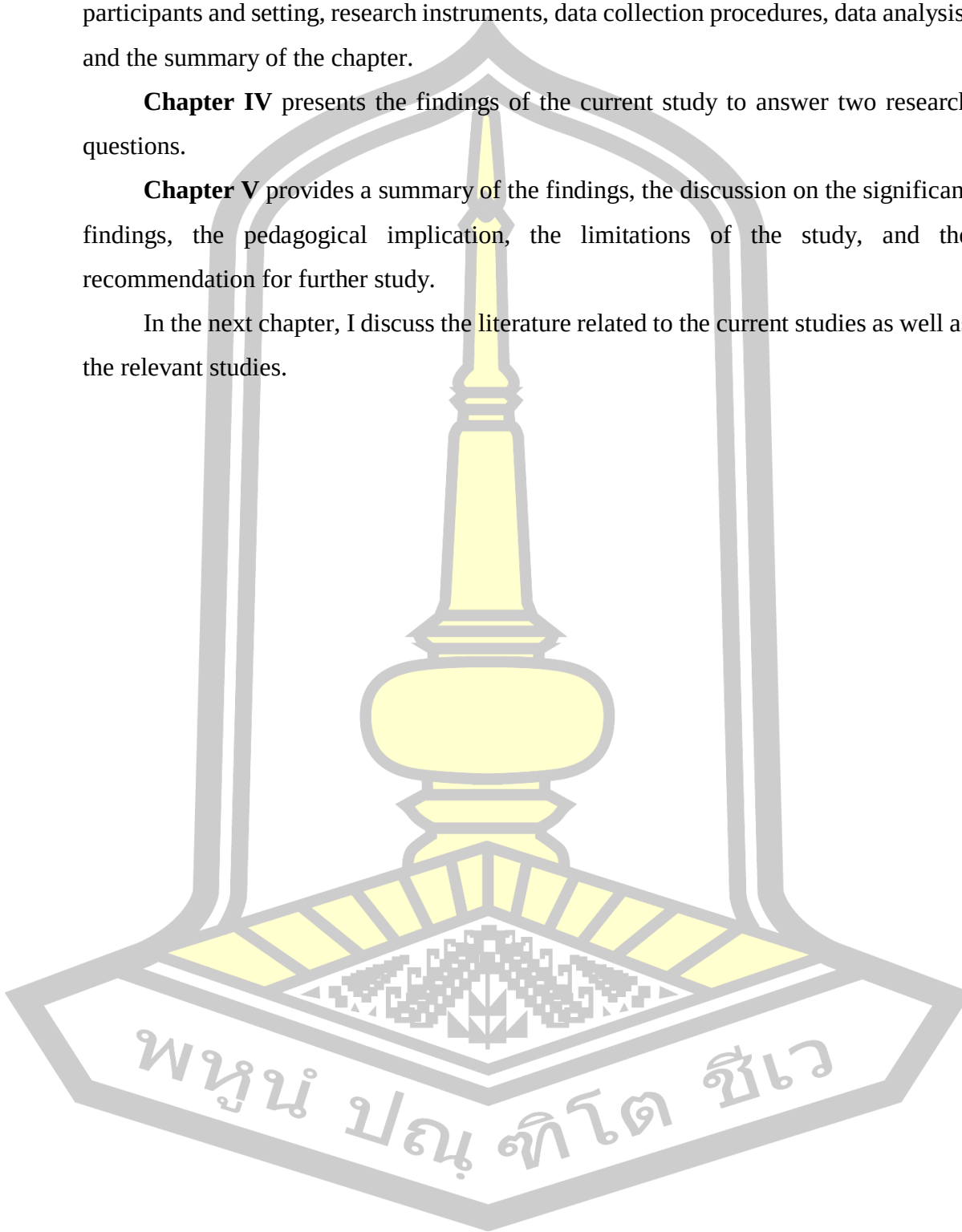
Chapter II presents the related literature and research studies on reading comprehension, Web-based instruction, and KWL-Plus. The chapter begins with The Basic Education Core Curriculum B.E. 2551 (A.D. 2008), reading, vocabulary knowledge, Instructional technology, Computer-assisted Language Learning (CALL), Web-based instruction, KWL-Plus, instructional scaffolding and the zone of proximal development, and related studies respectively.

Chapter III presents the research methodology of the current study. It includes participants and setting, research instruments, data collection procedures, data analysis, and the summary of the chapter.

Chapter IV presents the findings of the current study to answer two research questions.

Chapter V provides a summary of the findings, the discussion on the significant findings, the pedagogical implication, the limitations of the study, and the recommendation for further study.

In the next chapter, I discuss the literature related to the current studies as well as the relevant studies.



CHAPTER II
LITERATURE REVIEW

The current study was set out to investigate the improvement of reading comprehension by using web-based instruction and KWL-Plus of secondary school students. This chapter includes a review of the related literature and studies as the following areas: Reading, Instructional Technology, Computer-assisted language learning, Web-based instruction, KWL-Plus, and Scaffolding technique. Finally, the chapter also presents related studies. The first part of this chapter moves on to describe in greater detail in The Basic Education Core Curriculum B.E. 2551 (A.D. 2008).

2.1 The Basic Education Core Curriculum B.E. 2551 (A.D. 2008)

The office of the Basic Education Commission (OBEC) announces to reform the new core curriculum as a Thai basic education core curriculum B.E. 2551, which is revised from the basic educational curriculum B.E. 2544 to provide more understandable guidelines on how the eight areas; Thai language, Foreign language, Mathematics, Science and Technology, Art and Music, Social study, and Physical Education, should be taught and assessed. The teachers are required to design the lessons, which appropriate for students in their context (Ministry of Education, 2008).

According to the new curriculum, English is promoted as the compulsory subject, which the curriculum requires students to take at least three hours of English classes in a week (Nonthaisong & Mantero, 2017). The curriculum prescribes the English language as the main foreign language, which is taught from grade 1 in primary school to grade 12 in secondary school. The main aims of foreign language learning are to persuade students to have favorable attitudes towards foreign language, to be able to communicate in various situations, pursue knowledge, engage in livelihood, and take advantage of further education at a higher level. The main contents consist of four strands as follows:

1) Language for Communication is the use of foreign languages for listening, speaking, reading and writing, exchanging data and information, expressing feelings

and opinions, interpreting, presenting data, concepts, and views on various matters, and creating interpersonal relationships appropriately.

2) Language and Culture is the use of foreign languages harmonious with culture of native speakers; relationships, similarities and differences between languages and cultures of native speakers; languages and cultures of native speakers and Thai culture; and appropriate application.

3) Language and Relationship with Other Learning Areas is the use of foreign languages to link knowledge with other learning areas, forming the basis for further development, seeking knowledge, and broadening learners' worldviews.

4) Language and relationship with Community and the World is the use of foreign languages in various situations, both in the classroom and the outside community and the global society, forming a basic tool for further education, livelihood, and exchange of learning with the global society.

In terms of reading, the ninth grade students are required to gain the ability to clarify and explain what they have read accurately from the texts, news, advertisements, tales, and short story. The students are also required the ability to choose and specify the topics, main ideas and supporting details, and express opinions about the passages as well as to justify and give examples for presenting their ideas (Ministry of Education, 2008).

However, this study aims to improve secondary students' reading comprehension ability. The researcher puts a premium focus on the strands and indicators, which relate to grade 7 secondary school students. The reading area is stated in strand 1: Language for Communication; standard F: 1.1. The explanation of the stand 1 and the indicators are clarified as the below table.

Table 1: Reading indicators in Thai Basic Core Curriculum
(Ministry of Education, 2008)

Indicators	Contents
F1.1.3 Choose/specify the sentences and texts related to non-text information read	- The sentences and texts about oneself, family, school, environment, food and beverages, hobby, health and welfare, purchasing, weather, education, occupations, travel, service, places, languages, and science and technology - The amount of the vocabulary is about 1,400- 1,550 words. - Interpret and choose the information which relevant to non-text information, for example, graph, diagram, tables, pictures by using comparison adjective adverbs, contrast: but, although, and quantity words: much, very much, a lot of, lots of, some, any, a few, few, a little, little
F1.1.4 Specify the topic and main idea and answer questions from listening and reading dialogues, tales, and short stories	- Comprehend the main idea and supporting details with the simple questions - Yes/ No questions - WH-questions - Tenses: Present simple/ Present continuous/ Past Simple/ Future simple - Simple sentences and compound sentences

The lesson plans, reading passages adapted from a commercial textbook entitled "Maximize your score: Reading 1", based on the indicators and contents stated in the table so that the material appropriate for students' language proficiency level. The indicators and contents were useful for improving reading comprehension at a literal level.

As described, Thai Basic Core Curriculum was published for more precise guidelines for teachers on how the areas should be taught and assessed in class. The curriculum requires all schools to take English as a compulsory course and have at least three hours a week. The curriculum provides the indicators and contents for teachers to design their lessons and materials utilizing in class. Specifically, this study aimed to investigate the reading area; the area was mentioned in the first strand and two indicators. To gain more deeply understanding about reading, the following section reviews in the area of reading.

2.2 Reading

In this section, the researcher attempted to review the definitions of reading, the purposes of reading, types of reading, reading comprehension and its' level, the model of teaching reading comprehension, and how to assess student comprehension ability were clarified. A more detailed account of the definition of reading was given in the following.

2.2.1 Definition of reading

Reading is one of the most important skills in language learning besides listening, speaking, and writing. A board definition of reading by Goodman (1967) indicates that "reading is a precise process. It involves accurate, detailed, sequential perception and identification of letters, words, spelling patterns, and large language units." This definition implies that the best way to be successful in reading is to see it as a process of active guessing and to understand the texts in which the readers use some clues to understand the text. Other scholars have defined the definitions of reading in many ways. Reading is defined as an essential skill to master other language skills (Anderson, 1990), the domination between eyes and brain (Harmer, 1985; Williams, 1994). Several scholars define reading as the interacting process between the writer and the readers (Hamra & Syatriana, 2010; Hesham, 2006; Yusuf, Fajrina, & Irma, 2016). Moreover, reading is defined as a process of activating prior knowledge (Devine, 1987 cited in Andriani, 2016).

In Anderson (1990) definition, reading is defined as an essential skill for ESL or EFL students, and it is considered to be an essential skill to master other language skills. Reading is the most important foreign language skill because the other skills like listening, speaking, and writing involving reading as part of the activity. Reading also means dealing with language messages in written or printed form, or it can be stated that reading is the ability to draw meaning from the printed page and can be interpreted the information from the texts appropriately. Harmer (1985) defines reading as an exercise dominated by the eyes and brain. Moreover, Williams (1994) states that reading is a process whereby one looks at and understands what has been read.

Reading is the interactive process between the readers, the writers, and the texts. Hesham (2006) defines reading as the interactive process between a reader and a text, which leads to automaticity, or reading fluency. Hamra and Syatriana (2010) also propose that reading always involves the interaction between the writers and readers. It is an action of a communication process beginning from the thoughts of the writer in which presents utilizing symbols on the printed page. Without readers, the communication does not occur. Yusuf et al. (2016) also state that the reading process involves the interaction between the readers and writer, and the texts, and the comprehension is considered as the production of reading. Interacting with a text, a good reader usually uses some strategies in developing expertise in reading. Automaticity is defined as "occurring when the readers are unaware of the process, not curiously controlling the process, and using little processing capacity." Besides, reading is defined as the process of activating the readers' prior knowledge, cooperates with the appropriate cognitive skills and reasoning ability to find the concepts from the text.

In summary, the previous studies define reading as an essential skill for students to master another language skill as well as reading is an interactive and precise process, which involves the domination of eyes and brain in drawing the meaning from a text, as well as the process of activating readers' prior knowledge to promote reading fluency.

2.2.2 Reading purposes

The purposes of reading are varied and complex. Many people have different purposes when they read the text. The purposes are classified under seven headings, which are categorized by Grabe and Stroller (2002). There are (1) Reading to search for simple information and reading to skim, (2) Reading to skim, (3) Reading to learn from texts, (4) Reading to integrate information, (5) Reading to write (or search for information needed for writing), (6) Reading to critique texts, and (7) Reading for general comprehension. The details are clarified as follows.

1. Reading to search for simple information (typically scan the text for a specific piece of information or specific word)

2. Reading to skim (guessing where vital information might be in the text)

3. Reading to learn from texts (a person needs to learn a considerable amount of information from the text)

4. Reading to integrate information (require critical evaluation of the information being read so that the reader can decide what information to integrate)

5. Reading to write (or search for information needed for writing)

6. Reading to analyze texts (require the ability to analyze the texts)

7. Reading for general comprehension (require rapid and automatic process of words, strong skills in informing a general meaning representation of the main ideas)

2.2.3 Types of Reading

Reading is divided into two types, intensive reading, and extensive reading. Intensive reading involves students reading in detail, which specific and tasks. Moreover, extensive reading involves students reading a text for enjoyment, and to develop the general reading skill. The current study is conducted on teaching reading in class. Thus, the study focus on intensive reading. For the fact that, the researcher as a reading teacher conducted the reading procedures in the language classroom to advocate students improving reading achievement by asking some questions, having students predict the information from the text.

Intensive reading is the activity of an intensive study of a text that can increase students' knowledge of language features and their control of reading strategies. The focus of intensive reading is the comprehension of a particular text, and it will be beneficial when reading another text. It is also called close reading. It means that when a reader reads a short passage, he or she must give all the attention to vocabulary, reading text, and organization (Harmer, 1985). Besides, Paran (2003) states that the intensive reading is effective for developing reading skills because students in EFL context can comprehend a text step by step.

2.2.4 Vocabulary Knowledge

The relationship between vocabulary and reading has been a well-established notion among teachers of English as a foreign language. There is no doubt that reading and vocabulary knowledge directly related to each other. Several studies have exhibited the relationship between vocabulary knowledge and reading. Cooper (1984) claims that vocabulary knowledge is considered as a key component to being successful in reading paragraph and text. Likewise, Luafer (1997) states that vocabulary knowledge plays a crucial role in predicting the reading performance. Moreover, Al-Khasawneh (2019) proposes that vocabulary size is considered to be an important predictor of the ability to comprehend the written texts and they are strongly related to reading. Another study claims that the significance of vocabulary knowledge in reading skill due to the fact that it operates similarly to the background knowledge in reading (Martin-Chang & Gould, 2008). In can be concluded that vocabulary knowledge has a strong relationship to reading. It is considered as a key component of reading, which predicts reading performance.

2.2.5 Reading Comprehension

Reading comprehension is considered as the primary outcome of the reading. Reading comprehension is the ability to understand a text, analyze the information, and interpret the ideas of a text. Therefore, comprehension is considered an essential part of reading because if the readers cannot comprehend a text, they will encounter difficulties in catching the information and understanding the meaning of what they read. In the

existing literature on reading comprehension, several researchers have defined the definitions of reading comprehension in many ways.

Recently, several researchers have defined reading comprehension as a process activating prior knowledge with the appropriate cognitive skill and reasoning ability to determine the idea and concept from a reading text. In other words, the readers must be able to understand, interpret, and select the essential information from a text. Moreover, Urquhart and Weir (1998) propose that comprehension ability requires two language skills, which are language comprehension and language decoding. They also claim that to perform better reading skills, the readers must connect their prior knowledge, which is relevant to what they have read, to new knowledge. Moreover, language decoding is conceived as an essential element for reading comprehension. It encourages readers to recognize and process a reading text (Devine, 1987b; Urquhart & Weir, 1998). Similar to Wijaya (2015) states that the readers should be equipped with automatic word recognition skills, have the vocabulary and grammatical knowledge, activate their background knowledge, place themselves in the text, and recall what they read.

Besides, Rohman (2017) proposed that meaningful learning was determined by how the learners' prior knowledge was organized to incorporate new knowledge. In these words, the reader must be able to understand and to choose the essential information from a text, and the readers must be able to use their prior knowledge for comprehending a text what they have read. If the readers do not have background knowledge about a text, they may encounter difficulties in comprehending, or they have to work hard to catch the meaning of a text. As well as Bruning, Schraw, Norby, and Ronning (2004) propose that readers' comprehension is created within the knowledge framework that is activated prior knowledge to read and comprehend a text. Also, Setyawan (2018) proposes that the most effective way to comprehend reading is to see it as a process of active guessing in which the readers use various kinds of clues to understand a text.

Goodman (1972) clarifies that reading comprehension consists of three components. Firstly, background knowledge is the process of applying decoding skills with word knowledge, substantial background knowledge, and the reader's experiences with the idea expressed in a text. Secondly, Metacognition enables readers to interpret,

integrate critique, infer, analyze, connect, and evaluate the ideas in a text. Readers should be equipped with sequencing, summarizing, comparing and contrasting, drawing conclusions, distinguishing, and problem-solving skills. The last one is text structure; it is a method involving language procedures in selecting appropriate vocabulary, grammatical rules, and pragmatic connection governing language use to convey readers' reflections of the texts.

Reading comprehension is separated into four levels of skills; literal, interpretative, critical, and creative (Heilman, Blair, & Rupley, 1990; Smith, 1994). These four levels correlate with the classes of cognitive behaviors. The literal level of reading comprehension relates to "Knowledge." Likewise, comprehension and application related to the interpretive level. Analysis and evaluation are involved in the critical level, and synthesis is involved in the creative level. The following table clarifies in great detail of each level of reading comprehension.

Table 2: Level of reading comprehension skills

Literal Level	This level is the simplest. At this level, Questions are factual and detailed. The skills needed for this level are nothing-factual data, sequence, chronology, and enumeration.
Interpretive Level	The reader is required to see the significance of the data, to note various relationships such as cause-effect and relation of the part to the whole, to make a comparison, to draw conclusions and inference, and to generalize.
Critical Level	At this level, the students learn to evaluate and judge the information and the writer's use of language for guiding the reader's interpretation, noting evidence of the writer's bias, his qualifications, his point of view, intent, and truthfulness.
Creative Level	This level requires the reader's involvement with the information presented as he uses it to formulate or rethink ideas of his own. The question at this level might consist of open-ended queries, which require the reader to include his knowledge.

(Heilman et al., 1990)

In short, the literal level of reading comprehension involves acquiring information that is directly stated. The interpretive level involves "reading between the

lines" of making the inference. The critical level involves evaluating written material. The creative level involves formulating and rethinking ideas. From the description above, it can be stated that each level requires different abilities or skills. The interpretive level requires a higher skill than the Literal. However, the current study aimed to develop students' reading comprehension at the literal level that students can identify the main idea, facts, sequent of events, and the characters in a text.

2.2.5 Reading Models

Reading is an interactive process in which readers construct a meaningful representation of a text using practical reading skills. Readers interact with a text as they try to extract meaning, and that results in reading fluency. It requires the ability to discern printed letters, identify these letters as the components of words, and interpret the meaning of these words. Because of this inherent ambiguity of the reading process, there have been no less than three theoretical models that have been developed to explain the process. Rumptz (2003) classifies three reading models. There are bottom-up model, top-down model, and interactive model.

Bottom-up model

The bottom-up model of reading ability is primarily concerned with the recognition of individual letters, phonemes, and words. The "phonics" movement would best typify this view. This model believes that the reading process begins with individual recognition of letters and phonemic counterparts. This knowledge then leads to the recognition of individual words of the text presented to the reader. The meaning of the whole text is a process of building an understanding of individual letters to the word level, then to the sentential level, and finally, the next level. This is represented in our model as lexical control, for the model ignores any of the psycholinguistic and metacognitive strategies. The data are understood solely from this bottom-up process. The emphasis is on the printed text and what the reader receives from this, rather than the knowledge that the reader brings to this text (Lipson & Wixson, 1991 as cited in Rumptz, 2012).

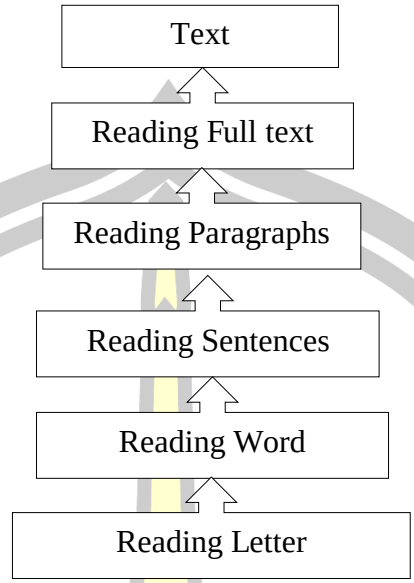


Figure 1: Bottom-up Model

Top-down Model

Top-down theory suggests an opposite movement of bottom-up models, and it argues that comprehension begins with readers' contribution, i.e., from higher levels of processing, and readers only resort to lower levels selectively. Typical top-down theory is Goodman's oft-quoted view of reading as a ―psycholinguistic guessing game. From the perspective of top-down theories, reading is seen as a constant process of guessing. Readers process reading, not by reading every word. Instead, they sample the text, predict what may come next, and then sample the text again to confirm their predictions (Grellet, 1981). The amount of reading that readers process depends on how well they can guess the meaning. Such theories also suggest that readers can use meaning and grammatical cues to identify obscure words, and reading for meaning is the primary objective of reading rather than mastery of letters, letter/sound relationships, and words (Gove, 1972; Smith, 1994). For the reader, the most crucial aspect of reading is the amount and kind of information gained through reading.

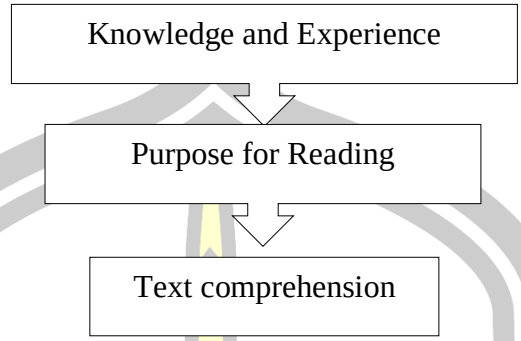


Figure 2: Top-down Model

Interactive Model

The interactive model is the combination of both the top-down model and the bottom-up model, which is now widely considered as a comprehensive explanation of how the readers derive the meaning of a written text. Referring to Rumelhart (1978), useful reading requires both bottom-up and top-down decoding. The readers can adopt top-down reading to make up for deficits in bottom-up reading. To obtain meaning, they apply their schemata to make up for the absence of bottom-up knowledge. This model is based on information from various sources like orthographic, lexical, syntactic, semantic knowledge, and schemata. While readers are reading, decoding processes support each other. If they do not understand texts, they should apply their previous knowledge to help them. This process consists of maintaining the text information, activating the readers' prior knowledge and retrieving it from long-term memory, integrating the information into the coherent discourse, and finally deriving the meaning of the text (Shahnazari & Dabaghi, 2014). Readers who are dependent on the top-down model use textual signs, but they should make up for deficiencies like weaknesses in word identification and lack of effective bottom-up processing. Likewise, Samuels and Kamil (1998) explain that this model as an interactive model of reading that allows compensating weakness in any of the processing levels by processing at other levels. If the readers have a weakness at the lower level of word recognition, the readers can compensate this by the use of the knowledge about the topic of the text. This model results in the most effective processing of texts. Teachers

should find reading instructions according to this model to boost readers' skills. The mutual teaching method is a reading instruction based on the interactive model.

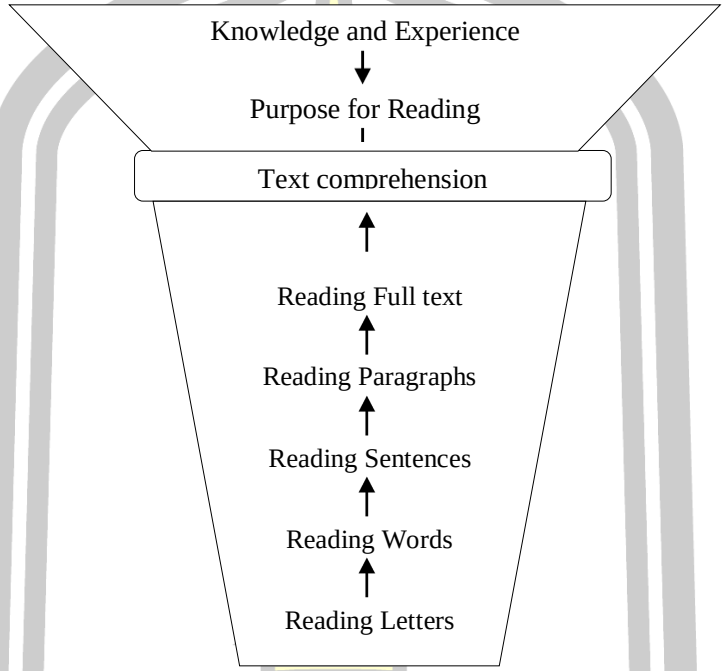


Figure 3: Interactive Model

As noted above, there are three reading models, which clarifies how the learners interact with a text: bottom-up, top-down, and interactive model. The bottom-up model firstly focuses on the phonics movement because they believe that the reading process begins with individual recognition of letters and phonemic counterparts. In contrast, the top-down model believes that comprehension begins with the readers' contribution. The quality of reading depends on how well the readers can guess the meaning and grammatical cues but reading word by word. The last model is the interactive model, which is the combination of the bottom-up model and the top-down model. Furthermore, the current study focused on the interactive reading model based on the procedures of the integration of Web-based instruction and KWL-Plus in improving students' reading comprehension at a literal level.

2.2.6 Reading Assessment

Assessment is an essential component way to measure learning outcomes. The assessment aims to measure the success of education and training. Therefore, education, training, and assessment should not be imagined to be separate from each other. However, it is essential that the assessment should be reliable and valid. To assess reading comprehension is perceived to be challenging, because it can be difficult to determine how students really know and what they are thinking.

Klingner, Vaughn, & Broadman (2007) highlights that reading comprehension assessment has different purposes. The types of assessment tools and activities, which teachers adopt should be considered by the purposes of the assessment. According to Klingner et al., (2007) argues that there are different types of comprehension assessment in reading. There are norm-referenced tests, criterion-referenced tests, curriculum-based assessment, curriculum-based measurement, interviews and questionnaires, observation, retelling, and think-aloud.

Table 3: Different Types of Comprehension Assessment

Types	**Descriptions**
Norm-referenced tests	Published tests administered under standardized conditions (e.g., with computerized answer sheets, timed); students' scores are compared with those of a normative sample.
Criterion-referenced tests	Students' test scores are compared with predetermined criterion levels that indicate mastery of a skill or content; informal reading inventories are a type of criterion-referenced test.
Curriculum-based assessment	Tests are based on the actual curriculum used in the classroom, and students are assessed regularly, and their progress is monitored.
Curriculum-based measurement	Students are assessed frequently with standard, brief tests; scores are monitored over time to assess progress.

Interviews and questionnaires	Students respond orally or in writing to a list of questions designed to assess their understanding of the reading process and their knowledge of reading strategies.
Observation	Examiners observe students' reading behaviors, using checklists, anecdotal records, or ethnographic note-taking.
Retelling	Students are prompted to retell or reconstruct what they remember about what they have just finished reading.
Think-aloud	Students are prompted to voice their thoughts before, during, and after reading.

(Klingner et al., 2007)

In summary, reading assessment should be reliable and valid. To assess students' comprehension, the instructor should focus on the purposes of reading. From the review, the scholar suggests some types of reading comprehension assessment: norm-referenced tests, criterion-referenced tests, curriculum-based assessment, curriculum-based measurement, interviews and questionnaires, observation, retelling, and think-aloud. However, the current study creates reading comprehension test based on criterion-referenced tests to assess students' reading comprehension skills. The students are required to pass fifty percent of the posttest of the reading comprehension. Having discussed the reading, the following section addresses instructional technology.

2.3 Instructional Technology

This section reviews instructional technology. Then, the definition of computer-assisted language learning as well as clarifies the concept of theory, which grounds the concept of CALL. Web-based instruction is also mentioned, including the definitions, salient characteristics, advantages, and limitations. The following is a brief description of Computer-assisted language learning (CALL).

2.3.1 Definition of instructional technology

There has been a growing interest in technology in the field of language learning and teaching. The range of technology available for use in the language classroom has become very diverse. Bryan and Salazar (2017) defined instructional technology as the ability to share information using media-based technology to facilitate interaction between teachers and students in the classrooms. Similarly, Min (2019) proposed that instructional technology is an interesting tool that contributes to students' learning performance, which is widely adopted in all levels of education system in recent decades, and she claims that the instructional technology has a positive impact on students' learning performance. Moreover, the instructional technology is delivered through computers, which intend to promote learning (Clark & Mayer, 2008). According to the reviews, the instructional technology is a tool for promoting students' learning performance via technology in the classrooms.

2.3.2 Computer-assisted Language Learning (CALL)

Computer-assisted Language Learning (CALL) in language teaching involves the use of computer technology to help in the process of presenting, reinforcing, and assessing learning materials that emphasize interactive elements. CALL also involves the use of Information and Communication Technologies (ICT) in learning and teaching a second or foreign language ranging from research to course development. Several Researchers express the definitions of CALL in various ways. Levy (1997) defines that CALL is "the search for and study of applications of the computer in teaching and learning." The main aim of CALL is to find ways for the teaching and learning of language. To be more specific, CALL is represented by the use of computer technology to promote learning via computer programs such as word processing, presentation packages, guided drills and practice, tutorials, games and simulations, multimedia CD-ROMs, and internet applications such as e-mail, chat, and websites for language learning purposes. Beatty (2003) defines CALL as a language learning process, which requires the adoption of computers, and that CALL is a relatively new branch in the field of applied linguistic. Likewise, Hashmi (2016) asserts that CALL is used to facilitate learning through teaching materials and is focused on learning rather than teaching. CALL materials are not teacher-centered but instead student-centered to

promote self-paced learning. It does not refer to the use of a computer by only the teacher to prepare teaching materials.

The constructivism approach is the basis for designing CALL. Some of these characteristics include learner construction of meaning, social interaction to help students learn, and problem-solving in "real world" contexts. Constructivism theory is a learning theory (Dewey, 1938; Piaget, 1973; Vygotsky, 1987), which emphasizes that knowledge formation is a function of learners' ability to form this knowledge in their context of their own experiences (Duffy & Jonassen, 1992). Likewise, Glasersfeld (1989) states that the approach encourages the students to construct their learning based on their experiences, and teachers should encourage students to connect their experiences and what they have learned. The constructivism approach perceives that the students construct their understanding individually by connecting the previous knowledge and interacting with their context. Hong, Holton, and Lai (2001) state that teachers should be the facilitator and coaches to monitor to make sure that the students achieve their learning. As can be seen from previous studies, students can gain in-depth understanding by connecting the knowledge and the context and interact with their peers and teachers. CALL is built adopting constructivism principles, which provides the students to construct their own learning, promotes teacher as a coach and facilitator, and offers the meaningful authentic material.

2.3.3 Web-based instruction (WBI)

The use of some web information for classroom activities not only gets the learners closer to their reality but also provides both instructors and learners the opportunities to exchange knowledge. Further, it has given access to authentic and wider-knowledge. Web-based instruction has been developed for educational use, such as Web-based instruction (WBI), distance distributed, or online learning. One of the most popular is WBI, which becomes an even more powerful interactive source for increasing learners' knowledge and guarantees quantity and quality of language input and output. Khan (1997) states that the use of the web as an educational tool provides the learners and instructors with a broader range of new and interesting learning experiences and teaching environments, not possible in the traditional class environment.

The concepts of WBI in teaching and learning have received increasing attention over recent years. Several researchers define the definitions of WBI. Web-based instruction (WBI) could be defined as the use of internet World Wide Web (WWW) as the means to access authentic course materials, administer tutorials and quizzes, or to interact with the learners (Khan, 1997; McKimm, 2003; Relan & Gillani, 1997; Sherry & Wilson, 1997). Moreover, WBI is considered as a tool in providing information or knowledge to contribute to the practical instruction through WWW (Relan & Gillani, 1997). Besides, the WBI environment requires teachers' support and foster.

2.3.4 Web-based instruction features and components

The internet provides a practical, flexible, and efficient tool for enhancing learning and accessing the latest information. WBI is becoming an even more powerful interactive tool that increases learners' knowledge, and that guarantees quantity and quality of language input and output. Khan (1997) separates the features of web-based instruction into two categories: key features and additional features. Key features are an integral part of the WBI design, such as interactive and multimedia systems. On the other hand, additional features are secondary tools assisting WBI designs, such as ease of coursework development. Some keys examples of key features and additional features are as follows:

1. Key Features: Interactive, multimedia, open system, online search, device-distance-time independent, globally accessible, electronic publishing, uniformity worldwide, online resources, distributed, cross-cultural interaction, multiple expertise, industry-supported, learner-controlled.

2. Additional Features: Convenient, self-contained, ease of use, online support, authentic, course security, environmentally friendly, non-discriminatory, cost-effective, ease of coursework development and maintenance, collaborative learning, formal and informal environments, online evaluation, virtual cultures.

Furthermore, Maddux (1996) states that there are some unique features of WBI include 1) information on the WWW can be made interactive, and 2) it often makes use of multimedia, including graphics, sound, and animation. In terms of pedagogical

features of WBI, WBL facilitates communication, enhances interactions, provides student-centered, self-paced, and collaborative learning, disseminates shared information, and reaches out to global communities.

2.3.5 The advantages and limitations of web-based instruction

Web-based instruction is becoming even more powerful in increasing learners' knowledge and motivation. The utilization of WBI is considered as a useful tool in providing a rich and stimulating educational environment. There are several advantages and limitations in designing, developing, and delivering Web-based instruction. This section shows the advantages and limitations of WBI given by several researchers.

A large number of educational institutions and organizations are seeking to take advantage of WBI, such as increased accessibility and improvement in learning. WBI is seen as a useful tool in supporting students with rich information at a low cost. Moreover, WBI provides teachers with an efficient way of delivering course materials and facilitating assessment and documentation of educational objectives (Alessi & Trollip, 2001; Arkorful & Abaidoo, 2014; Cook, 2007; Mudawee & Mudawee, 2016; Sarıca & Çavuş, 2008). Due to internet capability, WBI plays additional roles. These include promoting and facilitating enrollment into courses, posting and submitting assignments, interacting with teachers and fellow students, and building a learning community (Olson & Wisher, 2002).

In the same way, Alessi and Trollip (2001) propose that WBI facilitates communication among learners and teachers because learners can interact with their teachers or among themselves as well as Moore and Kearsley (2011) claim that the interaction between teacher and students through WBI allows for quick feedback, support guidance directly from the teacher. Also, it provides a learner-centered learning environment and promotes learner autonomy. Some students find out that interacting in this way less threatening and feel less vulnerable compared with face to face interactions such as putting one's hand up in class or speaking out loud publicly (Senthi, 2013) as well as when the learners are anonymous, and they will feel free to express their opinions and answer. It will also invite the unexpected or related response from the learners especially when it comes to collaboration or open-ended question activity

(Sanmugam, Selvarajoo, Ramayah, & Lee, 2019). That is many learners fear to answer in front of others, worry the answer could be wrong and they might feel judge by others.

Although WBI holds a great promise for delivering powerful and efficient learning, a great many limitations exist. In WBI, the instruction is delivered to individual students at different locations, so the instruction lack of interaction and non-verbal feedback from teachers (Bernard, 1997). Furthermore, students may face some technological obstacles (Cook, 2007; McManus, 2000; Rashid, Kadiman, Zulkifli, Selamat, & Mohd, 2016). Unsatisfactory internet access and technical problems can interrupt students while they are accessing their computers. The web is not a preference if the learners cannot gain access to an internet-connected to their computers. These suggest that teachers should provide good quality of internet connection and the orientation for WBI before utilizing it. Arkorful and Abaidoo (2014) claim that without clarifications, the offer of explanations, as well as interpretations from teachers, web-based instruction might be less effective than the traditional instruction. Similarly, Olson and Wisher (2002) propose that teachers should become the facilitators of knowledge, guiding the students rather than telling them what to do via WBI.

It can be concluded that WBI is seen as a powerful tool in the educational field. WBI offers many advantages to educational institutes and organizations. Teachers should adopt the advantages of WBI in order to design effective courses and materials. However, the limitations of WBI should be taken into consideration in WBI designing. The appropriate use of WBI requires an investigation of both the advantages and limitations before deciding to utilize WBI to meet the course objectives. Since technology supports students to adjust their learning process, they can access a lot of information that the traditional classroom cannot provide. The current study attempted to investigate the integration of technology and teacher instruction in improving students' reading comprehension. Web-based was considered as the main technology instruction integrating with KWL-Plus as a teacher instruction.

2.4 Know-Want-Learn Plus (KWL-Plus)

This section shows the overview of KWL-Plus techniques, its definitions, the procedures of KWL-Plus in reading comprehension, why it is crucial. It is also included the definition of semantic mapping, which is considered as the essential component of the Plus stage.

KWL-Plus

The KWL technique was firstly developed by (Ogle, 1986). Since its origin, the technique has been used as an instructional reading strategy. As a reading technique, it helps new teachers engage learners from the beginning of a reading lesson by activating prior knowledge. Ogle (1986) states that the use of the KWL technique enhances the learners to predict what they read the set of questions they are going to answer. Piper (1992) proposes that the KWL technique is a common method used by teachers to assist students in activating their schema before reading, to improve comprehension, and organize their thoughts following the reading. After that, Ogle and Carr (1987) have revised the KWL technique into the KWL-Plus technique, in short for know, want, and learned plus mapping and summarizing. They add semantic mapping in the last procedure to encourage the students to summarize and present what they have learned. The KWL-Plus technique is the blueprint that is adopted for leading the students to comprehend a reading text.

Several researchers have attempted to use KWL-Plus in improving students reading comprehension. For example, Siribunnam and Tayraukham (2009) claim that the KWL Learning method focuses on analytical reading for encouraging students to gain thinking skills such as what or how to think. The students are trained to think, plan, set a goal, check their thinking abilities, and manage the data system for further study by themselves. The tradition of teaching reading simply instructs students to directly read a passage and answer some comprehension questions that follow. This approach does not let the new information last longer in students' memory. On the contrary, KWL-Plus directs learners to involve in constructing their ideas before, during, and after reading a text. These continual stages allow the new concept from the passage to stay longer in learners' long-term memory.

2.4.1The definitions of KWL-Plus

KWL-Plus is the technique, which advocates the students to gather the knowledge they know about the topic before they get into reading assignments. The technique guides the learners before, during, and after reading by brainstorming what I know, listing what I want to know, and recalling as well as reflecting on what I just learned, and if possible, performing a further reading. Several Researchers define the definitions of KWL-Plus as follows.

Ogle and Carr (1987) state that KWL-Plus means that students are asked to do more reorganizing of what they have learned by making a semantic map or graphic organizer of the vital information. KWL-Plus is a strategy that requires students to take stock of what they know before they dive into reading and then think about the vital information with making semantic mapping and graphic organizers. As well as, Stahel (2008) proposes that KWL-Plus is a process which the teacher generates a discussion about a text topic and uses a chart or worksheet to record learners' statements about What I KNOW (K), What I WANT to know (W), and, after reading, What I LEARNED (L). The following clarifies the detail in each stage.

Know Stage (K)

Before reading an article, people's adult minds begin to activate what they already know, hear, experience, or believe about the given topic. A great number of studies attest to the role of prior knowledge or schema (plural: schemata) in ESL/EFL reading comprehension skills. For all these reasons, in pre-reading activities, teachers should help the students to access their schemata through different activities. Media such as pictures or photographs, real objects, a video might be occupied to that end. Besides, teachers can facilitate an oral discussion or uttering some questions to the students related to the topic. Teachers then write what the students mention on the board until they run out of ideas.

Want Stage (W)

In the W stage, students can individually list some questions that they are curious about. Once students finish writing their big questions in their minds, teachers

can give them the text to read. In some cases, the task types for reading might differ based on the students' competence. Teachers can vary the task type, such as asking students to work in pairs or small groups.

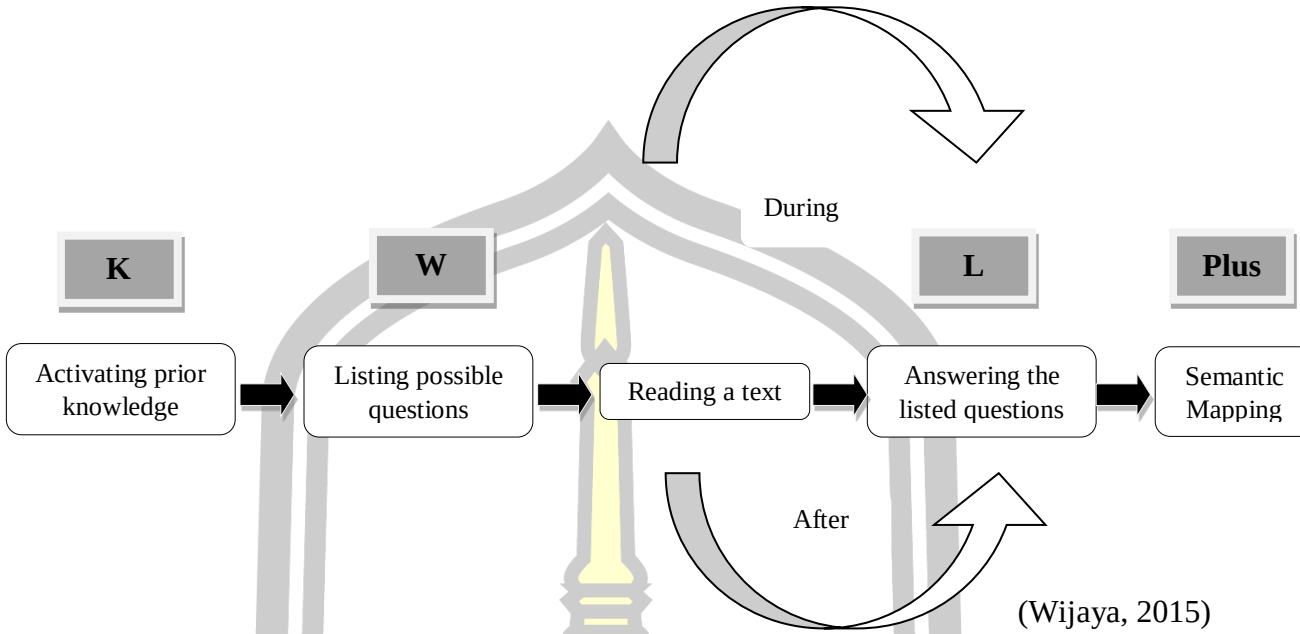
Learned Stage (L)

Students fill out the L column after finishing reading. They finish their reading first then continue to answer their previous questions. In this research context, sometimes students left some questions unanswered, as the text did not provide the information they wanted to know. The researcher usually asked the students to do further reading to fulfill their curiosity.

Plus Stage

This stage is the summary of a reading text, which engages the learners in constructing the meaning from a text and advocates the learners to become independent readers. The plus stage requires the learners to create a semantic mapping to organize their ideas by writing in their language. The semantic mapping is an organized arrangement of the concepts, which reveals what students already know about the topic and provides them with a based upon which they can construct the new information learned from the topic. It is very effective in improving students' reading skills and it encourages students to focus on the reading materials by letting them write down whatever they think of while they are reading the topic.

To sum up, KWL-Plus serves four basic advantages for the learners as follows. Firstly, before reading, the students elicit their prior knowledge of the topic they are going to read. Secondly, during reading, the learners construct their purposes for reading by listing some questions which they need to know about the topic; 3) after reading since they monitor their learning. Finally, the learners summarize what they have learned by creating semantic mapping to organize the ideas.



(Wijaya, 2015)

Figure 4: KWL-Plus implementations

KWL-Plus technique on reading comprehension procedures

The technique provides the KWL chart for activating students' prior knowledge from the topic. By asking students what they already know, students are encouraged to think about their background knowledge or experiences about the topic. There are What I know (K) column, What I want to know (W) column, and What I have learned (L) column. The chart shows a pre-while-post reading stage that must be completed by the students during the implementation. The first two sections are required to fill out students' prior knowledge related to the topic. The chart encourages students to become active readers while they are reading. It can be utilized as a classroom instrument. It is a solution to synthesize the information into the chart. Moreover, the students focus on what they have done and what they still would like or need to do. Figure 4 illustrates KWL chart as follows.

Topic …….

K What I know	**W** What I want to Know	**L** What I learned

Figure 5: KWL Chart

The KWL-Plus technique provides the systematic stages in the proceeding and setting the purposes to lesson as follow (Samtaikomsun, 2012):

Pre-reading activity

In this stage, firstly, before teachers assign students to read, teachers conduct the activity to activate learners' prior knowledge by giving them the topic which they are going to read. Secondly, teachers then examine what learners have already known about the topic and ask them to write in the worksheet in column K. Thirdly, learners list some questions about what they want to know more about the topic and then write in the worksheet in column W.

While-reading activity

In while reading stage, teachers encourage students to search for the information to answer from Column W and note down some keywords. Moreover, students are allowed to ask more questions if they need to know more about the topic. There are some questions that students cannot find the answers. These questions are discussed in the next stage.

Post-reading activity

In this stage, students write down the new knowledge that they gain from a text in column L. Students discuss and take turn asking and answering the questions, which they cannot answer with their peers. They help each other to summarize the topic and write down the keywords into semantic mapping.

In conclusion, KWL-Plus enables students to activate their prior knowledge and operate their thinking to memorize their information. Moreover, the technique

encourages students to become active learners in the learning process. Teachers provide guidance and support for the learners to learn on their own. In consequence, KWL-Plus is the appropriate technique for teaching reading comprehension. The students enable to express what they want to learn, and the classwork is relevant to the students' needs; therefore, many students are interested in finding out the unanswered information from other resources.

2.5 Instructional Scaffolding and Zone of Proximal Development (ZPD)

The zone of proximal development (ZPD) refers to a level of development when children engage in social behavior. Full development of the ZPD depends on social interaction and the range of skills that can be developed with adult guidance or peer collaboration. Wood, Baker, and Ross (1976) develop the term "instructional scaffolding," which produces Vygotsky's ideas of ZPD. They define scaffolding as support, which teachers or knowledgeable peer supplies to students with their ZPD that enable them to develop the understanding that they would not have been capable of understanding independently. Most scholars believe that the term scaffolding was firstly used in this educational sense by Wood, Bruner, and Ross (1976) to describe the interactions between mothers and children in which the mother assists the child and provides feedback without actually giving the child the correct response when that particular child is ready to ride independently (Graves, Graves, and Braaten, 1996).

2.5.1 Scaffolding in the classroom

Several scholars have attempted to examine the use of scaffolding strategies in the classroom. Tharp and Gallimore (1988) indicate scaffolding, contingency management, feeding-back, instructing, questioning, and cognitive structuring as a means of assisting students' performance in the classroom. They point out that teachers should be thoughtful and selective in choosing these strategies based on the individual movement of students through their individual zones of proximal development. As well as, Dole, Brown, and Trathen (1996) identify that teachers scaffold students' comprehension through the use of strategies such as cueing, prompting, use of analogies and metaphors, questioning, elaborations, and remodeling.

To sum up, the scaffolding instruction is developed from the ZPD, which is the basis of the social constructivism theory (Vygotsky, 1987). The scaffolding is adopted in class in order to advocate students to achieve the tasks, which is beyond their ability.

2.6 Related studies

This section presents the related studies of web-based instruction and KWL-Plus in the field of language teaching and learning both in Thai context and others as follows. The studies on WBI are firstly presented.

2.6.1 Web-based Instruction

To begin with, Duangdee and Deerajviset (2018) conducted a web-based lesson focusing on reading skills. The lesson was conducted in Khon Kean University, where the participants were graduate students who enrolled in "Reading in English for Graduate students' Course." The instruments were reading pre-test and posttest, web-based lessons, questionnaire, and the interview. The findings revealed that the web-based lesson was considered as a practical and useful tool for improving reading skills as well as students gained more positive attitude towards learning via web-based lessons.

Rungsawang and Torat (2017) investigated investigate the effectiveness of Web quest activities focusing on reading and writing abilities as well as to examine the students' attitude towards Web Quest with twenty-four students who enrolled in the English for Tourism Business course. The findings revealed that there was a significant difference in students' mean scores of pre-test and posttest, and the participants had positive attitudes towards Web Quest activities. Besides, the researcher suggested that further study should provide the orientation about the content, grammar features, styles, and how to use Web Quest to prepare students for reading and writing Web Quest activity, and teachers should be the facilitator in class.

Mudawe and Mudawe (2016) have investigated the effectiveness of Web-based instruction used as a tool and resources in fostering students reading and writing skills, and students' cultural awareness. The participants of the study were one hundred fifty

EFL students at the university level because they had at least completed seven to eight semesters and were expected to cover most of the course requirements. The result of the study revealed that there was a statistically significant difference between the control and experimental group in comprehending a reading text. It was worth mentioning that the use of web-based tools and resources have empowered students to tackle some reading barriers, especially those associated with insufficient vocabulary knowledge.

Aksoniran (2015) has conducted a study to investigate the effectiveness of web-based instruction on students' ability to use verb tenses on undergraduate students in a Thai university. The participants of the study were eighty-first-year students by using two stages of random sampling. The result of the study revealed that Web-based instruction had an impact on students' abilities. Meanwhile, there was no statistically significant difference in students' opinions between low and high achievers using WBI.

Dehghanpour and Hashemian (2015) have investigated the effect of teaching reading strategies through WBI to Iranian EFL students. The participants of the study were thirty upper-intermediate level students from an English institute for the experimental group. The group received the twenty-hour reading strategy training via WBI. Students practiced four general reading strategies through three stages of cognitive theory: cognitive, associative, and autonomous. The result of the study indicated that the students' usage of reading strategy increased significantly, and they performed better at the reading comprehension tasks via WBI and traditional instruction. Moreover, the students had a positive attitude towards Web-based reading strategy instruction.

According to the related studies, it can be concluded that WBI enables students to use some reading strategies to tackle reading comprehension. Not only WBI can be used as a useful tool and resources in learning but increase independent study as well. However, the studies suggested that teachers should provide the WBI orientation to prepare students, and the scaffolding should be integrated to assist students while they are learning via WBI. The related studies on KWL-Plus are reviewed as follows.

2.6.2 KWL-Plus

Dongoran and Antoni (2018) have conducted classroom action research to explore the impact of KWL strategy on grade eight reading comprehension of the narrative text. Two cycles of action research were adopted, and each cycle had four meetings included eighty minutes per meeting. The participants of this study consisted of twenty-three students in one intact class. The instruments adopted were reading comprehension, which was conducted at the end of every cycle, observation, field notes, and interview. The finding of the study revealed that students' reading comprehension of narrative text the average students score in cycle two was higher than cycle 1. It could be summarized that the KWL strategy helped promote reading comprehension skills.

Panthong and Chansang (2017) have investigated the effectiveness of the KWL-Plus technique in developing grade six students' reading comprehension and motivation in the northeastern of Thailand. The participants of the study involved eleven grade six students who were selected by purposive sampling technique. The findings suggested that students 'reading comprehension posttest score was a statistically significant difference from the pre-test score, and the students had higher motivation after receiving the treatment. The researcher claimed that the KWL-Plus technique helped promote students' critical thinking and collaborative learning.

Lou (2017) implemented the integration of an internet-based language laboratory (IBLL) and KWL-Plus model in investigating non-English-majored undergraduates' translation skills. The participants of the study involved one hundred and thirty-six students divided into two groups, control, and treatment group. The findings suggested that the treatment group gained posttest scores higher than the control group. According to the interview, students had a positive attitude towards the integration of the KWL-Plus technique and IBLL.

Kornpanchaikun and Plongbunjong (2013) conducted the study to develop reading skills by using KWL-Plus activity as the supplementary exercise. The activity was conducted to examine the students' satisfaction towards KWL-Plus technique of fourth-grade students. The result of the study indicated that the students' posttest means

the score was statistically significantly different from the pre-test, and the questionnaire revealed that students had high satisfaction towards the KWL-Plus technique. Thus, it could be stated that the KWL-Plus technique helped promote reading comprehension.

Regarding the related studies, KWL-Plus significantly helps promote students reading comprehension. It also reveals that KWL-Plus is working well in teaching reading comprehension. The technique provides a thinking process for students in dealing with reading and offers some reading strategies.

To sum up, the previous studies support that the integration of Web-based instruction and KWL-Plus enables students' reading comprehension as the related study conducted WBI and KWL-Plus in many countries. The shreds of evidence show that most of the studies implement only WBI at the tertiary level. However, using the integration of WBI and KWL-Plus to develop the reading comprehension of secondary school students in Thai context has not been investigated yet as the evidence found in the previous studies. The current study aimed to investigate whether the integration of WBI and KWL-Plus helps enhance secondary school students' reading comprehension.

2.7 Summary of the chapter

The current study aimed to investigate the impact of the integration of WBI and KWL-Plus in improving students' reading comprehension at the literal level. Course and curriculum are designed based on two strands and indicators related to the reading area of The Basic Education Core Curriculum B.E. 2551 (A.D. 2008). The study defines reading comprehension as the ability to comprehend the ideas at the literal level of comprehension, in which students are able to answer simple questions. An interactive reading model combining bottom-up and top-down model is utilized, and curriculum-based assessment is adopted to assess students' reading comprehension. Web-based instruction is considered as the key component of the current study integrating with instructional scaffolding, KWL-Plus, to promote grade seven students' reading comprehension. Detail of research methods is given in the next chapter.

CHAPTER III
RESEARCH METHODS

This chapter presents how the current research was conducted. The chapter provides information regarding participants, setting, and research instruments. It also details data collection procedure and data analysis.

3.1 Participants and setting

The participants whose ages range from 12 to 13 were drawn from one intact classroom of twenty seventh-grade Mini English Program (MEP) at a government secondary school in Northeastern Thailand. The group was selected by purposive sampling procedures. The students in the program are taught in English in three main subjects: English, Mathematics, and Science by foreign teachers with a total number of six hours a week. Due to the fact that the researcher as a teacher was responsible for teaching a supplementary English course for this group, and the teacher thus had the best insight into what issues in the classroom were. The participants were of mixed English proficiency levels and genders. The reading instruction was frequently teacher-fronted environment, which adopted grammar translation in the reading class. Teachers utilized a textbook as the main reading material in teaching reading. To instruct the reading, teachers translated a text into L1, and asked students to answer questions about a text. These students have been through a Thai formal education, which required them to take English as a compulsory subject at school. All of them have at least six-year experience of studying English. Their English scores according to the Ordinary National Evaluation Test (ONET) show a low proficiency level, particularly the reading part. It showed that they had difficulty in understanding and drawing key information stated in a text. Moreover, the participants have never been instructed to adopt the integration of technology and teacher scaffolding in reading class, which provides some reading strategies, and student-centered environment.

3.2 Research instruments

To answer the two research questions, the researcher utilized three research instruments, which encompass reading comprehension pre-test and posttest, students' attitudes questionnaire, semi-structured interview, and the integration of Web-based instruction and KWL-Plus lesson plans. The descriptions for each instrument are clarified as follows.

3.2.1 Reading Comprehension tests

The reading comprehension tests were given as the pre-test and posttest in this study. The tests, based on Thai Core Curriculum, were administered to all participants before and after the treatment. Each test contained three passages based on the students' proficiency and students' background knowledge. The tests included thirty items taken from seventh-grade level supplementary English textbook; 1) Spider Webs, 2) The Zoo, and 3) Growing Deserts. The pre-test and posttest were the same set of questions and reading passages. The test included 15 multiple choices items, and 15 for short answer items. The passages provided in the test were appropriate for the student's language proficiency, and the questions were set to elicit the exact information of the passages.

The participants completed the test via a google form. Time allocation was an hour. The aims of the overall pre-test and posttest were to assess the students' reading comprehension and to compare the test score to see whether the students have improved their reading comprehension. Moreover, the questions in the reading test focused on the literal level of comprehension, which is categorized by Heilman et al. (1990).

The validity and reliability of the reading comprehension pre-test and posttest

The content validity of the test items was evaluated by three experts in the field of language testing. The experts were asked to rate each item whether it was congruent with the objectives and the literal level of comprehension by utilizing the evaluation form constructed by the researcher. Then, the Index of Item-Objective-Congruence (IOC) was calculated by assigning scores to the answer as follows:

Congruent = 1

Questionable = 0

Incongruence = -1

The data obtained from the experts were interpreted. The items IOC value higher than 0.5 was accepted. In contrast, the items were lower than 0.5 must be revised. The result indicated that reading comprehension pre-test and posttest items were rated higher than 0.5 that 27 items out of 30. That was to say that the items were congruent with the objectives and the literal level of comprehension. Three items needed to be revised by adjusting the word choices and the relevance with the passages.

A pilot study was conducted after the revision of the reading comprehension test with the additional thirty students who were studying in grade eight in secondary school in the northeast of Thailand. The form of the test analyzed using SPSS in order to ensure the reliability. The criteria for the difficulty index and the discrimination index were presented as follows.

The Difficult Index

$p < 0.20$	means the item was difficult
$p = 0.20\text{-}0.80$	means the item was good in terms of its difficulty
$p = 0.81\text{-}0.94$	means the item was easy
$p \geq 0.95$	means the item was very easy

The Discrimination Index

$r = 0$	means the item had no discrimination ability
$r \geq 0.19$	means the item had low discrimination ability
$r = 0.20 – 0.29$	means the item had fair discrimination ability
$r = 0.30\text{-}0.39$	means the item had high discrimination ability
$r \geq 0.40$	means the item had very high discrimination ability

The results of reading comprehension test reliability and the difficult index indicated that the items were good in terms of its difficulty (p = 0.48). In terms of the discrimination of index, the items had very high discrimination ability (r = 0.67). The result indicated that both of them had high reliability.

3.2.2 A students' attitude questionnaire

The students' attitude questionnaire is designed to examine grade seven students' attitudes towards learning English reading comprehension based on the integration of the WBI and KWL-Plus technique. The questionnaire of the current study is categorized into three aspects. The first aspect focused on the attitudes towards the use of WBI in class. The second was students' attitude towards scaffolding instruction in reading class, which is adapted from Afzal (2013). The last aspect focused on the attitudes towards KWL-Plus (Saiyod, 2009). Each aspect consisted of five items, including fifteen items. To measure the questionnaire item, the researcher adopted a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

There was a five-point Likert rating scale of 1-5 (1= strongly disagree, 2= disagree, 3 uncertain, 4= agree, and 5= strongly agree). The participants were required to mark the numbers 1, 2, 3, 4, and 5, which reflected their attitudes on the questionnaire. A mean score obtained from students' attitudes questionnaire was interpreted by the following range: Very high = 4.5-5.00, High=3.50-4.49, Moderate= 2.50-3.49, Low= 1.50-2.49 and Very low= 1.00-1.49. Three experts in English instruction were asked to evaluate the content validity. The experts were graduate students in the field of English Language Teaching, or a person who was promoted in Senior Professional Level. The experts were asked to rate each item whether it was congruent with each aspect of the questionnaire by utilizing the evaluation form constructed by the researcher. Then, the Index of Item-Objective-Congruence (IOC) was calculated by assigning scores in the form. The result obtained from the experts indicated that the items were congruent with the aspects of the questionnaire higher than 0.5 (0.894).

3.2.3 Semi-structured interview

After the last period of the implementation, the researcher provided a semi-structured interview in Thai for all participants to keep track of their learning and collect data regarding students 'attitudes towards the integration of web-based instruction and KWL-Plus. The interview questions focused on students' feelings, satisfaction, perceptions, opinions, and attitudes towards the integration of web-based instruction and KWL-Plus. The interview lasted ten minutes for each student and was audio-recorded. The semi-structure interview questions were selected based on three aspects of the students' attitudes questionnaire included WBI, scaffolding instruction, and KWL-Plus. The students were asked ten questions in order to express how they responded to the use of the integration of Web-based instruction and KWL-Plus in improving reading.

3.3 Data collection procedure

To answer the two research questions in this study, the data collection procedures were illustrated by the flowchart as follows.

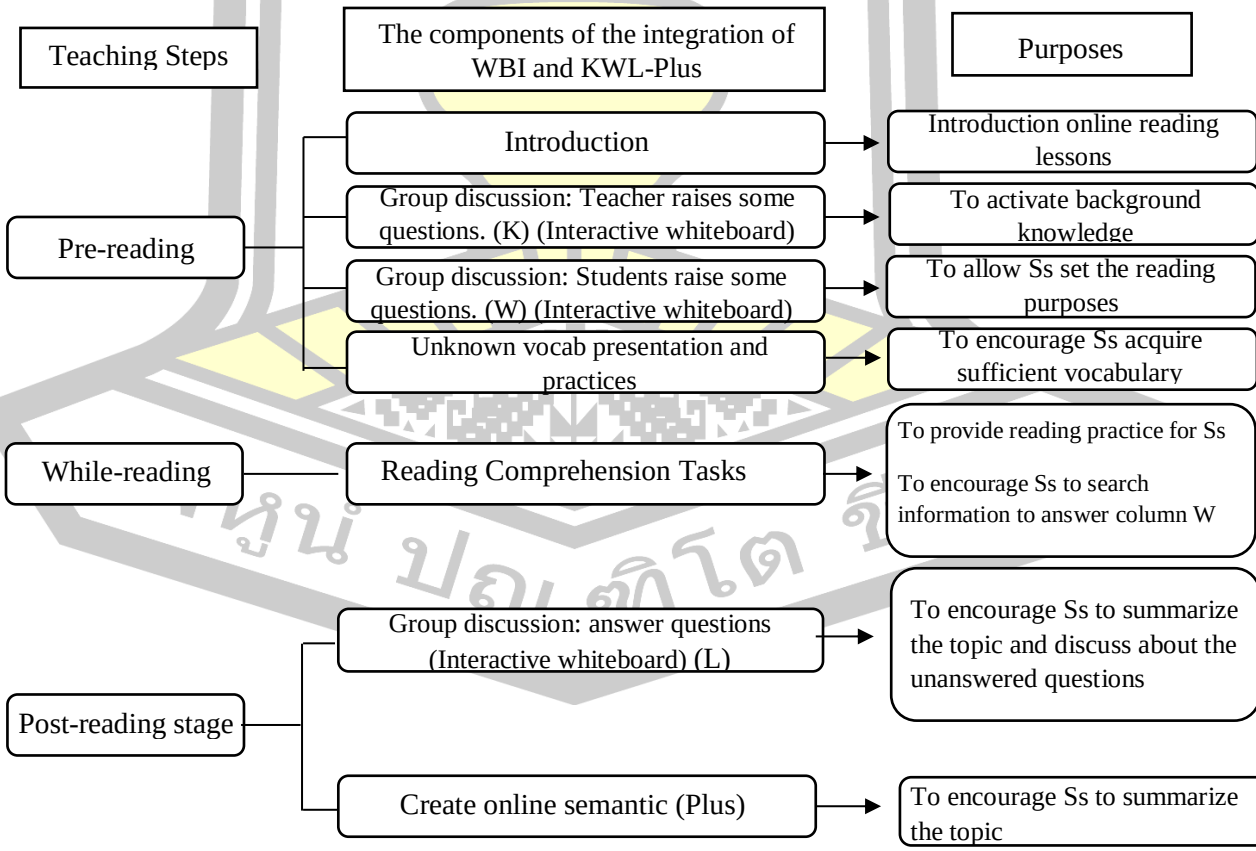


Figure 6: The procedures of the current study

Before the implementation of the study, the class training was provided to inform students of the objectives and what the current study was trying to investigate, and to establish the guidelines for the integration of WBI and KWL-Plus step-by-step. The students became familiar with the pattern of training so that they would not get lost while using it. The researcher, as a teacher, implemented a pre-test to assess students' prior knowledge and reading comprehension skill.

The reading implementation was subsequently divided into three stages: pre-reading, while-reading, and post-reading based on the KWL-Plus concept. In the pre-reading stage, the pre-test was administered to all students in the participants via web-based. The teacher then presented the online reading lesson to the students. Firstly, a set of questions related to the passages were asked through the interactive online whiteboard as a group discussion. Students activated their background knowledge together with shared knowledge with their peers. While they were having a group discussion, the students filled what they had known in the K column in the KWL chart. The unseen vocabulary was presented after a group discussion, which was presented by using images, sound, and their pronunciation. Besides, the vocabulary activities were provided to encourage students to get familiar with the vocabulary.

Then, in the while-reading stage, the students were assigned to achieve online reading. Students found the information from the given topic to answer the questions from the pre-reading stage. The teacher provided the scaffolding for students by preparing a link of dictionary for checking the meaning of unknown vocabulary, and a channel to interact with the teacher and peers for discussing the topic, the search engine for searching for more information. The teacher assigned students to note down some key words and write down the new knowledge they obtained from the passages. Moreover, students were asked to summarize the passages by creating online semantic mapping and shared with their peers through the interactive online whiteboard. Students received immediate feedback from teachers and peers, and other students tried to analyze peers' semantic mapping and seek for the missing information. After finishing creating the semantic mapping, a posttest was administered to check students' improvement in reading comprehension skills in the post-reading stage. In this teaching process, the teacher's roles were to facilitate and guide the students to perform the

reading. The teacher used some questions to lead the students to lesson. Likewise, the students conducted their reading with teacher's facilitation.

To examine students' attitudes towards the integration of WBI and KWL-Plus, The researcher collected the data to answer this research question by utilizing five-Likert scales obtained from the students' attitude questionnaire and semi-structured interview. The students' attitude questionnaire and the interview were conducted to all students in class in the last period of the implementation. The following table shows the descriptions of the lesson plans used in the current study.

Table 4: The framework of the lesson plan

Time	Topic	Activities
1	Pre-test	WBI and scaffolding
Week 1/1	Environment: Too Much Traffic	Background activation (K) via WBI and scaffolding
Week 1/2	Environment: Too Much Traffic	Brainstorming and questioning (W) via WBI and scaffolding
Week 2/1	Environment: Too Much Traffic	Monitoring Understanding via WBI and scaffolding (L)
Week 2/2	Environment: Too Much Traffic	Topic summarization via WBI and scaffolding(Plus)
Week 3/1	My space	Background activation (K) via WBI and scaffolding
Week 3/2	My space	Brainstorming and questioning (W) via WBI and scaffolding
Week 4/1	My space	Monitoring Understanding via WBI and scaffolding (L)
Week 4/2	My space	Topic summarization via WBI and scaffolding(Plus)
Week 5/1	King of the sea	Background activation (K) via WBI and scaffolding
Week 5/2	King of the sea	Brainstorming and questioning (W) via WBI and scaffolding
Week 6/1	King of the sea	Monitoring Understanding via WBI and scaffolding (L)
Week 6/1	King of the sea	Topic summarization via WBI and scaffolding(Plus)
Week 7/1	Sepak Takraw	Background activation (K) via WBI and scaffolding

Week 7/2	Sepak Takraw	Brainstorming and questioning (W) via WBI and scaffolding
Week 8/1	Sepak Takraw	Monitoring Understanding via WBI and scaffolding (L)
Week 8/2	Sepak Takraw	Topic summarization via WBI and scaffolding(Plus)
1	Posttest	WBI and scaffolding

(Adopted from Maximize your score: Reading 1)

The current study adopted two cycles of action research, which included plan, action, observation, and reflection. According to the result from the first cycle, the second cycle was conducted after finishing the first two lesson plans to solve problems. The steps in the first cycle were repeated, but with more improvement based on students' problem observed in the previous cycle. The cycles of action research procedures are presented as follows.

Table 5: Action Research Procedures

Cycle	Descriptions
1	***Planning*** - Prepared Chapter 1 and 2 lesson plans - Prepared teaching materials (the integration of Web-based instruction and KWL-Plus reading lessons) - Prepared the guidelines for the classroom orientation ***Action*** - The teacher informed students about the objectives of the course and the guidelines for the students. - Teacher conducted the implementation. ***Observation*** - The teacher observed students' participation in the implementation, the activeness in the class, and the problems occurring in the classroom. ***Reflection*** - After the observation, the teacher evaluated the implementation.

	The result from the observation indicated that students had some problems with the word recognition, and the long passages demotivated students in reading. These problems caused students to get low scores.
2	***Planning*** - Prepared Chapter 3 and 4 lesson plans - Prepared teaching materials (the integration of Web-based instruction and KWL-Plus reading lessons) ***Action*** - Teacher conducted the implementation with more improvement based on the problems occurring in the first cycles. Two vocabulary activities were added to advocate students improve their word recognition. The passage used was separated into the short paragraph, and added more some images, which help students to form the ideas about the reading passages. ***Observation*** - The teacher observed students' participation in the implementation, the activeness in the class, and the problems occurring in the classroom. ***Reflection*** - After the observation, the teacher evaluated the implementation. The result from the observation indicated that students could reach the target scores. So, the researcher did not continue to the next cycle of action research. The integration of Web-based instruction and KWL-Plus was effective for students in improving their reading comprehension.

3.4 Data analysis

This study aimed to investigate the impact of the integration of WBI and KWL-Plus to develop secondary students' reading comprehension, as well as examined the students' attitudes towards the integration of WBI and KWL-Plus. The collected data were analyzed quantitatively.

To answer the first research question, the collected data from the pre-test and posttest of reading comprehension were analyzed. Firstly, the scores collected from the pre-test and posttest were calculated to examine the percentage and the mean scores, and then the mean scores of the reading comprehension pre and posttests were compared to see whether there was a statistically significant difference by using t-test of SPSS. All participants were required to complete the test before and after the implementation. The participants took approximately an hour to complete the test. The researcher analyzed using the mean scores, whether there was the posttest scores were higher than the pre-test. Secondly, the students' attitude towards the impact of the integration of WBI and KWL-Plus, the self-rating scale was calculated using standard deviation (S.D.), and the mean scores. The result of the data indicated the students' attitudes towards the integration of WBI and KWL-Plus. All participants completed the questionnaire and participated in the semi-structured interview, which conducted a week after the implementation. The semi-structured interview was conducted in Thai by the researcher and lasted 15 minutes for each participant. The interviews were audio recorded and transcribed for the data analysis to examine students' attitudes towards the implementation. The data obtained from the semi-structure interview was analyzed using content analysis.

3.5 Summary

This chapter presents the research methodology starting with participants and setting, research instruments consisting of reading comprehension pre-test and posttest, students' attitudes questionnaire, and semi-structure interview. It then discusses the data collection procedures, including teaching procedures. The last section presents the data analysis methods for the quantitative data and qualitative data. The next chapter provides the findings of the current study.

CHAPTER IV
RESULTS

This chapter presents the research findings on how the results address the two research questions. The chapter is divided into two sections. The first section presents the data from the students' scores of pre and post-tests to analyze the impact of the integration of WBI and KWL-Plus. In terms of students' attitudes, the last section reports the data analysis from the students' attitude questionnaire and semi-structured interview.

4.1 Does the integration of WBI and KWL-Plus have an impact on secondary school students' reading comprehension?

This research question determined whether the impact of the integration of Web-based instruction and KWL-Plus improved secondary school students' reading comprehension scores. The researcher administered reading comprehension pre-test and posttest to address this research question. The mean score from the reading comprehension pre-test and posttest were analyzed using the t-test—Table 6 below illustrates students' reading comprehension pre-test and posttest mean score.

Table 6: Students' reading comprehension pre-test and posttest scores
* Significant at the 0.01 level ($p<0.01$)

	N	Mean	Std. Deviation	t	Sig.
Pre-test	20	15.55	5.652	6.931	.000**
Posttest	20	22.80	2.949		

As shown in Table 6 the overall mean scores of reading comprehension pre-test and posttest of the students are significantly different at the 0.01 level (t= 6.931). The overall mean score of students' reading comprehension pre-test is 15.55 with the standard deviation of 5.652, in contrast, after the implementation; the mean score of the students' reading comprehension posttest is 22.80 with the standard deviation of 2.949. The latter score is significantly higher than the former score. The results of the paired t-test indicate that the integration of Web-based instruction and KWL-plus helped

improve students' reading comprehension, and overall students have developed their reading comprehension.

4.2 What are the students' attitudes towards the integration of Web-based Instruction and KWL-Plus?

This section presents the students' attitudes towards the integration of Web-based Instruction and KWL-Plus. The researcher conducted this research through a questionnaire to collect students' attitudes, opinions, feeling, and comments about the impact of the integration of web-based instruction and KWL-Plus, which improve their reading comprehension. Twenty students completed the questionnaire. 100% of the respondents; 35% were male (7 students), and 65% were female (13 students). The questionnaire consisted of three aspects; WBI, scaffolding instruction, and KWL-Plus. A mean score derived from the students' attitudes was interpreted by the following range: Very low = 1.00 – 1.49, Low = 1.50 – 2.49, Moderate = 2.50 – 3.49, High = 3.50 – 4.49, and Very high = 4.50 – 5.00 (Likert, 1932). The summary of the overall mean score is presented in the following table.

Table 7: The overall mean score of the students' attitudes questionnaire

Items	Descriptions	$\bar{x}$	S.D.	Results
1	Aspect 1: Web-based Instruction	4.52	.64	Very high
2	Aspect 2: Scaffolding Instruction	4.50	.63	Very high
3	Aspect 3: KWL- Plus	4.50	.66	Very high
Total		**4.51**	**0.64**	**Very high**

N=20

As can be seen in Table 7, the overall mean score of the students' attitudes questionnaire is 4.51, with a standard deviation of 0.64. The result indicates that the students have positive attitudes towards the integration of Web-based instruction and KWL-plus in improving reading comprehension. The highest mean score obtained for the first aspect; it reveals that Web-based instruction help improved students' reading comprehension, and students are satisfied with this aspect at a very high level (4.52). The results also reveal that scaffolding instruction and KWL-Plus help them to improve

their reading comprehension as well, the mean scores at very high levels (4.50) respectively. The following section presents the mean score of the students' attitudes in each aspect.

Table 8: Aspect 1: Web-based instruction

Items	Descriptions	$\bar{x}$	S.D.	Results
1	I use reference materials (e.g., online dictionary) to help me understand what I read.	4.49	.594	High
2	The lesson provides tables, figures, videos to increase understanding of the passage.	4.58	.562	Very high
3	I can go back and forth in the passage at any time and anywhere.	4.52	.651	Very high
4	The lesson and activities help improve my reading comprehension skill.	4.51	.744	Very high
5	Online semantic mapping helps me comprehend the passages.	4.50	.652	Very high
Total		**4.52**	**.64**	**Very high**

N=20

The first aspect of the questionnaire asks about the students' attitudes towards reading via web-based. The overall mean score is ($\bar{x}$) 4.52, with a standard deviation of .64. The highest mean score falls into item no.2; it indicates that learning reading via web provided tables, figures, and videos, could increase the understanding of the passages at the highest mean score ($\bar{x}$) 4.58 with the standard deviation of .562. The students reports that they could go back and forth in the passage at any time and anywhere at the mean score ($\bar{x}$) 4.52 with the standard deviation of .651. They agree that the lesson and the activities on web-based help them improve their reading comprehension skill at the mean score ($\bar{x}$) 4.51 with a standard deviation of .744. They report that online semantic mapping help them organize and comprehend the passages at the mean score ($\bar{x}$) 4.51 with a standard deviation of .652. The students also reveal that they use the reference materials, for example, an online dictionary during reading to assist them to understand what they read at the mean score ($\bar{x}$) 4.49 with the standard deviation of .594. According to the results, students have a positive attitude towards reading via web-based instruction at a very high level.

Table 9: Aspect 2: Scaffolding Instruction

Items	Descriptions	$\bar{x}$	S.D.	Results
1	The teacher always helps me understand difficult concepts in reading.	4.54	.594	Very high
2	The teacher's help makes me feel at ease, comfortable, and less stressed during reading.	4.45	.627	High
3	The teacher assists me when I encounter complicated tasks.	4.49	.662	High
4	Teacher's observation and monitoring help me improve my reading comprehension.	4.54	.638	Very high
5	Clear directions and explanations help me meet my reading goals.	4.48	.640	High
Total		**4.50**	**.63**	**Very high**

N=20

The second aspect focuses on scaffolding instruction. This aspect aimed to examine the students' attitudes toward the teacher's scaffolding techniques while they were reading via web-based. The findings shows that the students perceive scaffolding instruction as a useful technique in their online reading. The overall result indicates that students have positive attitudes towards the scaffolding instruction with the total mean score ($\bar{x}$) 4.50 and a standard deviation of .63. Students report that they find teachers' assistance is essential to them in understanding the difficult concepts in reading as well as the teachers' observation and monitoring are found to be useful for them in improving their reading comprehension at the same mean score ($\bar{x}$) 4.54 with a standard deviation of .594 and .638 respectively. They reveal that when they encounter complicated tasks, teacher always assists and helps them to solve the problems with the mean score ($\bar{x}$) 4.49, and a standard deviation of .662. Given clear directions and explanations, assists them meet their reading goals with a mean score ($\bar{x}$) 4.48 with a standard deviation of .640. They agree that teacher made them feel at ease, comfortable, and had little stress during the reading at the mean score ($\bar{x}$) 4.45 with the standard deviation of .627. The findings present that the students perceive the utilization of scaffolding instruction in an online reading classroom useful since they believe that it facilitates them to understand some difficult concepts and complicated tasks.

Table 10: Aspect 3: KWL-Plus

Items	Descriptions	$\bar{x}$	S.D.	Results
1	Asking and answering questions about what I have known helps me to form the idea. (K)	4.52	.651	Very high
2	Making questions about what I want to know pursues me to read the passage. (W)	4.51	.653	Very high
3	I found that group discussion helps me gain more information about the reading. (L)	4.52	.616	Very high
4	The semantic mapping helps me to organize and summarize a text. (Plus)	4.52	.699	Very high
5	I am willing to continue reading when I have some unanswered questions.	4.41	.693	High
Total		**4.50**	**.66**	**Very high**

N=20

The last aspect of the questionnaire is the students' attitudes towards KWL-Plus techniques. The overall mean score is 4.50, with a standard deviation of 0.66. It can be concluded that KWL-Plus helps students improve their reading comprehension. Moreover, they have positive impressions and interests in reading utilizing the KWL-Plus strategy. Students report that asking and answering questions about what they have known help them form ideas, and they find that the group discussion enables them to gain more information about the passages, both are in a similar mean score ($\bar{x}$) 4.52. Likewise, they reveal that, the semantic mapping helps them organize and summarize the passage after finishing reading. They agree that making questions about what they want to know encourages them to read the passages with the mean score ($\bar{x}$) 4.51 with the standard deviation of .653. The latter also illustrates that they are willing to continue reading when they have some unanswered questions with a mean score ($\bar{x}$) 4.41 with a standard deviation of .693. Although the item gets the lowest score, it still is a high positive attitude; it reveals that the students prefer to continue their reading when they still have some questions about the reading.

The results from the semi-structured interview

The semi-structured interview was addressed to ten participants to gather the qualitative data to elicit in-depth information from the students towards the integration of Web-based instruction and KWL-Plus randomly. Due to students' low English proficiency levels, the semi-structured interview was conducted in Thai language and the collected data were categorized into ten items. The following table shows the students' attitudes towards the integration of Web-based instruction and KWL-Plus.

Table 11: The students' attitudes semi-structured interview

No	Descriptions	Interview excerpts
1	How did the reference materials or tables, figures, and videos help you during reading?	**Participant 1**: When I encounter some difficult words, I always use google translation to find the meaning of those words. **Participant 2**: I do not like reading too many words. I appreciate that the teacher adds some photos and diagrams in reading to make it more attractive and easy to read**.** **Participant 3**: If I want to know more information about the passages, I use google to find the information.
2	What online activities, help you improve your reading comprehension?	**Participant 1**: When I answer the questions wrongly in a traditional classroom, I feel embarrassed. The interactive whiteboard makes me feel at ease, answering questions even though it could be wrong. **Participant 2**: I like vocabulary hunting activity. It is so much fun to complete. It is challenging that all participants are on the screen so I can know which position I am. I try to finish the activity because I want to be the first person who reaches the top.

3	How did you feel about reading online?	**Participant 1**: I feel that online reading is exciting and fun. **Participant 2**: I encounter some difficulties in using the computer, so I feel that I am slower than my friends are.
4	What difficulties did you encounter while performing online reading?	**Participant 1**: The internet connection is not stable. While I am doing the activity, I cannot continue doing it. **Participant 2**: I am not good at using a computer, so I use more time to complete the activities.
5	What was your experience with online reading?	**Participant 1**: I have read fiction and cartoon online before. **Participant 2**: I have never read online before. I use the internet to play games.
6	How did you feel about the teacher's assistance during online reading?	**Participant 1**: I feel more confident when the teacher guides me during reading. **Participant 2**: I am happy that the teacher provides some questions before reading passages. It encourages me to activate my background knowledge. **Participant 3:** I am satisfied with the quick feedback from the teacher. When I have some questions, I can ask her straightaway.
7	How did teacher's assistance help your reading comprehension?	**Participant 1**: She provides us with an online dictionary and a channel to contact her directly. **Participant 2**: She asks us some questions to guide us in reading.
8	What happened after you had an online group discussion before reading?	**Participant 1**: I gained some information about the reading passages. **Participant 2:** I think interactive whiteboard allows us to share ideas and concepts.

9	How did asking and answering questions affect your reading comprehension?	**Participant 1**: The teacher asks some related questions to help me connect my background knowledge and new knowledge**.** **Participant 2:** A teacher asks some questions before reading help me activate my background knowledge, which reminds me of some forgotten words.
10	After finishing the lesson, are there any changes to your reading comprehension.	**Participant 1:** I think reading is not difficult if we know how to comprehend the text. **Participant 2:** I will continue reading via the web because online reading is more enjoyable than a textbook. **Participant 3:** My reading comprehension has improved because I have learned how to read and comprehend the passages.

The data collected from the semi-structured interview suggests that the majority of the students had a positive attitude towards the integration of Web-based instruction and KWL-Plus. The results from the semi-structured interview shows that the students enjoyed performing an online reading. Only a small number of respondents indicate that Web-based instruction is not practical for them. In conclusion, it is indicated that the integration of Web-based instruction and KWL-Plus help improved students' reading comprehension.

4.3 Summary of the results

This chapter shows the results of the study according to two research questions. The explanations for each question are as follows: The first question was "Does the integration of WBI and KWL-Plus have an impact on secondary school students' reading comprehension?" and the second was "What are the students' attitudes towards the integration of Web-based Instruction and KWL-Plus?"

For the first question, the results revealed that the students' reading comprehension has improved after receiving the implementation of the integration of web-based instruction and KWL-Plus. The mean scores were analyzed from the pre-test and posttest to examine the students' improvement. Moreover, the different scores before and after the implementation illustrated that the integration of web-based instruction and KWL-Plus was effective in improving students' reading comprehension. The overall mean scores of reading comprehension pre-test and posttest of the students were significantly different at the 0.01 level (t= 6.931). It can be concluded that the implementation helped improved students' reading comprehension.

In the second question, the questionnaire together with the semi-structured interview, were analyzed to answer this question. According to the obtained data, the students' attitudes towards the integration of web-based instruction and KWL-Plus was at a very high level. The result revealed that reading via web-based providing figures, tables, and videos help improved their reading comprehension since they evoked students' interests in reading. The next chapter, therefore, moves on to the discussion

CHAPTER V
DISCUSSION AND CONCLUSION

This chapter provides a discussion of the findings from the research according to the current literature. The chapter presents the conclusion of the study, together with the discussion reference to reading comprehension, web-based instruction, and KWL-Plus. Furthermore, the overall attitudes of the students towards the integration of Web-based instruction and KWL-Plus, the conclusion of the study, pedagogical implication, limitations of the study, and recommendations for further studies are provided.

5.1 Summary of findings

The aims of the study are to investigate the impact of the integration of Web-based instruction and KWL-Plus in developing a literal level of reading comprehension. The two main objects of the study were; 1) To investigate the impact of the integration of Web-based instruction and KWL-Plus of secondary school students' reading comprehension; 2) To examine the students' attitudes towards the integration of Web-based instruction and KWL-Plus.

The study was conducted with one intact classroom, 20 grade 7 students in a government secondary school in the northeast of Thailand. The participants were selected with purposive sampling procedures. The pre-test and posttest were administered as a quantitative measurement, together with the analysis of the questionnaire. The semi-structured interview was provided for qualitative data measurement. The duration of the experiment lasted eighteen hours implemented during supplementary English subject twice a week, included nine weeks, four lesson plans. The study adopted two cycles of action research. The first cycle included lesson 1 and 2, and the second cycle was 3 and 4, which solved the problem occurred in the first cycle. Before starting the implementation, the teacher provided one hour for class training for the students to become familiar with the web-based lesson. The web-based lesson was created based on the integration of Web-based instruction, KWL-Plus, and scaffolding instruction. After finishing all the lessons, the students were asked to complete the attitudes questionnaire and the semi-structured interview.

The results of the study revealed that the integration of Web-based instruction and KWL-Plus has an impact on the students' reading comprehension. According to reading comprehension, the pre-test and posttest were significantly different at the 0.01 level. The students could answer the fundamental questions about the topic, and specify the main idea as well as summarize the topic into semantic mapping. Interestingly, the students could guess the meaning of the sentences even though they did not know the meaning of every word. It can be concluded that the integration of Web-based instruction and KWL-Plus helped improved students' reading comprehension.

Moreover, the students' attitude towards the integration of Web-based instruction and KWL-Plus questionnaire reported that the students had a positive attitude at a very high level (4.51). It leads to the conclusion that the students had positive attitudes with the integration of Web-based instruction and KWL- Plus. These results also gave support to previous studies that the students performed better at the reading comprehension tasks through Web-based instruction and scaffolding instruction (Dehghanpour & Hashemian, 2015).

5.2 Discussion

The findings indicated that the integration of Web-based instruction and KWL-Plus helps improve students' reading comprehension. The findings suggest that integration has an impact on this reading class, as the students could access to read anytime and anywhere. Moreover, they can improve their reading comprehension through the web by receiving assistance from a teacher, and they can benefit from online reading classes at their convenience.

According to KWL-plus, the students have been trained to think, plan, set a goal, check their thinking abilities, and manage their knowledge before reading through the web, which provided a collaborative environment and reference materials to support reading (Arkorful & Abaidoo, 2014). Web-based instruction also allowed the interaction between teacher and students for quick feedback, support guidance directly from the teacher (Moore & Kearsley, 2011), the students could exchange ideas and discuss reading about the relevant details. Furthermore, a teacher provided cueing, prompting,

and questioning to guide the students while they were performing online reading (Dole, Brown, & Trathen, 1996).

5.2.1 Reading Comprehension

Based on the reading comprehension pre-test and posttest, the overall mean score of the pre-test was 15.55. In contrast, the mean score of the post-test was 22.80. The findings of the current study indicate that learning reading with the integration of Web-based instruction and KWL-Plus influenced students' reading comprehension according to their reading comprehension pre-test and posttest scores. Moreover, the findings also reveal that the students performed better at reading comprehension, recommending the advantages of the integration of Web-based instruction and KWL- Plus in reading classes, especially in secondary schools. Before students started reading, a teacher provided the title, unseen vocabulary, and some pictures for them so that they could assume what they were going to read. Moreover, they could guess what the messages conveyed by the writer from the passages were. Setyawan (2018) proposed that the most effective way to comprehend reading is to see it as a process of active guessing in which the readers use various kinds of clues to understand a text. The interview excerpts could support this finding.

> "Talking about the title of the passages, it prompts me to be ready before reading; especially the unknown vocabulary advocates me to comprehend the passage even though I do not know all the meaning in the passages."
>
> (Student 1)
>
> "Practising unknown vocabulary helps in guessing the meaning of the words because I can imagine the picture of that vocabulary while I am reading the passage." (Student 2)

Schema and vocabulary knowledge had a significant impact on understanding about reading comprehension. The effective readers utilized their schema in pre-reading activities in which related to the passages. The various activities in the pre-reading stage helped activate students' prior knowledge, which encouraged students to link their background knowledge to new information and created their meaning. To meet these purposes, the teacher asked students some preliminary questions, which related to the

topic to lead them to the topic. Conducting group discussions aroused them to access their prior knowledge before reading to allow them to share ideas with their peers. At the first cycle of the current study found that the activities were not as practical as expected. Few students did not have the background knowledge about the passages; therefore, it could not be easy for students to read the passages. In these words, the readers must be able to use their prior knowledge for comprehending a text what they have read (Urquhart & Weir, 1998). Besides, Rohman (2017) proposed that meaningful learning was determined by how the learners' prior knowledge was organized to incorporate the new knowledge.

Furthermore, the vocabulary affected reading comprehension, as well. The students who were not mastery in vocabulary encountered some difficulties while reading. It caused them to pay less attention and gave up on reading. Due to a lack of vocabulary knowledge, vocabulary practice activities were added. The activities should be the same set of vocabulary so that students could be familiar with them. The activities were changed from two to four activities, for example, matching, fill in the gaps, guessing game, and vocab hunting. This finding is in agreement with Wijaya (2015) that the readers should be equipped with automatic word recognition skills, have vocabulary and grammatical knowledge, activate their schema, place themselves in the text, and recall what they read. The following excerpts can evidence this claim

> "A teacher asks some questions before reading help me activate my background knowledge, which reminds me of some forgotten words."
>
> (Student 3)
>
> "I cannot remember all the unknown vocabulary. When I am reading the passages, I cannot perform it well. Finally, I give up because it is too difficult for me" (Student 4)

The findings also suggest that long reading passages demotivated students to read. This is because when students saw too many words on the screen, they perceived that it was difficult, and they could not comprehend the passage. Moreover, they did not pay much attention to find the answer from the passages. Therefore, the passages were separated in a paragraph with infographics so that students could guess the meaning from the

passages. Moreover, they could create the mental image of the passages to comprehend the processes they faced during reading.

> "I do not like reading too many words. I would appreciate that the teacher adds some photos, and diagrams in reading, make it more attractive and easier to read" (Student 5)

This finding is congruent with Manowong (2017), who reported that the reading infographic could include an alternative reading activity to assist students to comprehend the passages more efficiently since they integrated words and graphics in order to present the complex information clearly and quickly together with BanouSabouri (2016) stated that visualizing was crucial for reading when it was used for narrative texts. While the students were reading, they could rapidly understand what was happening by visualizing the place and personalities of the passages.

5.2.2 Web-based Instruction

The findings of the research show that Web-based instruction affected students' reading comprehension. It was found that during reading, the students report that the audio, animation, symbol, and infographic provided in the passages helped them comprehend the specific meaning of the passage. As a reading equipped with the media, the comprehension would be facilitated. They also mentioned that the infographic was viewed as the passage presentation in a simple way, and it made the reading more motivating and easier to read. The finding is in line with Manowong (2017) that reading integrated with infographics not only encouraged students to read the passage but also create a better reading performance and allows students to practice their creativity in generating their infographic utilizing online tools.

Moreover, students also claimed that Web-based reading provided reference materials such as an online dictionary, which they could quickly confirm or check the unknown vocabulary by using the online dictionary for both vocabulary spelling and meaning. Moreover, related webs helped them to gain more information about the passage as well as they could practice their reading comprehension in the authentic passage. Students also reported that they could take the advantages of a great number of the reference materials to assist them in comprehending the reading passage. The finding is congruent

with that online dictionary facilitates students to recognize the word spelling or meaning, or the related web may encourage them to put reading strategies into practice and develop their reading competence.

> "When I encounter some difficult words, I always use google translation to find the meaning of that word." (Student 6)

The different online tools facilitated them to develop their reading comprehension as well as online literacy. The students felt that the online tools supported the interaction between students to students and students to teacher, allowing them to work collaboratively to achieve the reading goal and to receive the guidance and feedback from the teacher rapidly. The interactive online whiteboard was set in the pre-reading to conduct a group discussion. The teacher asked some questions related to the reading passage, and students were allowed to share their answers and ideas anonymously. The interaction between teachers and students through WBI allows for quick feedback, support guidance directly from the teacher. Besides, it provides a learner-centered learning environment and can promote learner autonomy (Moore & Kearsley, 2011). Some students who could not answer the question, used search engines to find the answer. Their answers were varied; some answered the question with texts, but some used images.

Moreover, some students kept posting images which were not related to the question. That was, they could exchange their ideas and discuss the reading passage without worrying about making mistakes. This finding is in line with Sanmugam et al. (2019) that web-based allows them to be anonymous so that they feel free to express their opinions and answer. It also invites the unexpected or related response from the learners, especially when collaborate or open-ended question activity is being used. The following excerpt can evidence this claim

> "When I answer the questions wrongly in a traditional classroom, I feel embarrassed. The interactive whiteboard makes me feel at ease, answering the questions even though it is wrong." (Student 7)

Students reported that they perceived the role of the teacher as immediate feedback. After finishing reading, they could submit the reading assignments then get quick

feedback from the teacher, which provided additional explanations. It encouraged students to reflect on their answers and helped them construct more understanding of the passages. The immediate feedback from the teacher provided the opportunity for them to see the effect of their action. Students who were lower in reading proficiency and in word recognition, could not perform the reading well. The teacher provided the additional scaffold by adding more word activities to maintain their comprehension in reading.

5.2.3 KWL-Plus

The finding showed that KWL-Plus helped improve students' reading comprehension in comprehending the reading passage. These findings of the study are congruent with the results of the previous studies (Dongoran & Antoni, 2018; Panthong & Chansang, 2017), which indicates that the students' reading comprehension improved utilizing KWL-Plus. Also, Kornpanchaikun and Plongbunjong (2013) claimed that KWL-Plus promotes students reading comprehension.

In this study, the students were trained to perform reading comprehension by employing KWL-Plus. The findings indicate that K (Known) stage facilitated the students to activate their prior knowledge so that they could consider what they have known about the passage. The teacher led the discussion through the Web-based and introduced a set of related questions for the students to activate their background knowledge and enhanced the students' ability to comprehend the reading passages. This finding is in line with Wijaya (2015) that effective readers should use their prior knowledge in the pre-reading stage and connect it with the new knowledge. The KWL-Plus advocated students to get over the reading difficulties while reading as they planned and monitored their comprehension. Besides, it guides students before, during, and after reading. If the students did not have sufficient background knowledge, they could not perform a better reading. The following excerpt can evidence this claim

> "The teacher asks some related questions help me connect my background knowledge and new knowledge" (Student 8)

The students revealed that W (Want to know) stage encouraged students to become active readers, and it engaged them with the reading passage. In this stage, students

raised some questions and made focus their attention on what they did not know about the reading passage. It helped students to set their goals before reading, and raised students' awareness in reading so that they looked for the specific information. It aroused students' interests due to the questions they have raised. This finding is congruent with Usman et al. (2018) that students made a list of questions about what they are expected to know from the passage. They feel curious and engage in the reading passage. Many questions have emerged in their minds. The finding also reports that the semantic mapping helped students connect the concept of the passage and summarized the main ideas and related information. The semantic mapping is the plus stage of KWL-Plus. It helps students' comprehension skills, and it has great potential for facilitating them to gain more understanding in the reading passages. The students created online semantic mapping to summarize their ideas and shared the mapping with their peers. The following excerpt can evidence this claim

> "I can summarize and comprehend the reading passage by creating the online semantic mapping." (Student 9)

As a result, KWL-plus could promote reading comprehension. For the fact that it helps generate the ideas, self-questioning, identifying the responses, summarizing the reading passage, and reflect the understanding. The next section discussed the overall attitudes towards the integration of Web-based instruction and KWL-Plus in improving reading comprehension.

5.3 The overall attitudes towards the integration of Web-based Instruction and KWL-Plus

The following discussion based on the findings of the second research question attempting to examine students' attitudes towards the integration of Web-based instruction and KWL-Plus in improving secondary school students' reading comprehension. This section discusses three aspects of the questionnaire; web-based instruction, scaffolding instruction, and KWL-Plus.

The finding from analyzing the students' attitudes questionnaire indicated that the students had positive attitudes towards the integration of Web-based instruction and

KWL-Plus with a very high level (4.51). The students felt that the integration supported poor readers increase their reading comprehension. Although the students encountered difficulties in reading for the first time, they could gain abilities in reading comprehension with more confidence and pleasure. The first aspect attempted to examine the students' attitudes towards web-based instruction. The findings show that students had positive attitudes at a very high level. Students revealed that online reading provided the tables, figures, and videos, which could increase the understanding of the passages at the highest mean score ($\bar{x}$) 4.58. Since the online reading lesson has consisted of various activities and reference materials, which helped enhance their reading comprehension. Online reading allowed students to go back and forth in the passages at their convenience. In addition, the students agreed that online reading activities helped enhance their reading comprehension.

The second aspect focused on scaffolding instruction. The finding shows that the students perceived scaffolding instruction as a useful technique in their online reading. The overall result indicated that students had positive attitudes towards the scaffolding instruction with the total mean score ($\bar{x}$) 4.50. Students reported that scaffolding instruction assisted students in comprehending the complicated concepts together with teacher observation and monitoring was beneficial for students to improve their reading comprehension. This was partly because the students practice and read with the assistance from the teacher, and they interacted with their peers while they were doing the activities. The finding indicated that while they were performing online reading, the assistance from the teacher helped them to understand the challenging concepts or the complicated task, as well as the teacher's assistance, helped them decrease reading anxiety.

The last aspect of the questionnaire focused on the students' attitudes towards KWL-Plus. The findings indicate that the overall mean score was 4.50 at a very high level. Students revealed that KWL-Plus helps students improve their reading comprehension as well as they had a positive impression and interested in reading utilizing the KWL-Plus strategy. Asking and answering the questions of what they have known enabled students to generate their ideas, and group discussion helped students gain more information about the passages. Moreover, students reported that semantic mapping

helped them organize and summarize the passages after finishing reading. Interestingly, after finishing the lesson, some students asked for more activities to practice their reading comprehension. In conclusion, the students had positive attitudes toward the integration of Web-based instruction and KWL-Plus in improving secondary school students' reading comprehension.

5.4 Conclusion

The current study attempted to investigated whether the impact of the integration of Web-based instruction and KWL-Plus improve secondary school students' reading comprehension. Furthermore, the current study examined students' attitudes towards the integration of Web-based instruction and KWL-Plus. Referring to the results of the current study, the integration of Web-based instruction and KWL-Plus helped improve students' reading comprehension at the literal level. Besides, the students expressed a positive attitudes towards the integration of Web-based instruction and KWL-Plus. The qualitative data obtained from the semi-structure interview indicated that students had positive attitudes towards the use of Web-based instruction and KWL-Plus. The integration of Web-based instruction and KWL-Plus provided the additional features, which facilitated students to improve their reading comprehension. It could be concluded that the integration of Web-based instruction and KWL-Plus enhanced students reading comprehension.

5.5 Pedagogical Implications

As mentioned in the background of the study, the traditional reading with a teacher-centered environment caused students to lose interest in their learning. A teacher plays a primary role in class, and the students are passive learners. In class, teachers chose what students learn, how they learn, and how they are assessed. Abdulkarim (2003) proposes that this is because the teaching and learning reading mostly focused on the textbook, and all readings are done in the form of intensive reading, which eventually demotivated students to learn to read. Similar to Saiyod (2009) advocates that students tended to pay much attention to grammar and vocabulary rather than the meaning of

the text, while the teacher-based teaching environment was assuming to be impractical in teaching reading. In terms of Web-based instruction, although technology opens up the abundance of opportunities to the learners, it can never replace the role of teacher in class. Though technology offers students rich and authentic resources, it cannot teach students to question, scrutinize the information, and inspire them to learn. In other words, there is no teacher-student interaction. Therefore, online language teaching and learning lacks the teacher-student interaction, which is generally presented in a face-to-face classroom (Peck & Dorricott 1994). Technology should be the teacher's assistant, playing supportive roles that can affect the students' learning outcomes.

The findings of the study implied that only teacher instruction and technology might not affect students' reading comprehension. The integration of technology and teacher instruction can be adopted in the reading class to promote the students' reading comprehension. The implementation shifts teacher-fronted to student-centered, which make the reading class more exciting and pleasurable. Moreover, the educators can apply the implementation and the findings of the current study in developing curriculum design, which adopts the integration of technology and teacher's scaffolding instruction into the class in other educational levels. However, there were limitations of the study, which are discussed in the following section.

5.6 Limitations of the study

Although the findings of the study indicated the positive result of the utilization of the integration of Web-based instruction and KWL-Plus in improving students' reading comprehension of secondary students in the northeastern of Thailand, and the students expressed the positive attitudes towards the implementation, the study had some limitations. Firstly, the passages of the reading activities were selected from the students' textbook, which is related to the subject of introduction to reading (E21105). The passages used were not varied, and they might not be interesting for students to read. Secondly, low technology literacy students affected the implementation. In each period that lasted an hour to run reading activities, the low technology literacy students took more time doing online reading even though there was training before starting the implementation. It caused other students to decreased motivation in studying for the

fact that they have to wait for those students. Finally, the time given for each period is limited. Performing the activity was not consistent, so that the students forgot the vocabulary and the topic when it came to the next class.

5.7 Recommendations for further studies

This study investigated the impact of the integration of Web-based instruction and KWL-Plus in improving secondary school students' reading comprehension in the northeastern of Thailand. Through the analysis of the findings. The implementation influenced the students' reading comprehension. The recommendations for the further studies are presented as follow;

1. Further studies should interest students in reading, and the passages should be varied.

2. The researcher should consider that students are equipped with the technology literacy so that the students do not get lost while performing the activities. In addition, the class orientation for the technology class should be suitable for students' technology literacy.

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APPENDIX

APPENDIX A: Reading Comprehension Test

Directions: *Read the passages. Then answer the questions.*

Passage 1: "Spider Webs"

All spiders spin webs. That's because webs help spiders. Webs help spiders do three things. Webs help spiders hold eggs. Webs help spiders hide. And webs help spiders catch food.

Webs help spiders hold eggs. Many spiders like to lay their eggs in their webs. The webs help keep the eggs together. Webs help spiders keep their eggs safe.

Webs help spiders hide. Most spiders are dark. They are brown, grey, or black. But spider webs are light. They are white and cloudy. When spiders hide in their webs, they are harder to see.

Webs help spiders catch food. Spider webs are sticky. When a bug flies into the web, it gets stuck. It moves around. It tries to get out. But it can't. It is trapped! Spiders can tell that the bug is trapped. That's because spiders feel the web move. And the spider is hungry. The spider goes to get the bug.

As you can see, webs help spiders hold eggs. Webs help spiders hide. And webs help spiders catch food. Without webs, spiders would not be able to live like they do. Spiders need their webs to survive!

1. This passage is mostly about_____.
a. spider colors b. spider webs
c. spider eggs d. spider food

2. Spider webs help spiders _____.
1. hold eggs 2. catch food
3. find water
a. 1 only b. 1 and 2 only
c. 1, and 3 d. 1,2 and 3

3. As used in paragraph 4, the word "trapped" most nearly means _____.

a. stuck b. hidden
c. eaten d. washed

4. How can spiders tell when something is trapped in their web?
a. They hear it. b. They smell it.
c. They feel it. d. They see it.

5. As used in the last sentence of the passage, the word "survive" means_____.
a. alive b. hidden
c. caught d. feel

6. How does the web help spiders?
_____

7. Where do spiders lay their eggs?
_____

8. What can be trapped in spider web?
_____

9. How can spiders know that the bug is trapped?
_____

10. Can spiders live without spiders web?
_____

Passage 2: "The Zoo"

If you like animals, the zoo is the place to visit. You can have fun time with your family and friends. You can take pictures with your camera and see all types of wild animal.

Some of the animals you will see are common. For example, deer are not that special, but they are beautiful animals. Other animals, elephants, are not common at all. They are also very big! Still others are quite dangerous. You do not want to get too close to the lion.

Of course, if you like animals that jump around and climb trees, go look at the monkeys. They will always make you smile. You can see all these animals and more by taking a trip to the zoo.

11. What is the passage about?
a. Taking pictures b. Visiting the zoo
c. Caring for animal d. Types of wild animal

12. Why is it better not to get too close to the lions?
a. They are big. b. They are too common.
c. They are dangerous. d. They are not that special.

13. You can take pictures with your _____.
a. elephants b. lion
c. camera d. deer

14. Which types of wild animals are not mentioned in the passage?
a. Tigers b. Monkeys
c. Elephants d. Lions

15. What animals like jumping around and climbing the trees?
a. Elephants b. Lion
c. Monkeys d. deer

16. The word "wild" describes _____
a. friends b. families
c. animals d. the zoo

17. Which animal is the most dangerous?
_____

18. Which animal is beautiful but not special?
_____

19. Can you name the wild animals, which you can see from the passage?
_____

20. This animal is big, and are not common at all. What are they?
_____

Passage 3: "Growing Deserts"

There are deserts all over the world. You can find in Africa, China, South America, and North America. In some places, deserts are growing. This is a serious problem because deserts destroy farmland and ruin land where animals live. When people cannot grow food or find animals to eat, they have to leave their homes.

Sometimes, nature can cause deserts to spread. Wind can move sand away from deserts and onto useful land. When there is no rain for a long time, plants die and deserts grow. However, humans can also cause deserts to grow. This is called desertification, and it happens in many ways. One way is when people cause too much air pollution, which can make an area hotter. Hotter weather can reduce the amount of rain as well. Too many people in one area can also damage the land. In addition, having many animals can harm the land. When large animals like cows walk on soil too much, they turn it into dust. The wind easily blows this dust away. Trees help hold water in the ground. When people cut down too many trees, less water stays in the ground, and the soil is ruined.

All of these things can speed up desertification. To stop deserts from growing, people must think of ways to treat the land better.

21. What is the main idea of the reading passage?
a. Where the world's deserts are
b. How people live in deserts
c. Why some deserts are growing
d. How cows can stop deserts from growing

22. Where are deserts found?
a. Africa and South America
b. The United States and China
c. On useful land
d. All around the world

23. Which is not a cause of desert growth?
a. No wind b. Using land too much
c. No rain d. Many animals

24. How do humans cause desert growth?
a. By causing pollution
b. By eating only vegetable
c. By planting trees
d. By moving sand

25. How can humans stop desert growth?
a. By using bicycles
b. By raising more cows
c. By cutting down trees
d. By having fewer children

26. Why people cannot grow food?
_____

27. If there is no rain for a long time, what will happen?
_____

28. Give an examples of what causes desert growth
_____

29. Does the hot weather reduce the amount of rain?
_____

30. What should people do for reducing desert growth?
_____

APPENDIX B: Questionnaire

Students' attitudes towards the integration of Web-based instruction and KWL Plus

Direction: Please respond to the following items by placing a check mark (√) in the rating scale according to your opinion

5 = strongly agree 4 = agree 3 = uncertain

2 = disagree 1 = strongly disagree

Items	5	4	3	2	1
Aspect 1: Web-based instruction 1. I use reference materials (e.g., online dictionary) to help me understand what I read.					
2. The lesson provides tables, figures, video to increase understanding about the passage.					
3. I can go back and forth in the passage at anytime and anywhere.					
4. The lesson and the activities help improve my reading comprehension skill.					
5. Online semantic mapping help me comprehend the passages.					
Aspect 2: Scaffolding Instruction 6. The teacher always helps me understand difficult concepts in reading.					
7. The teacher's help makes me feel at ease, comfortable, and less stressed during reading.					
8. The teacher assists me when I encounter complicated tasks.					
9. The teacher observation and monitoring help me improve my reading comprehension.					
10. With clear directions and explanations help me meet my reading goal.					
Aspect 3: Known-Want to learn- Learned Plus 11. Asking and answering questions about what I have known help me to form the idea. (K)					
12. Making questions about what I want to know pursue me to read the passage.					
13. I found that group discussion helps me gain more information about the reading.					
14. The semantic mapping helps me to organize and summarize a text.					
15. I am willing to continue reading, when I have some unanswered questions.					

APPENDIX 3: Semi-Structured Interview

1. What is your name?

2. How did the reference materials or tables, figures, and video help you during reading?

3. What online activities, which help you, improve your reading comprehension?

4. How did you feel about reading online?

5. What difficulties did you encounter when reading online? Why?

6. What was your experience with online reading?

7. How did you feel about teacher's assistance during online reading?

8. How did teacher's assistance help your reading comprehension?

9. What happened after you had online group discussion before reading?

10. How did asking and answering questions affect your reading comprehension?

11. After finishing the lesson, are there any changes to your reading comprehension.

APPENDIX 4: Lesson Plans

Lesson Plan

Chapter 1: Environment: Too much traffic

Subject: Introduction to reading (E21204) Class Grade 7

Foreign Language Department Time 5 hours

1. Standard

F 1.1.4 Specify the topic and main idea and answer questions from reading dialogues, tales, and short stories

2. Learning outcome

2.1. Students can comprehend the main idea and supporting details about the passage "Environment: Too much traffic", and express opinions with the proper reasoning.

3. Teaching procedures

Stages	Teacher's role	Students' role
1. Class Orientation (1 hour)	- Inform students about the learning objectives, contents, and assessment. - Provide web-based guidelines step by step - Conduct reading comprehension pretest	- Follow teacher's instruction via google classroom - Complete the pretest
2. Pre-reading (1 hour)	- Lead in the activity by asking some questions via interactive board *What is the transportation?* *Which transportation do you like?* *What will be the problems if there are too many cars?* - Conclude the activity	- Answer varies - take note - Matching vocabulary and pictures, and vocabulary and sentences

Stages	Teacher's role	Students' role
	- Conduct the discussion for the students by giving the topic " Too much traffic." - Ask students to raise the questions about what they want to know about the topic - Conclude what students have known, and what they want to learn about the given topic	- Have group discussion, then write what they have known in "K" column (google sheet) - Be able to use the relevant information links for more information - Make some questions and write in the "W" column (google sheet) - take note
3. While-reading (1 hour)	- Assign online reading tasks - Provide online dictionary, the instant communication for students to consult with classmate and teacher, media materials, relevant network links (search engine)	- Complete online reading tasks - Answer the questions in Column "W"
4. Post-reading (1 hour)	- Assign students to write what they obtain in the "L" column - Conduct the discussion for unanswered questions via interactive board - Assign students to create semantic mapping to summarize the topic, share with their classmates - Give feedback	- Write what have learned in the "L" column (google sheet) - Find more information via relevant network links (search engine) - Share ideas and opinions - Create online semantic mapping - Share their semantic mapping, and give feedback to classmates' semantic mapping

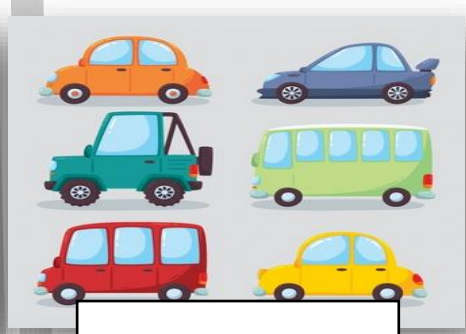
4. Assessment

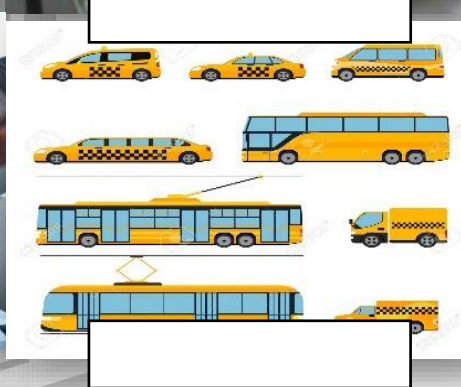
Learning outcome	Assessment tools	Criteria
1. Students are able to interpret the passage “Environment: Too much traffic”, and express opinions with the proper reasoning.	- Reading tasks	- at least 75 percent accurate
2. Students are able to use foreign language as a tool for searching the unknown information, and exchange information in their community.	- Online discussion	- Observation

1. Unknown Vocabulary

Direction: *Match the pictures and their meaning*

1. Road	2. Transportation	3. Fuel	4. Pollution	5. Public transport
6. Air-conditioning	7. Stress	8. Hurry	9. Accident	10. Vehicles





2. Reading Passage

Traffic in cities is a serious problem, and it is getting worse. Every day, especially in the morning and evening rush hours, the roads are full of vehicles from taxis to tuk-tuks. What can we do about this?

In Thailand, more people can buy their own car. Who wouldn't prefer the comfort of air-conditioning and iced coffee by their side? But when there are more cars, there are more accidents on the road, and there is also more stress and pollution.

For short trips, people should leave their cars at home. Walking is good for your health, and if someone in a hurry, they can take a motorbike taxi. For long trips, it's a good idea to ride with friends, so you can save fuel and money. People in cities should also try to use public transportation whenever they can.

Too much traffic hurts people and the environment. Everyone must be responsible, and think twice before they get in their cars.

3. Reading quizzes

Direction: *Read the passage and answer the questions*

1. Which the best title for this paragraph?

a. The advantage of cars
b. Ways to improve public transport
c. Increasing accidents
d. Solving traffic problems

2. Why does the writer think people prefer to travel by car?

a. Cars are cheap.
b. Cars are comfortable.
c. Cars can carry five people.
d. Cars are quicker than busses.

3. The writer says motorbike taxis are useful if _____

a. you need to go somewhere fast
b. you don't have much money
c. you cannot use public transport
d. you don't care about your health

4. What does the writer think about people who drive cars?

a. They are rude.
b. They are responsible.
c. They should slow down.
d. They should think twice.

Lesson Plan

Chapter 3: King of the Sea

Subject: Introduction to reading (E21204) Class Grade 7

Foreign Language Department Time 4 hours

1. Standard

F 1.1 Understanding of and capacity to interpret what has been heard and read from various types of media, and ability to express opinions with proper reasoning

F 4.2 Usage of foreign languages as basic tools for further education, livelihood and exchange of learning with the world community

2. Learning outcome

2.1. Students are able to interpret the passage "King of the sea", and express opinions with the proper reasoning.

2.2. Students are able to use foreign language as a tool for searching the unknown information, and exchange information in their community.

3. Teaching procedures

Stages	Teacher's roles	Students' roles
1. Pre-reading (30 minutes)	- Lead the discussion by asking some questions via interactive board - *What animal is the biggest in the world?* - *What is the biggest animal in the sea?* - Conclude the activity	- Answer varies - take note
2. Pre-reading (1.30 hours)	- Provide unseen vocabulary by using matching activity (with learning vocabulary online guideline)	- Matching vocabulary and pictures, and vocabulary and sentences, fill in gap, and vocabulary hunting

Stages	Teacher's roles	Students' roles
	- Conduct the discussion for the students by giving the topic " King of the sea" - Ask students to raise the questions what they want to know about the topic - Conclude what students have known, and what they want to learn about the given topic	- Have group discussion, then write what they have known in "K" column (google sheet) - Be able to use the relevant information links for more information - Make some questions and write in the "W" column (google sheet) - take note
3. While-reading (1 hour)	- Assign online reading tasks - Provide online dictionary, the instant communication for students to consult with classmate and teacher, media materials, relevant network links (search engine)	- Complete online reading tasks - Answer the questions in Column "W"
4. Post-reading (1 hours)	- Assign students to write what they obtain in the "L" column - Conduct the discussion for unanswered questions via interactive board - Assign students to create semantic mapping to summarize the topic, share with their classmates - Give feedback	- Write what have learned in the "L" column (google sheet) - Find more information via relevant network links (search engine) - Share ideas and opinions - Create online semantic mapping - Share their own semantic mapping, and give feedback to classmates' sematic mapping

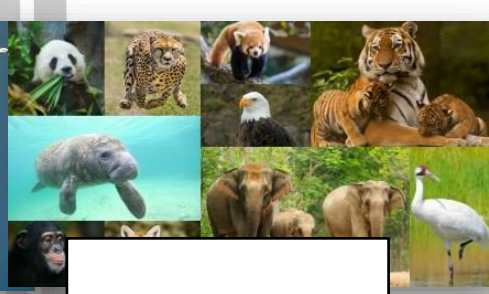
4. Assessment

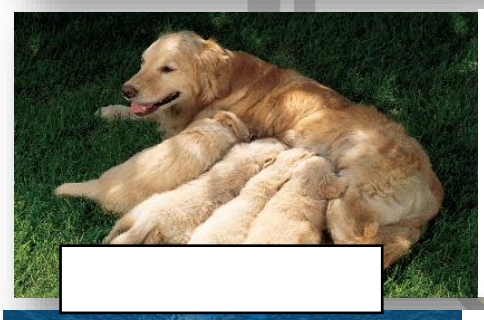
Learning outcomes	Assessment tools	Criteria
1. Students are able to interpret the passage “King of the sea”, and express opinions with the proper reasoning.	- Reading tasks	- at least 75 percent accurate
2. Students are able to use foreign language as a tool for searching the unknown information, and exchange information in their community.	- Online discussion	- Observation

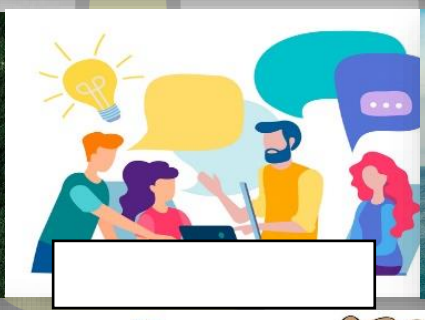
1. Unknown Vocabulary

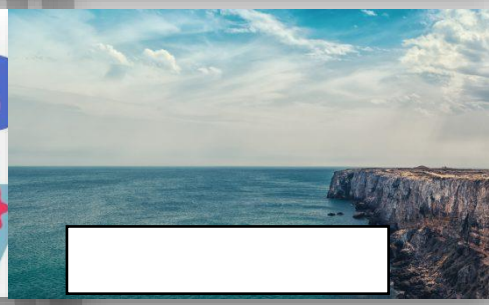
Direction: *Match the pictures and their meanings*

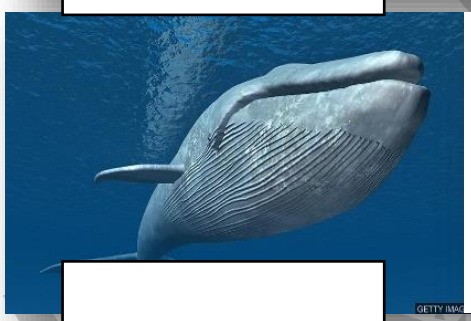
1. Blue whale	2. Communicate	3. Enormous	4. Endangered species	5. Krill
6. Ocean	7. Swallow	8. Mammals	9. Surface	10. Dive

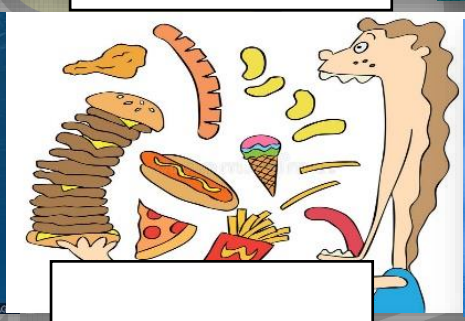












2. Unknown Vocabulary

Direction: *Complete the sentences with the given words.*

1. Blue whale	2. Communicate	3. Enormous	4. Endangered species	5. Krill
6. Ocean	7. Swallow	8. Mammals	9. Surface	10. Dive

1. The whales can travel for hundred kilometers in the _____.

2. Whales are _____, so they cannot stay underwater for too long.

3. Blue whales are not an _____.

4. The _____ is the biggest animal in the world.

5. The whales cannot _____ anything larger than shrimp.

6. The whale are the _____ animal, which can swim fast.

7. They need to come up to the _____ to breath after 10 to 20 minutes.

8. The blue whales use their calls and song to _____ with others.

9. An adult whales eat about 3.6 metric tons of _____ a day.

10. Blue whales usually _____ around 100 meters, but can reach a depth of 500 meters.

3. Reading Passage

King of the Seas

The blue whale is the biggest living animal in the world. It grows up to 30 meters long, and the largest can weigh more than 180 metric tons. The tongue of a blue whale alone can weigh as much as an elephant, and its heart can be the size of a small car. A baby blue whale weighs up to 2.7 metric tons when it is born, and gains 91 kilograms every day for its first year. But these enormous animals can swim at a fast speed of 32 kilometers an hour.

During certain times of the year, an adult whale eats about 3.6 metric tons of krill a day. The whale swims slowly through the water with its mouth open, and thousands of tiny fish and plankton swim into it. But the whale can't swallow anything larger than a shrimp.

Whales are mammals, and so they cannot stay under water for too long. They need to come to the surface to breathe after 10 to 20 minutes. Blue whales usually dive around 100 meters, but can reach a depth of 500 meters. When they come to the surface, they blow a wet stream 12 to 15 meters up in the air.

Blue whales are the loudest animals on Earth. Their call is louder than a jet, and it can travel for hundreds of kilometers in the ocean. They use their calls and songs to communicate with other blue whales. Fortunately blue whales are no longer an endangered species.

4. Reading quizzes

Direction: *Read the passage and answer the questions*

1. What is a good title for this passage?

a. The Blue Whale b. Endangered Whale
c. A Big Whale d. A Big Animal

2. The blue whale can reach _____ meters in length.

a. 2.7 b. 3.6
c. 30 d. 32

3. A krill is _____.

a. a big fish
b. a lobster
c. a kind of small shrimp
d. a kind of plant

4. Blue whales cannot _____.

a. swim with their mouth closed
b. swim far away
c. stay under water for too long
d. eat shrimp

5. Blue whale are the _____ on Earth.

a. bluest
b. smallest
c. loudest
d. quietist

BIOGRAPHY

NAME	Miss Tiparporn Vaisean
DATE OF BIRTH	January 22, 1990
PLACE OF BIRTH	Kalasin
ADDRESS	78 Theenanon Road Kalasin Sub-district Muang District Kalasin, 46000
POSITION	Government teacher
PLACE OF WORK	Uthenpattana School, Nontan Subdistrict, Tha Uthen District, Nakhon Phanom Province, 48120
EDUCATION	2013 Bachelor of Arts in (B.A.) in English, Mahasarakham University 2020 Master of Education (M.Ed.) in English Language Teaching, Mahasarakham University