



**The Effects of Using Concept Maps on Reading Comprehension, Vocabulary
Development, and English Reading Attitude of Grade 6 Students**

Muneeroh Deema

**A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of
Master of Arts in Teaching English as an International Language
Prince of Songkla University**

2016

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I hereby certify that this work has not been accepted in substance for any degree, and is not being currently submitted in candidature for any degree.

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ชื่อวิทยานิพนธ์	ผลของการใช้ผังมโนทัศน์ต่อความสามารถในการอ่านภาษาอังกฤษเพื่อความเข้าใจ การพัฒนาคำศัพท์ และทัศนคติต่อการอ่านภาษาอังกฤษของนักเรียนชั้นประถมศึกษาปีที่ 6
ผู้เขียน	นางสาวมูณีเราะห์ ดีแม
สาขาวิชา	การสอนภาษาอังกฤษเป็นภาษานานาชาติ
ปีการศึกษา	2558

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลของการใช้ผังมโนทัศน์ในการพัฒนาการอ่านภาษาอังกฤษเพื่อความเข้าใจ การพัฒนาคำศัพท์ ความคิดเห็นของนักเรียนต่อการใช้ผังมโนทัศน์ และทัศนคติต่อการอ่านภาษาอังกฤษของนักเรียนชั้นประถมศึกษาปีที่ 6 กลุ่มตัวอย่างคือ นักเรียนชั้นประถมศึกษาปีที่ 6 โรงเรียนบ้านดालอ จังหวัดปัตตานี จำนวน 30 คน ซึ่งกำลังศึกษาอยู่ในปีการศึกษา 2558 การวิจัยครั้งนี้เป็นการวิจัยแบบการทดลองกลุ่มเดียว (ทดสอบก่อน ทดสอบระหว่างการทดลอง และทดสอบหลังการทดลอง) เครื่องมือที่ใช้ในการทดลอง คือบทอ่านภาษาอังกฤษซึ่งเป็นนิทานจำนวน 10 เรื่อง พร้อมแบบฝึกผังมโนทัศน์แบ่งเป็นแบบเติมคำที่กำหนดให้ (fill-in concept map) จำนวน 5 เรื่อง และแบบนักเรียนสร้างเอง (student-constructed concept map) จำนวน 5 เรื่อง เครื่องมือที่ใช้ในการเก็บข้อมูลประกอบด้วย 1) แบบทดสอบวัดความสามารถการอ่านเพื่อความเข้าใจ จำนวน 30 ข้อ ครอบคลุมความเข้าใจ 3 ระดับตามทฤษฎีของ Richard (1992) และ Rubin (1993) คือ ความเข้าใจระดับตัวอักษร ความเข้าใจระดับการตีความ และความเข้าใจระดับการประเมินค่า ใช้ทดสอบก่อน ระหว่าง และหลังเรียน 2) แบบทดสอบความรู้ด้านคำศัพท์จำนวน 40 ข้อ ใช้ทดสอบก่อนเรียน หลังเรียน และทดสอบความคงทนของคำศัพท์ 3) แบบสัมภาษณ์กึ่งโครงสร้าง และ 4) แบบสอบถามทัศนคติต่อการอ่านภาษาอังกฤษ สถิติที่ใช้ในการวิจัยได้แก่ ค่าเฉลี่ย ค่าส่วนเบี่ยงเบนมาตรฐาน และค่า t-test

ผลการวิจัยพบว่านักเรียนมีคะแนนทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจหลังการเรียนโดยใช้ผังมโนทัศน์เพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ 0.01** ซึ่งแสดงให้เห็นว่าการเรียนโดยใช้ผังมโนทัศน์สามารถพัฒนาความสามารถทางการอ่านภาษาอังกฤษเพื่อความเข้าใจของนักเรียนได้ และเมื่อเปรียบเทียบคะแนนทดสอบการอ่านในแต่ละระดับ (ระดับตัวอักษร, ระดับการตีความ, ระดับการประเมินค่า) พบว่า นักเรียนมีคะแนนทดสอบก่อนเรียนและหลังเรียนเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ 0.01**ในทุกๆระดับ จึงอาจกล่าวได้ว่า ผังมโนทัศน์ทั้งสองแบบสามารถพัฒนาการอ่านภาษาอังกฤษเพื่อความเข้าใจของนักเรียนได้ในทุกระดับ ส่วนด้านการพัฒนาคำศัพท์นั้น พบว่า

นักเรียนมีคะแนนทดสอบความรู้ด้านคำศัพท์หลังการเรียนโดยใช้ผังมโนทัศน์เพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01** ส่วนค่าเฉลี่ยของการทดสอบความคงทนของคำศัพท์พบว่าเพิ่มขึ้นเล็กน้อยอย่างไม่มีนัยสำคัญทางสถิติ แต่ผลจากการสัมภาษณ์แสดงให้เห็นว่านักเรียนส่วนใหญ่เห็นว่า การอ่านนิทานพร้อมกับการทำผังมโนทัศน์สามารถช่วยให้เข้าใจเรื่อง และเพิ่มความรู้ด้านคำศัพท์ได้ดีขึ้น และนอกจากนี้ นักเรียนมีทัศนคติต่อการอ่านภาษาอังกฤษดีขึ้นอย่างมีนัยสำคัญทางสถิติ จึงสรุปได้ว่าการใช้ผังมโนทัศน์ทั้งสองแบบสามารถพัฒนาระดับความเข้าใจในการอ่าน ทัศนคติต่อการอ่านภาษาอังกฤษ และกระตุ้นความต้องการฝึกอ่าน

คำสำคัญ: ผังมโนทัศน์, ผังมโนทัศน์แบบเติมคำ, ผังมโนทัศน์แบบนักเรียนสร้างเอง, การอ่านเพื่อความเข้าใจ, การพัฒนาคำศัพท์ และทัศนคติต่อการอ่านภาษาอังกฤษ

Thesis Title	The Effects of Using Concept maps on Reading Comprehension, Vocabulary Development, and English Reading Attitude of Grade 6 Students
Author	Miss Muneeroh Deema
Major Program	Teaching English as an International language
Academic Year	2015

ABSTRACT

This study aimed to investigate the effects of using concept maps on English reading comprehension, vocabulary development and English reading attitude of Grade 6 students. The participants were 30 Grade 6 students studying at Ban Dalor School, Pattani, in the 2015 academic year. The research was a quasi-experimental design of one group pre-test, mid-test and post-test. The experimental instruments were 10 stories as reading texts, together with 5 fill-in concept map exercises and 5 student-constructed concept map exercises. The research instruments included 1) a thirty-item reading comprehension test covering 3 levels of comprehension proposed by Richard (1992) and Robin (1993): literal level, interpretation level and evaluation level, 2) a forty-item vocabulary test used for pre, post, and retention test, 3) a semi-structured interview, and 4) a questionnaire of English reading attitude. Means, standard deviations, and paired-sample t-test were used in the data analysis.

The results revealed that the students' overall reading comprehension score improved significantly at the level of 0.01** after using concept maps indicating that two types of concept maps help students to improve their reading comprehension ability. A further comparison on 3 levels of comprehension (literal, interpretation, evaluation) also showed that there was a significant difference in the progression of 3 levels. Regarding students' vocabulary development, students could improve their vocabulary knowledge significantly at the level of 0.01**. The result also showed that the mean score in the retention test was slightly increased from the post-test, even with no significant difference. However, most students indicated in the interviews that reading stories along with the use of concept maps could help them understand the texts easier and they can increase their vocabulary knowledge during

the learning process. It is also found that the students' attitude towards reading in English has significantly improved. It can be inferred from the findings that the concept mapping technique can be an enabling tool in a reading class as it can improve English reading comprehension, English reading attitude, and increase more desires in reading practice.

Keywords: Concept maps, Fill-in concept map, Student-constructed concept map, Reading comprehension, Vocabulary development and English reading attitude

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Muneeroh Deemae

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LIST OF PAPERS

This thesis is based on the following papers:

Deemae, M., & Charumanee, N. (2016). The Use of Concept Maps to Develop English Reading Comprehension Ability and Vocabulary Knowledge. *Journal of liberal Arts*, Prince of Songkla University. (submitted manuscript).

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เรื่อง ตอบรับการได้รับบทความ

เรียน นางสาวมณีเราะห์ ดีแม

ตามที่ท่านได้ส่งบทความ เรื่อง การใช้ผังมโนทัศน์ในการพัฒนาความสามารถในการอ่านภาษาอังกฤษเพื่อความเข้าใจและความรู้ด้านคำศัพท์ เพื่อตีพิมพ์ในวารสารศิลปศาสตร์ มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตหาดใหญ่ ตามความทราบแล้วนั้น

กองบรรณาธิการได้รับบทความของท่านแล้ว และจะนำบทความของท่านเข้าสู่กระบวนการประเมินคุณภาพโดยกองบรรณาธิการและผู้ทรงคุณวุฒิต่อไป ทั้งนี้ กองบรรณาธิการจะแจ้งผลให้ท่านทราบอีกครั้งหนึ่ง

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CONFIRMATION OF ABSTRACT ACCEPTANCE FOR 8th ICHiSS 2016

Thank you for your kind interest in participating in the 8th International Conference on Humanities and Social Sciences (ICHiSS) 2016 “Innovation in Humanities and Social Sciences: Opportunities and Challenges” to be held on 27 – 29 May 2016 at The Hotel Royale Chulan Damansara, Selangor, Malaysia.

We are pleased to inform you that your abstract is accepted to be presented in the 8th ICHiSS 2016.

The panel of evaluators is of the opinion that your paper does contain information linking your paper to one of the sub-themes of our conference. It will be better and more relevant if it shows linkage to the main theme of the conference which is “Innovation in Humanities and Social Sciences: Opportunities and Challenges”. We hope, if possible, you will try to improve on this when you write your full paper.

Kindly submit your full paper via online at: submission@upnm.edu.my with the subject of e-mail: “Your Paper ID: ICHiSS 2016” before 7th May 2016. You are advised to edit and adhere to the format stated in our website when submitting your full paper.

For registration fees arrangements and payment method, please refer to our conference website at: <http://ichiss.upnm.edu.my/index.php/call-for-abstract/registration-fees>. Kindly take note on the advantage of the „early bird“ registration fee promotion.

Should you have any inquiries or require further clarifications, kindly contact us at: amnah@upnm.edu.my and norlaila@upnm.edu.my.

Thank you for your kind cooperation and attention on the above matter. We look forward to see you at the conference.

“DUTY, HONOUR, INTEGRITY”

With best regards,

Organizing Committee of 8th ICHiSS 2016

1. Introduction

In the era of knowledge based-society, English is an important tool for accessing the huge amount of useful information which is mostly written in English. Among the four English language skills, reading skills seem to be highly important as it is the main device to learn the new knowledge which emerges and changes all the time. According to Harris and Sipay (1979), reading skills are necessary for academic study, and for professional development in today's world. Thus, reading skills development is considered as the essential goal in teaching English.

In ESL and EFL contexts, reading texts are the fundamental sources for language exposure. However, to read effectively is not always easy. Mede (2010) states that most of EFL learners have difficulties in reading English because they are not aware of how to read and may not understand a text. The lack of comprehension may cause frustration among learners and may affect their reading attitude. In Thailand where English is used as a foreign language, reading skills seem to be the crucial problem among Thai students. They find that English is difficult and this blocks their desire or motivation in reading. A lot of students have low motivation in reading due to the lack of vocabulary knowledge and low reading skills (Therrien et al., 2006). However, the reading motivation will change as the students become fluent readers (Nichino, 2007). One way to solve this problem is to implant reading habit in children, starting from reading the easy texts which they are familiar and interested, and properly match their proficiency level in order to develop their good attitudes towards reading. This idea is confirmed in Supriyoko's study (2004) that there is a positive correlation between reading interest and reading comprehension. The high level of reading comprehension is a consequence of the high reading interest. Therefore, with the intention of improving the students' reading comprehension, the teacher has to increase the students' reading interest right from the beginning. One of the ways to increase students' reading interest is to provide them the materials that are enjoyable and challenging to read.

Reading passage is one of the factors that influences and motivates students to read. The proper length and the level of the texts also promote the students' success in reading. O'Donnell and Wood (1992) noted that students do not want to read difficult

texts but love to read texts which are easy to follow and also easy to understand. According to Harris and Sipay (1990), they mentioned that the achievement in reading depends on 2 factors: the interestingness and the challenges of the text. Narrative text is considered as an appropriate text to facilitate the students' interest, including stories or fables which will draw students' attention and develop their curiosity. Similar to Leu and Kinzer (1995), they stated that the literature is a tool that can improve reading comprehension as it can promote reading attitude, vocabulary knowledge and sentence structure. However, the challenges of the texts can be less considered at first when dealing with the young and low proficiency learners since the will to read or motivation in reading of these students is more important than their achievement at the beginning of their reading development.

Even though story texts can be the interesting reading source to draw the students' interest, students still lack the skill in linking information together. They cannot process the information to understand the text. To improve students' reading comprehension, teachers are always looking for an effective way to develop their reading ability. Many techniques have been proposed to help the students improve their reading performance. Educators and researchers have conducted a variety of studies on the use of questioning-answering, self-questioning, cooperative learning, thinking aloud, using jigsaws and graphic organizers as strategy instructions to improve reading skills. Concept mapping, a kind of graphic organizer, is one of the recommended techniques that is widely used in second language teaching. With particular emphasis on the concept words and their relationships, it is used to represent students' knowledge and enhance their thinking (Birbili, 2006); to scaffold for understanding (Novak & Canas, 2006); to point out the relationships among concepts (Workman & Anziano, 1994), and to encourage critical thinking (Gallenstein, 2003).

To further define, concept maps are tools of visual symbol for representing knowledge. They consist of key words or main concepts which are usually in boxes or circles, and the relationships between concepts are indicated by a connecting line with a word linking two concepts. Words on the line refer to linking words or linking phrases to specify the relationship between the two concepts (Novak & Canas, 2008).

It involves the importance of connecting new information to prior knowledge and experience (Novak & Gowin, 1984). According to Plotnik (1997), the main advantages of concept mapping are the use of visual symbols because they are easily recognized, easy to scan for a specific word and it also allows for more understanding of a concept. It can promote vocabulary knowledge and reading comprehension since it focuses on the key words or the key concepts of the texts for students to link them to make the text easy to understand.

As mentioned above, concept mapping can be used as a study technique to promote reading comprehension and to help students understand reading as a process (Anderson, 1978). Most previous studies focused only on one type of concept map with different types of text. Research on using narrative texts with young learners was also rare. Therefore, this study employed two types of concept maps namely, fill-in concept map and student-constructed concept map as the reading devices to explore and summarize narrative texts to reflect students' comprehension. It was also hoped that vocabulary could be developed as well as the good reading attitude towards English.

1.1 Definition of terms

The key terms used in this study are defined as follows:

- 1. Concept mapping technique** refers to a way of teaching that emphasized the relationship between two concepts (Novak & Canas, 2008). In this study, there were two versions of concept map used in two phases of the study: fill-in concept map and student-constructed concept map.
- 2. Fill-in concept map** is the same as construct-on-scaffold concept map. The map is an incomplete framework of teacher-constructed concept map with some blanks provided as a scaffold for students. Students have to fill the missing concepts from a list of terms provided to complete the map. This version of concept map was introduced in the first phase of the study.
- 3. Student-constructed concept map** is a version of concept map in which students have the opportunity to construct their concept map freely according to their understanding of the text. Students are guided to construct the maps on

their own by learning the concept words first and then use at least 10 words to construct their maps. This version of concept map was presented in the second phase of the study.

4. **Reading comprehension** refers to the ability to understand the reading passages in the pre-, mid, and post-test as indicated by the level of scores obtained from the test prepared by the researcher. In this study, there were three levels of reading comprehension; literal comprehension, interpretation comprehension and evaluative comprehension.
5. **Vocabulary development** refers to the ability to identify the meaning of words correctly after the treatment. It was measured by the vocabulary test prepared by the researcher. The scores were collected in the pre-, post- and retention period.
6. **Reading attitude** refers to the attitude towards reading in English before and after using the concept mapping techniques as measured by the questionnaires on English reading attitude.

2. The purpose of the study

The purpose of this study was to investigate the effects of using concept map on reading comprehension and vocabulary development of elementary school students in Grade 6 employing fairy tales and story texts, and also to examine the students' attitudes towards reading in English and students' opinions on the use of two versions of concept map. The study attempted to answer the following questions:

1. To what extent do the students improve their reading comprehension?
2. To what extent do the students improve and retain vocabulary knowledge after using concept maps?
3. What are students' opinions towards the use of concept map to improve their reading comprehension?
4. What are students' attitudes towards reading in English? Has it changed after using concept maps?

3. Literature Review and Related Study

3.1 Reading comprehension

3.1.1 The definition of reading and reading comprehension

Many scholars have defined the definition of reading and shared the common assumptions as follows. According to Anderson and Nunan (2008), reading is a process of how readers make meaning from written texts. Reading consists of two processes: word recognition and comprehension. The first step is to identify or recognize words in the texts. Once readers can recognize words, they will understand what they read and make them derived the meaning of the texts. Also, it is a process of receiving and interpreting the information encoded in written language (Urquhart & Weir, 1998 cited in Grabe, 2009). Williams (1994) states that reading is not just only reading aloud but is a process of looking at and understand what is written, and without understanding, “reading” cannot be called. Nuttall (1996) views reading as the process of getting meaning from a text, the meaning transfer of a message from writer to reader. Moreover, Snow (2002) defines reading comprehension as the process of eliciting as companion with constructing the meaning of the text through interaction involving with written language. This involves readers not only using grammar and vocabulary knowledge, but also facilitating readers’ understanding.

Based on the above definitions, it is clear that “comprehension is the heart of reading” (Serravallo, 2010, P.43). Comprehension is what the readers get after they read the text (Kastayo, 1998). And during the reading process, comprehension will occur when the readers can link and integrate the new information they have read from the text with their prior knowledge (Koda, 2005). Thus, words recognition is as important as associating background knowledge with new information in the text as this process helps students to achieve the main reading goal - the comprehension.

3.1.2 Reading comprehension levels

Reading comprehension can be classified into different levels ranging from the lowest to the highest. Richard et al. (1992) and Rubin (1993) have agreed in proposing levels of classification in reading comprehension as follows:

- a. **Literal comprehension** is reading to understand, remember, or recall the information explicitly involved in the passage.
- b. **Interpretation comprehension** is reading to find out the information which is not offered in the passage by using their experience and knowledge of the world. Therefore, readers have to think beyond what they have read. They need to organize, analyze, classify, summarize, and synthesize the information presented in the passage.

At this point, Rubin (1997) further details that readers at this interpretation level are required to do the things below:

1. Determining the meaning of words in the text
2. Finding the main idea
3. Making conclusion
4. Making generalizations
5. Recognizing cause and effect reasoning
6. Recognizing analogies

c. **Critical or evaluative comprehension** is reading to complete information in a text with the readers' own knowledge. This level of comprehension involves evaluation and making judgment on values of what they have read. The readers could be able to collect, interpret, apply, analyze and synthesize the information.

d. **Applicative comprehension** is reading to gain feelings or emotion from the text.

As briefly reviewed above, comprehension covers understanding within and beyond the text. To teach reading skills, it is important to consider what levels of comprehension should be introduced to particular groups of students.

3.2 Models of teaching reading skills

There are three types of reading models: the bottom-up, the top-down, and the interactive models. The explanation is as follows.

1) Bottom-up approach

Bottom-up approach focuses on the ability of readers to decode the texts from the smaller units to the larger ones. Learning will start from the parts of the language (letter) to understanding the meaning of the whole text. Learners have to recognize and translate the letters into speech sounds and then form the letters into words, finally form up the words to sentences to make meaning of the texts (Nunan, 1991)

2) Top-down approach

The top-down approach is an approach in which readers will work at the global features such as the purpose of the writer, the topic of the message, and the overall structure of the text in order to get meaning of the texts (Nunan, 1998). To be able to do so, the readers have to use background knowledge, make prediction, assumption, and questions to the texts. This involves “schema theory”. The term “schema” was first used by Barlett as "an active organization of past reactions or experiences" (Barlett, 1932 p.201 cited in An, 2013). Schema is introduced in reading as an important role of background knowledge to facilitate the readers to understand the texts (Rumelhart, 1980). According to schema theory, comprehending a text is an interactive process between the reader’s background knowledge and the text. It assumes that the meaning of the text is not provided by the written text itself. A text only carries the readers the direction how to construct meaning from their own prior knowledge (Collins, 1979 cited in An, 2013). The efficient comprehension, therefore, requires the ability to relate the text being read to one's own prior knowledge.

According to Carrell (1988), he suggested two different types of schema: formal schema and content schema. The formal schema refers to the background knowledge of form or structure in different types of texts. Different types of text have different structure. So lack of such kind of knowledge also obstruct in reading

comprehension. For the content schema, it refers to the background knowledge of the content area of the text. The readers who already have the knowledge of a particular content will be able to understand the texts efficiently. Additionally, the knowledge of cultural content also influences on interpreting implicitly.

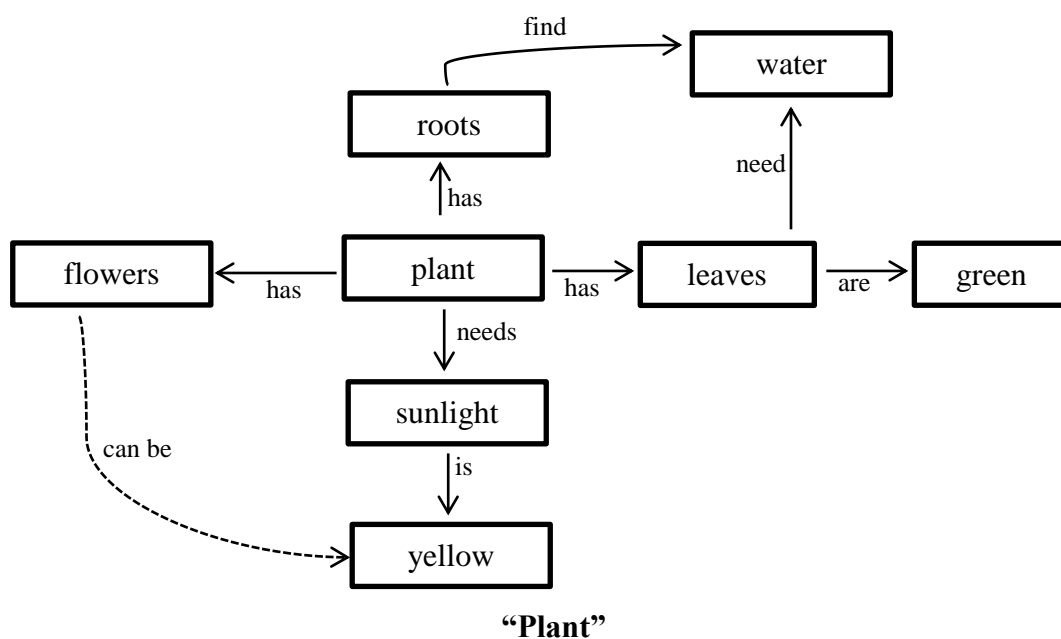
3) Interactive approach

This approach is a combination of bottom-up and top-down approaches. With the understanding of words and sentence structures, students may be able to get the meaning of the text. However, just knowing word meanings and structures are not always sufficient; sometimes it requires some background knowledge to interpret the text. When readers read the texts, they may not understand the whole text at first. After going further on reading, they may understand better by linking their own experience or their background knowledge with the new information they read. The more students have schema related to the text, the more they understand the text. According to Gove (1983), in interactive approach the readers shift between bottom-up and top-down approach to interpret the text. Anderson (2008) mentioned that “most readers begin reading by using top-down reading strategies until there is a problem, and then they shift to the bottom-up strategies” (p.7). Thus to reach comprehension, efficient readers combine elements of both bottom-up and top-down models. The concept mapping technique is also interactive as the process involves the integration of bottom-up and top-down approaches.

3.3 Concept mapping technique

Concept map is a graphic organizer used as a teaching technique to help students understand a topic individually or in groups (Hay & Kinchin, 2006). According to Novak and Canas (2006), they proposed that a concept map consisting of key words or key concepts, are usually in circle or boxes. There is a connecting line with a word on the line to determine the relationship between two concepts. (see figure1: An example of concept map on “**Plant**”)

Figure 1: An example of concept map



Teachers can use a concept map in various stages of teaching: before teaching as an advance organizer; in teaching process as a device for presenting new information or clarifying concept; and after teaching for summarizing, reviewing and also for testing the students’ achievements (Kalhor & Shakibaei, 2012). Concept maps can help teachers to indicate the key concepts of the content and present a summary to the students. Concept maps do not only provide the key concepts and the important information through visual presentation, but also point out the links, structures or characteristics not being observed in the text and present it in a summarized version. Therefore, concept maps can facilitate the meaning and the retaining of the information guiding students to have meaningful learning (Novak, 1990).

This technique is now widely applied in language teaching area. The concept map itself has been approved by many researchers and there are many versions of concept maps including a student-constructed concept map (self-constructed concept map), a fill-in concept map (construct-on-scaffold concept map or teacher-constructed concept map), and a cooperative concept map. The student-constructed concept map refers to the map which students can construct it freely by themselves while the fill-in concept map refers to the incomplete concept map with some blanks and words given by the teacher. The cooperative concept map involves cooperative

learning and the concept mapping. This study particularly employed the first two types of concept maps: fill-in concept map and student-constructed concept map as a summarizing technique in the learning process to improve students' reading comprehension and vocabulary.

Many studies have been conducted to investigate the effects of using concept maps on education. Most found positive results as shown in the review of the related studies section.

3.4 Related Studies

Some previous studies related to the development of reading skills through concept mapping and English reading attitude can be summarized as follows.

Liu (2010) investigated the effect of creating concept maps with the help of computer on English reading comprehension of ESL English majored students in Taiwan. The study found that not only concept map strategy improved reading comprehension, but also improved the application of other reading comprehension strategies.

Kalhor and Shakibaei (2012) investigated the effect of teaching English reading comprehension to Iranian students through concept mapping. The participants of the study were 38 third grade high school female students in Karaj city. Eighteen students were in experimental group and the other 18 students were in control group. The experimental group was taught by using concept map, while the control group was taught in conventional way of reading comprehension teaching. The result showed that concept mapping technique has a significant effect on English reading comprehension.

Khajavi (2012) conducted an investigation to examine the influence of concept mapping on reading comprehension and self-efficacy of intermediate EFL students in Iran. Sixty participants were selected as a concept mapping group and a traditional method group. It was found that the students in the concept mapping group showed greater achievement in reading comprehension and self-efficacy than students in the traditional method strategy group.

Soleimani and Nabizadeh (2012) studied the effects of learner constructed concept map, fill-in concept map, and summarizing strategy on students' reading comprehension. Ninety intermediate pre-university Iranian students were chosen and divided into three groups: learner constructed concept map group, fill-in concept map group, and summarizing strategy group. The whole study was conducted within three months. The results of the study showed that despite the efficacy of all three strategies, the fill-in concept map version was the most influencing one. It further verified that concept map technique might be regarded as an alternative or even as an effective replacement of the summarizing strategy for reading comprehension skill.

Likewise, Saeedi et al. (2013) conducted an investigation to compare the effectiveness of methods of presentation of concept maps and methods of concept mapping on reading comprehension. The participants of the study consisted of 66 third-year high school students in Iran. They were randomly assigned to three treatment groups and one control group. Treatment groups included computer-based concept mapping, paper-pencil concept mapping, and reading text with prepared concept maps. The control group of the study did not receive any concept map. It was found that the presentation of prepared concept maps significantly improved comprehension, compared with the map generation and the control group. But paper-pencil concept map and computer-based concept mapping compared with the control group were not statistically significant. So it implied that the best way to use concept map is teacher-generated concept maps with texts.

Another study was conducted by Beydarani (2015) who examined the influence of concept mapping on reading comprehension of EFL learners in Turkey employing persuasive and descriptive texts. The participants were randomly assigned into four groups: two control groups and two experimental groups. Learners in the two experimental groups received treatment of concept mapping as reading comprehension texts, while learners in the two control groups received no treatment of concept mapping. The results indicated that the learners in two experimental groups outperformed the learners in two control groups in reading comprehension. This study also showed that concept mapping has different effect across types of texts.

Learners who received persuasive texts performed better than those who received descriptive texts.

However, Dolehanty (2008) found the different results in her study of the effect of concept mapping technique on the students reading comprehension of Iranian EFL students. The participants practiced using concept map on six chapters of their books and then participated on a reading comprehension test. The results showed that concept mapping had no significant impact on the students reading comprehension. However, most of the students reported that they had positive attitudes about the concept map.

With respect to EFL study conducted in Thailand, Phantharakphong and Pothitha (2014) studied 15 students in the tenth grade of Demonstration School of Khon Kaen University. The purposes of the study were to study the development of English reading comprehension by using concept maps, and to study the students' attitudes towards learning English reading comprehension by using concept maps. The study was conducted through the use of percentage of scores from concept map retelling based on the redeveloped rubrics and comprehension test. The results showed that the percentages of retelling and comprehension tests were 81.25 percent and 86.50 percent respectively. Students stated that concept maps can help them understand English reading better. This could be concluded that the use of concept maps could enhance the students' English reading comprehension.

Suwan and Laohawiriyanon (2013) investigated the use of concept maps to improve English reading comprehension ability: A case study of Prathomsuksa 5 students with low English proficiency. The subjects of this study consisted of eight students in Prathomsuksa 5 at Ban Klong Wa (Taweerat Radbamrung) who had low English proficiency. The results showed the positive effect on the overall skills of their reading ability. As for the three reading sub-skills, it was found that reading for gist was the sub-skill on which the subjects obtained the highest score, followed by drawing inferences, and reading for specific details.

Although the above studies showed the positive results of concept mapping on students' reading comprehension skills, the use of concept mapping technique in understanding the narrative texts particularly with young learners was not common. Thus, the present study aimed to investigate the effects of using concept maps along with story texts to develop English reading comprehension ability, vocabulary development and English reading attitude of the elementary students.

4. The significance of the study

This study aimed to find out the effects of using two versions of concept map on reading comprehension, vocabulary development and reading attitudes by employing fairy tale story texts. It was expected that the reading comprehension, vocabulary knowledge and reading attitudes of the students could be improved after using this technique.

Students and teachers of English may receive benefits and value of using concept maps in teaching reading skills. Students may be equipped with a new and interesting learning technique to improve their vocabulary bank and reading comprehension skills which could be applicable in reading more difficult texts at the higher level of education. Specifically for teachers, the findings of this study could help teachers of English to be aware of the importance of using concept maps as a teaching technique in their classes.

5. Methodology

This part presents the methodology consisting of four sections: participants, instruments, data collection, and data analysis in order.

5.1 Participants

The participants of the study consisted of 30 Grade 6 EFL students at Ban Dalor School located in Yaring district, Pattani Province. They were purposely chosen on the basis of the consistently poor performance in English from Grade 1 to 5 as indicated by their grade in English which was mostly average at C level. The ages of the participants ranged from 11 – 12 years old. These participants had never been participants of any language research.

5.2 Instruments

5.2.1 Treatments: the reading materials and the concept maps

Ten traditional narrative stories adapted by Cambridge English Online were used in the current study. The stories were from British Council website and were randomly selected. The criteria for selection included 1) the relevance to the students' interest by allowing them to select ten stories they wanted to read the most 2) the proper length of texts, 3) the proper vocabulary level and 4) the proper language complexity level.

The study employed two types of concept maps: 1) fill-in concept map and 2) student-constructed concept map. Based on the first five texts, the fill-in concept maps (the incomplete concept maps with some given concepts and linking words) were constructed and comprehension exercises were used to check their understanding. Students had to fill the missing concepts with the words provided from a list based on each text and also did the comprehension exercises. With the last five texts, students were free to construct their own concept maps called student-constructed concept maps and answer comprehension exercises similarly as in the first phase. All the reading materials, the fill-in concept maps, and the comprehension exercises were checked by the supervisory committee to assure the content validity and revised as suggested. (See Appendix A: Learning materials)

5.2.2 Reading comprehension test

In this study, a 4 multiple-choice reading comprehension test was used three times as pre-, mid-and post- test. All the three tests were parallel except that the test items were rearranged in order to avoid familiarity. Three stories which were at the same level as the stories in the experiment were selected for the reading comprehension test. Each story consisted of 10 questions: 6 questions of literal level, 2 questions of interpretation level and 2 questions of evaluation level. The whole test included 30 questions. To assure the content validity and the reliability of the test, it was checked by the three experts and then revised as suggested. The IOC was 0.94. Then the test was piloted with thirty Grade 6 students who were not involved in the

study. This group of students was chosen because their learning background, learning context, and English proficiency level were comparable to those of the participants in the study. The reliability of the test was 0.76. (see Appendix B: Reading comprehension test)

5.2.3 Vocabulary test

The test was used to examine the vocabulary development and retention level. It was conducted in pre-, post- and retention periods. One hundred words were drawn from the 10 stories in the learning materials (10 words from each story). The list was given to the target students to identify the words they knew by giving the meaning in Thai. The 40 words highly frequently unknown to all students were selected for the vocabulary test which required students to write the meaning of each word in Thai language. (See Appendix C: Vocabulary test)

5.2.4 Interview form

The semi-structured interview was conducted to gather in-depth data related to the students' ability in doing concept maps. It was also used to probe students' opinions on using concept maps, problems which they had while learning, what helped them to do the maps, and what benefits they found, for example. The teacher asked the students questions after they had finished their reading in each story. To assure the content validity of the interview questions, they were verified by three experts and then revised as suggested. The questions in the interview are shown below. (See Thai version in Appendix D)

1. Do you like this story? Why/ Why not?
2. Is the story proper and easy to do the concept maps?
3. How do you link your idea to understand the story?
4. Do you like doing concept maps activity after reading? Why/ Why not?
5. Do you have problems in doing concept maps activity? What is the most difficult in doing such activity?
6. How do you solve the problems?

7. How is the learning atmosphere in class when you are working on concept maps activity?
8. How do you feel when you are able to understand the texts by yourself?
9. What do you get from doing concept maps activity?
10. Do you get more understanding of the texts by using concept maps?
11. Do the concept maps help you to memorize the vocabularies easily? Does your vocabulary knowledge increase?

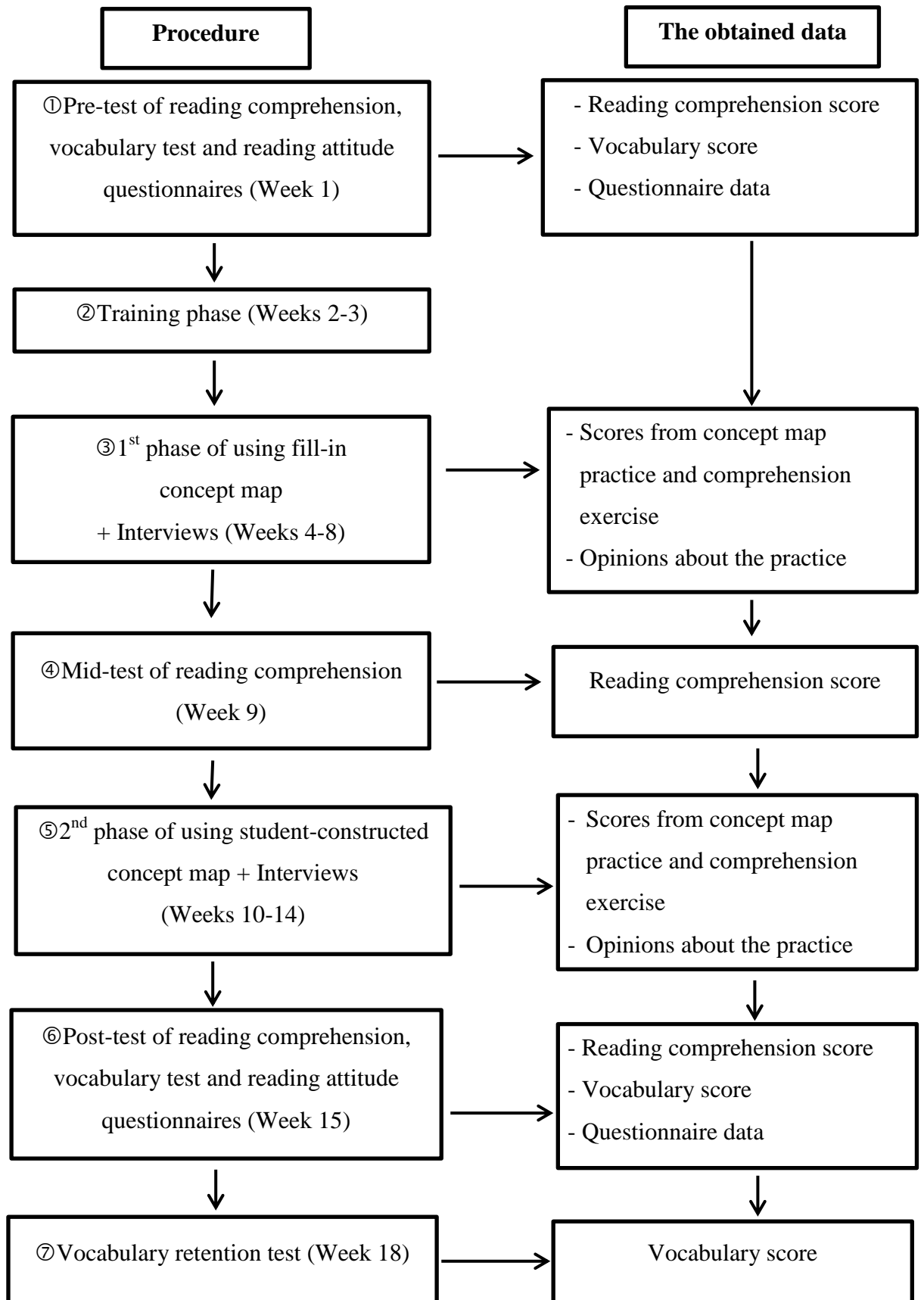
5.2.5 Questionnaire on English reading attitude

The questionnaire on English reading attitude was administered in the pre- and post-test period. There were 20 items of questions about attitude towards English reading. The items were based on affective domain (items 4, 5, 6, 9, 10, 14, 17), behavioral domain (items 1, 2, 3, 7, 8, 13, 15, 16), and cognitive domain (items 11, 12, 18, 19, 20). This was used to check the students' English reading attitude before and after using concept maps. It was adapted from Reading Attitude Survey (RAS) for Students Studying English as Foreign Language (Chiang, 2015). To assure the content validity of the questionnaire, it was verified by three experts using IOC and then revised as suggested. The IOC was 0.964. It was then piloted with the same group of the students participating in the pilot of the comprehension test. The reliability of the questionnaire was 0.875. (See Appendix E: Questionnaire on English Reading Attitude)

5.3 Data collection

The data were collected following the steps below taking place during the second semester of 2015 academic year from November 2015 to January 2016. The data collection was based on the procedures shown in the flow chart below.

Figure 2: The sequence of data collection



The study was conducted in the supplementary class, which occupied a ninety-minute period a week. In week 1, all participants had to do the pre-test of reading comprehension containing 30 items of multiple-choice questions, 40 items of vocabulary test, and also reading attitude questionnaire. After that, the researcher began the training phase which aimed at teaching them to be familiar with concept maps technique. The training phase took 2 weeks (weeks 2-3).

After 2 weeks of training phase, the fill-in concept map was used during weeks 4-8 which was the first phase of the experiment. Five fairy tale stories were employed in this phase. Each story took a ninety-minute period in class. In each class, the teacher warmed students with the pre-reading activity to prepare students for the reading activity. While reading each story, the students highlighted the concept words in the text. The teacher provided help on words meaning as needed. Then students were assigned to complete the fill-in concept map and then did one other comprehension exercise. The score each student obtained from each concept map was collected. The focus-group interview was also conducted at the end of each period to find out the students' opinions towards the use of each concept map.

In week 9, the mid-test was administered to measure the reading comprehension development of the students and this did not include the vocabulary test.

During weeks 10-14, the second phase, student-constructed concept map was implemented. Similarly to the first phase, five fairy tale stories were used in teaching reading. Students were assigned to construct the concept map by themselves and did a reading comprehensions exercise after reading each story. As with the first phase, the concept map scores from the second phase were kept. The focus-group interview was continually conducted at the end of the period to collect data related to students' opinions on the use of each concept map.

The post-test, the same version as in the pre- and mid- test was administered after the last class ends. The vocabulary test was also included. The reading attitude

questionnaire was administered one more time at the end of the experiment. Two weeks after the post-test, the participants took the vocabulary retention test.

5.4 Data analysis

The researcher calculated the scores from concept maps practice, reading comprehension test, vocabulary test, and questionnaire by using percentages, means, standard deviations, paired-sample *t*-test and correlation co-efficient. Data from interviews were summarized and described.

6. Results

Research Question 1: To what extent do the students improve their reading comprehension?

6.1 The development of reading comprehension

To answer the first research question as to what extent the students improve their reading comprehension after using two types of concept map, the researcher used scores from concept map exercises and scores from the pre-test, mid-test and post-test to calculate means, standard deviations and paired sample *t*-test. The results are presented in chart1 and Table 1 below.

Chart 1: The illustration of concept map scores

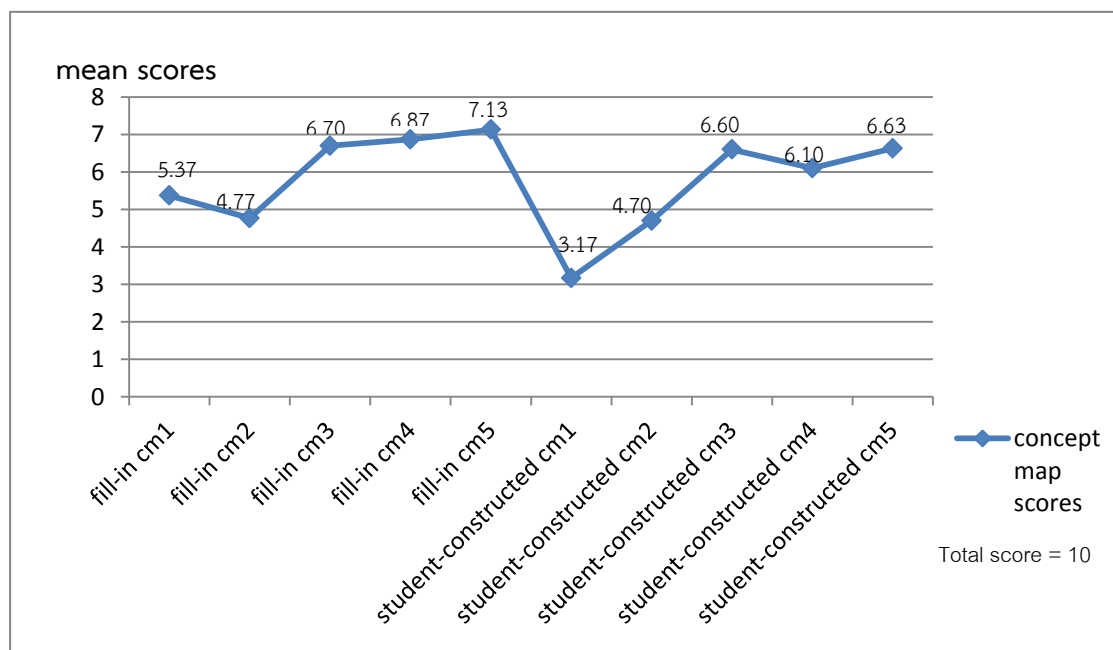


Chart 1 shows the students' scores from concept maps through the two phases of treatment. It revealed that students had lower scores on the first two maps of fill-in concept map exercises ($\bar{x} = 5.37$ and 4.77) and then the scores continually increased in the next three maps ($\bar{x} = 6.70, 6.87$ and 7.13 respectively). However, the mean scores decreased to the lowest after the first two maps of student-constructed concept maps ($\bar{x} = 3.17$ and 4.70). Similarly to the fill-in concept map exercises, the scores increased again in the last three maps of student-constructed concept maps ($\bar{x} = 6.60, 6.10,$ and 6.63 respectively).

The results related to the concept map scores clearly showed that students might struggle at the beginning of the practice of each type of concept maps but later on they gradually improved their ability in completing the maps as well as improved their understanding of the texts as shown in table 1 below.

Table 1: Comparison of reading comprehension scores in the pre-test, mid-test and post-test

The period	Total score	\bar{x}	S.D.	Mean Difference	t-value	df	p-value
Pre-test	30	9.80	2.92	3.27	-6.47**	29	.00
Mid-test	30	13.07	5.03				
Mid-test	30	13.07	5.03	2.20	-4.08**	29	.00
Post-test	30	15.27	4.37				
Pre-test	30	9.80	2.92	5.47	-13.56**	29	.00
Post-test	30	15.27	4.37				

**Significant at 0.01

Table 1 shows that the mean score of students' reading comprehension in the post-test ($\bar{x} = 15.27$) was higher than that in the pre-test ($\bar{x} = 9.80$) and the mid-test ($\bar{x} = 13.07$). A further look at the mean difference between the pre-test and the mid-test showed that there was a significant difference at 0.01 level (mean difference = 3.27, $p = 0.00$). As for the mean difference between the mid-test and the post-test, it was also found that there was a significant difference at 0.01 level (mean difference =

2.20, $p = 0.00$). With the continually improving scores, it was identified that there was a significant difference at 0.01 level between the mean score of the pre-test and the post-test (mean difference = 5.47, $p = 0.00$).

The finding indicated the students' ongoing improvement in their reading comprehension both in the mid-test and the post-test. This suggested that the two types of concept map technique could promote the level of understanding of the texts. To further look into specific levels of comprehension, the next section describes the development of different levels of comprehension.

6.2 Development of the different levels of comprehension

The study also investigated whether the use of concept maps improved any of the three different comprehension levels: literal level, interpretation level, and evaluation level. The results are presented in Table 2 below.

Table 2: Comparison of scores by the different levels of reading comprehension

Levels of comprehension	The period	Total score	\bar{x}	S.D.	Mean Difference	t-value	df	p-value
Literal level	Pre-test	18	6.80	2.48	1.20	-4.70**	29	.00
	Mid-test	18	9.00	4.22				
	Mid-test	18	9.00	4.22	1.67	-3.20**	29	.00
	Post-test	18	10.67	3.25				
	Pre-test	18	6.80	2.48	3.87	-9.59**	29	.00
	Post-test	18	10.67	3.25				
Interpretation level	Pre-test	6	1.30	1.06	0.17	-1.22	29	.23
	Mid-test	6	1.47	1.17				
	Mid-test	6	1.47	1.17	0.50	-1.68	29	.10
	Post-test	6	1.97	1.10				
	Pre-test	6	1.30	1.06	0.67	-2.34*	29	.03
	Post-test	6	1.97	1.10				

Levels of comprehension	The period	Total score	\bar{x}	S.D.	Mean Difference	t-value	df	p-value
Evaluation level	Pre-test	6	1.70	1.26	0.90	-5.57**	29	.00
	Mid-test	6	2.60	1.40				
	Mid-test	6	2.60	1.40	0.03	-0.14	29	.89
	Post-test	6	2.63	1.50				
	Pre-test	6	1.70	1.26	0.93	-3.90**	29	.00
	Post-test	6	2.63	1.50				

*Significant at 0.05

**Significant at 0.01

As shown in Table 2, the mean scores on literal level in the mid-test ($\bar{x} = 9.00$) and the post-test ($\bar{x} = 10.67$) were higher than the mean score in the pre-test ($\bar{x} = 6.80$). The Paired sample t-test also showed that there were significant differences at 0.01 both between the pre-test and the mid-test (mean difference = 1.20, $p = 0.00$) and between the mid-test and the post-test (mean difference = 1.67, $p = 0.00$). As for the pre-test and the post-test, it was found that there was a significant difference at 0.01 level (mean difference = 3.87, $p = 0.00$). This indicated that concept maps technique could continually help students to significantly improve their literal comprehension level.

As for the interpretation level, the students did better in the mid-test and the post-test than in the pre-test. The mean scores in the pre-test, the mid-test and the post-test increased respectively ($\bar{x} = 1.30, 1.47$ and 1.97). Although the results of mean score difference from t-test revealed no statistically significant differences both between the pre-test and the mid-test (mean difference = 0.17, $p = 0.23$) and between the mid-test and the post-test (mean difference = 0.50, $p = 0.10$), the mean scores of the pre-test and the post-test showed a significant difference at 0.05 level (mean difference = 0.67, $P = 0.03$). The results indicated that concept maps technique could help students to gradually be progressive at interpretation level.

The results on evaluation level revealed that the mean score in the post-test ($\bar{x} = 2.63$) improved more than in the pre-test ($\bar{x} = 1.70$) and the mid-test ($\bar{x} = 2.60$).

A closer look at the score of the mean difference between the pre-test and the mid-test showed that there was a significant difference at 0.01 (mean difference = 0.90, $p = 0.00$), while there was no significant difference between the mid-test and the post-test. However, the results of mean scores in the pre-test and post-test were found to have significant difference at 0.01 (mean difference = 0.93, $p = 0.00$), indicating that concept maps technique could also help students improve their reading at evaluation level.

Research Question 2: To what extent do the students improve and retain vocabulary knowledge after using concept maps?

6.3 Vocabulary development

To examine whether the students could improve and retain their vocabulary knowledge, the researcher administered the vocabulary test before instruction (pre-test), immediately after instruction (post-test), and two weeks after instruction (retention test). The results are presented in Table 3 below.

Table 3: Comparison of vocabulary scores in the pre-test, post-test and retention-test

The period	Total score	\bar{x}	S.D.	Mean Difference	t-value	df	p-value
Pre-test	40	5.97	3.81	12.66	-9.78**	29	.00
Post-test	40	18.63	9.90				
Post-test	40	18.63	9.90	0.87	-0.85	29	.40
Retention-test	40	19.50	12.22				

**Significant at 0.01

Table 3 shows that the mean score of students' vocabulary knowledge significantly increased from 5.97 in the pre-test to 18.63 in the post-test (mean difference = 12.66, $p = 0.00$). As for the mean score in the retention test, it was also found that students improved the vocabulary knowledge more than in the post-test ($\bar{x} = 18.63$ and 19.50 respectively) even though the scores were not statistically different ($P = 0.40$). These results seemed to indicate that concept mapping technique

was effective in terms of improving and retaining vocabulary knowledge. It provided students a positive effect on vocabulary development and retention. The next section presents what students thought and how they reacted to the use of concept mapping technique.

Research Question 3: What are students' opinions towards the use of concept map to improve their reading comprehension?

6.4 Students' opinions towards the use of concept maps

The analysis of data from interviews revealed 3 main points: the content of the stories, problems during the practice, and benefits from the concept mapping.

6.4.1 The content of the stories

This study showed that the content in the selected stories was favorable and lended themselves to concept mapping activities. It was found that the most popular stories among students were adventure stories. Most of the students liked "Ali and the Magic Carpet" and "The Voyage of the Animal Orchestra" respectively. They mentioned that the stories were fun and enjoyable. While reading, they felt like they played a part in the stories and took adventure with the characters. The least popular story was "The Lantern - A Ramadon Story", only half of the student liked it. Some students complained that it was lengthy. Almost all of the students seemed to think that the stories selected were suitable to do the concept maps and also suited their interests and their linguistic level. However, slightly more than half of the students indicated that the stories used early at the beginning of the experiment were quite difficult for them because they contained unfamiliar words, phrases and new sentence structure or tense.

6.4.2 Problems during the practice

The areas of difficulty arose from grammatical structures, vocabulary and the type of concept map. As most of the selected stories were in past tense, many students were confused with the past form of verbs shown in the stories. Most of the students thought that they lack proficiency in English both vocabulary knowledge and sentence

structure and these was the main obstacles in reading and completing the maps. Students found it hard to choose words which could go into the boxes and those serving as the linking words especially during the student-constructed concept map phase. The majority of the students stated that “it is very difficult to choose words that go into the boxes and ones that could be on the lines”. Some further revealed that they did not know how to start it and were confused with the kind of words to be used in the map. However, this problem was an issue only at the beginning of the second phase. After the first two weeks of the Phase 2 treatment had passed and with more help from the teacher’s scaffolding, they mentioned that the stories seemed to be easier to understand and doing the concept maps was no longer too difficult. This may be because most of the stories used in the experiment included some repeated vocabularies. More than half of the students preferred to do the fill-in concept map more than the student-constructed concept map. Although most students show more preferences of the fill-in concept map, interestingly some students agreed that student-constructed concept map was more flexible and challenging for them. They reasoned that they were free to choose any sensible vocabularies to do the map without being restricted to the given choices.

6.4.3 Benefits from the concept mapping

As stated by the students, the gained benefits involve vocabulary power, reading comprehension, and positive attitude towards concept mapping process. Most of the students expressed that they had acquired a huge amount of vocabulary from the concept mapping after reading the stories. Some statements are as follows: “I learned more vocabularies from reading the story and the concept mapping”, and “I learned many new vocabularies that I did not know before”, and “to do the concept maps after reading the story has increased my vocabulary bank together with promoting my understanding of the texts”. Most of them agreed that they would enjoy the stories more if they were good at English and had enough vocabulary knowledge. In addition, many expressed that they could categorize parts of speech of the words better. They recognized nouns, verbs or adjectives because they had to use them when they constructed the map by themselves in the student-constructed concept map phase.

Most of the students agreed that their English reading comprehension improved after learning by using concept maps. They reasoned that during the concept mapping, they had to try to understand what they had read and then transferred their understanding into the concept map. Almost half of the students confirmed that the process in linking the key words to form the whole story was the process that promoted students' comprehension. Interestingly, they suggested that 10 weeks of learning were too short. They would like to learn and practice more to be better in reading. This attitude towards "reading plus concept mapping" seemed to correspond with the results from the questionnaire which are presented below.

Research Question 4: What are students' attitudes towards reading in English? Has it changed after using concept maps?

6.5 Students' attitude towards reading in English

To examine whether the students' attitude towards reading in English changed after using the concept maps, the researcher compared data from the two administrations of the questionnaires. The 5 point Likert Scale could be interpreted as follows: 5 was strongly agree ($\bar{x} = 4.21-5.00$), 4 was highly agree ($\bar{x} = 3.41-4.20$), 3 was moderately agree ($\bar{x} = 2.61-3.40$), 2 was slightly agree ($1.81-2.60$) and 1 was disagree ($\bar{x} = 1.00-1.80$). The results are presented in the Table 4 below.

Table 4: Students' attitude towards reading in English before and after the treatment

Reading Attitude	Before treatment		After treatment		Mean difference	t	df	Sig. (2-tailed)
	\bar{x}	S.D.	\bar{x}	S.D.				
Affective domain (Items no.4, 5, 6, 9, 10, 14, 17)	2.33	0.90	2.89	0.86	0.56	3.445**	29.00	0.00
Behavioral domain (Items no. 1, 2, 3, 7, 8, 13, 15, 16)	2.36	0.48	2.70	0.47	0.34	4.052**	29.00	0.00

Reading Attitude	Before treatment		After treatment		Mean difference	t	df	Sig. (2-tailed)
	\bar{x}	S.D.	\bar{x}	S.D.				
Cognitive domain (Items no. 11, 12, 18, 19, 20)	3.27	0.93	3.76	0.96	0.49	2.992**	29.00	0.00
Total	2.58	0.68	3.03	0.67	0.45	4.152**	29.00	0.00

**significant at 0.05

Table 4 shows that students' overall attitude towards reading changed significantly from slight ($\bar{x} = 2.58$) to moderate level ($\bar{x} = 3.03$). The most significant change was related to affective domain (mean difference = 0.56, $p = 0.00$) which covered the items on the "Likes" and the "Enjoyment" received from reading. Another significant improvement from moderate ($\bar{x} = 3.27$) to high level ($\bar{x} = 3.76$) was related to cognitive domain which included the items on what reading can do or help them (mean difference = 0.49, $p = 0.00$). Last was behavioral domain changing from slight ($\bar{x} = 2.36$) to moderate level ($\bar{x} = 2.70$) with the significant difference of 0.34 ($p = 0.00$). These findings might be signaling that students learned and enjoyed the idea of "reading plus concept mapping" as shown in their more positively changing attitude.

7. Summary of the findings

With reference to the research questions of the study, the findings can be summarized as follows.

Regarding students' reading comprehension ability, the students improved their overall reading comprehension ability and specific levels of comprehension: literal, interpretation, and evaluation levels. However, the pace of progressions of the 3 levels were different as shown by the scores interval, indicating that the easiest level in progression was the literal level because students gained the higher score in the mid-test than the other two levels. The results also suggested that it took longer to progression on interpretation and evaluation levels.

As for students' vocabulary development, students could improve their vocabulary knowledge significantly at the level of 0.01**. The results also showed that the mean score in the retention test was slightly increased after the post-test, even with no significant difference.

In the area of students' opinions towards the use of concept maps and their attitude towards reading in English, the results showed that reading stories along with the use of concept maps could help them understand the texts easier and they could increase their vocabulary knowledge during the learning process. It was also found that the students' attitude towards reading in English has significantly improved in all domains namely affective, behavioral and cognitive.

8. Discussion of the findings

8.1 Reading comprehension ability

The results related to reading comprehension ability after using two types of concept map technique suggested that the students in this study could improve their reading comprehension significantly both for the overall comprehension and for each level of comprehension namely literal, interpretation and evaluation level. A closer look at which type of concept maps could help students understand the texts better, the result revealed that the students got a higher score of mean difference in the mid-test than in the post-test. This might imply that the fill-in concept map introduced in the first phase might provide students a better improvement on reading comprehension than student-constructed concept map practiced in the second phase. This study echoed one study on improving reading comprehension through the use of presentation of prepared concept maps and the method of concept mapping. The study suggested that the best way to use concept map is teacher generated concept maps with texts (Saeedi et al., 2013). As for enhancing student's reading comprehension ability, the finding of the current study was also consistent with other similar studies showing that concept maps technique is effective in improving students' reading comprehension as well as promoting students' summarizing ability, developing their vocabulary knowledge and promoting joyful learning interaction (Dolehanty, 2008;

Liu, Chen, & Chang, 2010; Soleimani & Nabizadeh, 2012; Jaya & Latief, 2013; Deylamsalehi, Barjasteh, & Vaseghi, 2015).

There are several possible explanations for the positive effects on reading comprehension after using concept maps along with a story as a reading text. First, the texts chosen by students might motivate them to read. Second, concept maps learning technique provided students with the opportunities to become active readers as the process of the concept mapping contributed to the interactive reading as it combined both bottom-up and top-down approaches of reading. To interpret the ideas in the text, students used their background knowledge as well as their language knowledge. They had to extract the main ideas of the text and thought about their relations before presenting their understanding in a concrete format or visual representation of their knowledge. Last, as a visual representation could be easily recognized more than the text alone, so it supported students in understanding and retaining information in a meaningful way. This confirms Novak and Gowin (1984) who stated that ones have a better capacity in recalling specific information through visual image than remembering the details from the direct text.

8.2 Vocabulary development

The finding proved that both two types of concept maps technique could enlarge vocabulary knowledge of the students significantly. Students showed significant growth in the post-test and obtained the highest mean scores on their vocabulary retention test. This finding was consistent with the previous studies such as Dolehanty (2008); Deylamsalehi, Barjasteh, & Vaseghi, (2015) and Lui, Chen, & Cho (2010) that the concept mapping technique could promote positive effect on English vocabulary learning of the students. This positive effect of concept maps on vocabulary development can be explained with the following supports. First, holding the ideas by concept maps consisting of the key words, students were able to clarify language, identify key vocabularies and organize those words into a meaningful map (Cicognani, 2000). Another reason is determining the relationship between words can enable students to recognize the meaning of words easily.

8.3 Students' opinions towards the use of concept maps

This current study found that students were pleased with the use of concept maps as the devices to reflect their understanding of the reading texts. This similar result was found by Tabatabaei (2014) that students had positive attitude towards using a concept mapping technique in a reading class. One important influence might come from the choice of texts and the content which were favorable and interesting to the students. This factor may help them develop positive attitude towards reading as suggested by Ghazali et. al. (2009) that the texts selection which suits students' interest and language level, and using a several of attractive teaching techniques can motivate students to read more and improve their reading attitude.

The use of fill-in concept map and student-constructed concept map was suitable for students at this level provided that the texts or stories lended themselves to the construction of the maps. Students claimed of learning more vocabulary (both meaning and parts of speech) and improving their reading comprehension. This similar result was found by Soleiman & Nabizadeh (2012) that learner-constructed, filled in the map technique and summarizing strategy had positive effect on students' reading comprehension.

8.4 Students' attitude towards reading in English

The change of students' attitude towards reading in English after the use of concept maps to facilitate reading comprehension could be observed in this study. Their desires to continue this concept mapping were evident to confirm their improving attitude related to the "fun" (affective domain), the "importance" (cognitive domain), and "their action" (behavioral domain) related to English reading.

9. Implications and recommendations

9.1 Pedagogical implications

1. The concept mapping can be an enabling technique in teaching reading and vocabulary. However, the types of concept maps will need to be carefully considered as each type has different complexities that may lead to different scaffolding techniques.

2. The study started the Phase 1 with the fill-in concept map which was considered as the easier one, and then the student-constructed concept map was followed in Phase 2 as it was more challenging. However, the students seemed to struggle a lot at the beginning of each phase. So, it is recommended that more help is needed at the start both in terms of material design and instructions.

3. Scaffolding needs to be taken into consideration when applying concept mapping technique. This study showed that students struggled during the first two weeks of the use of student-constructed concept map which demands the independent construction from the students. More scaffolding is necessary with this kind of concept map. For example, providing more explanations about what kind of words to go in the box as concept words or what kind of words serving as linking words would be helpful to students.

4. Choosing a reading text only by its content may not guarantee its readability. Some texts used in this study posed some problems related to vocabulary and language complexity. Thus, the criteria for choosing the right texts for the target students should be carefully applied.

5. This study showed positive results of using concept maps along with reading narrative stories. Students improved their English reading ability, English vocabulary and had more positive attitude towards reading in English as they claimed to learn more and desired to continue this concept mapping. These results may imply that the concept mapping technique may contribute to the lifelong learning and it could be an effective tool in English reading classes at all levels.

9.2 Recommendations for further studies

1. As the findings show that students got low score at the beginning of Phase 1 (fill-in concept map) and Phase 2 (student-constructed concept map), this may suggest that the two weeks of training phase before the experiment may not be enough to make the students be familiar with the 2 types of concept maps. The training phase should take longer in the next study.

2. The reading passages used in the study were traditional narrative stories which were not too long for the elementary students and the choices were

made by the students. Further study with different levels of students may apply other kinds of reading texts relevant to students' needs and interests.

3. The 3 administrations of the same reading comprehension test (pre-, mid-, and post) in this study might be considered as a limitation since the test items could be familiarized. The further study may need to construct parallel tests to avoid this problem.

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APPENDENCIES

Appendix A

Learning materials:

- **Reading texts**
- **Fill - in concept map and student-constructed concept map exercises**
- **comprehension exercises**

Fill-in concept map practice 1**The greedy hippo**

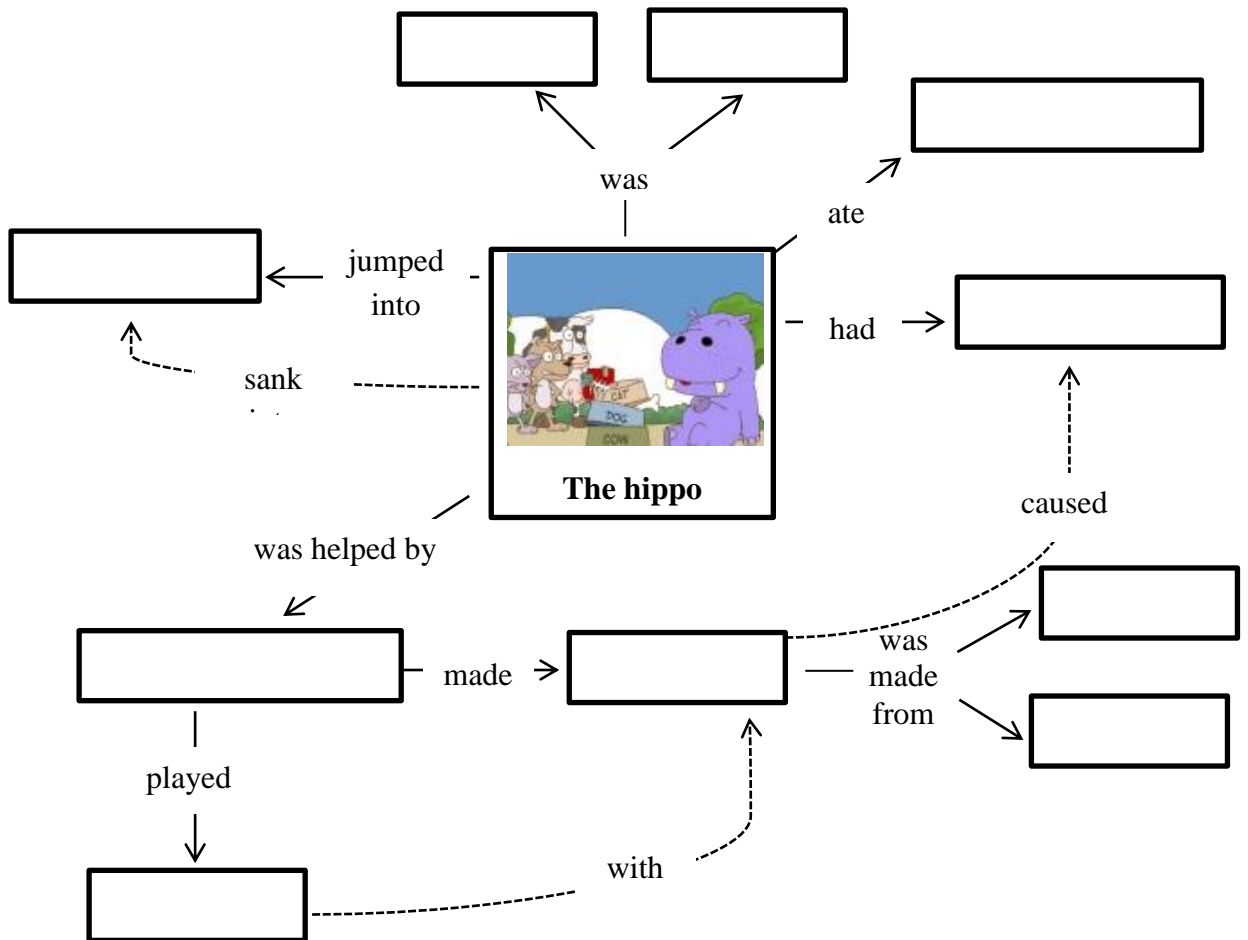
There was a greedy hippo. He ate everything in sight.
From cheese to peas, chips and cake, he always had a bite.
Now Hippo he was selfish. He ate everybody's food.
He ate the cat's, the dog's, the cow's. He was very, very rude.
One morning after breakfast, he jumped into the lake.
One big splash and he was stuck. That was a big mistake.
The hippo, he sank deeper, and then began to shout.
"Help, please help, I'm sinking. Won't someone pull me out?"
The animals all pulled and pulled, as hard as they were able.
Out he popped, ran past them all and ate everything on their table.
The animals were angry, and thought they'd play a trick.
They made a pie from fish and soap to make old Hippo sick.
"Here you are, we've made a pie, especially for you."
"Thanks," he said, "I'll eat it now. I've nothing else to do."
First a nibble, then a bite, then a great big swallow.
He then went back into the lake, the place he loved to wallow.
But something wasn't right, thought Hippo, "I feel quite odd inside."
Now he had a tummy ache as the cooks looked on with pride.
Hippo learnt his lesson. It was the end of all their troubles. He was last seen leaving town, blowing fishy bubbles.

Fill-in concept map: Exercise 1

Direction: Complete the concept map of this story using the given words.

The Greedy hippo

- | | | | | |
|------------------|-------|----------|---------|------------|
| the animals | fish | soap | selfish | a trick |
| everybody's food | a pie | the lake | greedy | tummy ache |



Name.....Class.....No.....

Comprehension Exercise: The Greedy hippo

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. What animals are in the story?
 - a. Hippo, cat, and cow
 - b. Hippo, cow, and buffalo
 - c. Cat, hippo, and rabbit
 - d. Cow, hippo, and fish
2. How was the hippo?
 - a. Kind
 - b. Friendly
 - c. Lovely
 - d. Selfish
3. Why did everybody hate the hippo?
 - a. He ate everybody's food.
 - b. He always played a trick to others.
 - c. He was always angry at his friends.
 - d. He always slept all the day.
4. What did the animals do to give the hippo a lesson?
 - a. Pushed him into the lake
 - b. Made a pie from fish and soap for him
 - c. Made some juice with poison for him
 - d. Hit and threw him into the lake
5. What happened to the hippo at the end?
 - a. He still lived with others happily.
 - b. He died because of a tummy ache.
 - c. He was chased away to another town.
 - d. He left town and was seen blowing fishy bubbles.
6. According to the story, which action tells us the hippo was selfish?

7. Do you think the hippo was crazy at the end? Why?

Fill-in concept map practice 2**Ratty robs a bank**

This is Ratty. He is the worst rat in the world.

He's with his friends, Cheese and Miss Whiskers.

They are planning to rob the Bank of Britain. "OK rats, we're at the bank.

Let's go!" It's the end of the day. The cashier is counting the money.

"Freeze! Nobody moves!" said Ratty. "OK, rats. Let's see what's in the safe!"

"Perhaps we'll find some cheese!"

"There's no cheese. But there's lots of money!

You get the notes – and I'll get the coins!"

"OK rats. Let's go!"

"Run!" The chief of police is at the bank.

He knows there is only one person who can help.

"Hello, Spycat?" Spycat has arrived.

First, he points his magic pen at the cashier. "I can move again!"

Next Spycat looks for clues. He finds a piece of cheese inside the safe.

"Who eats cheese in a bank?"

Finally, Spycat finds a banknote. "Now I know who robbed this bank!"

"One hundred, two hundred, three hun...Oh no, it's Spycat!"

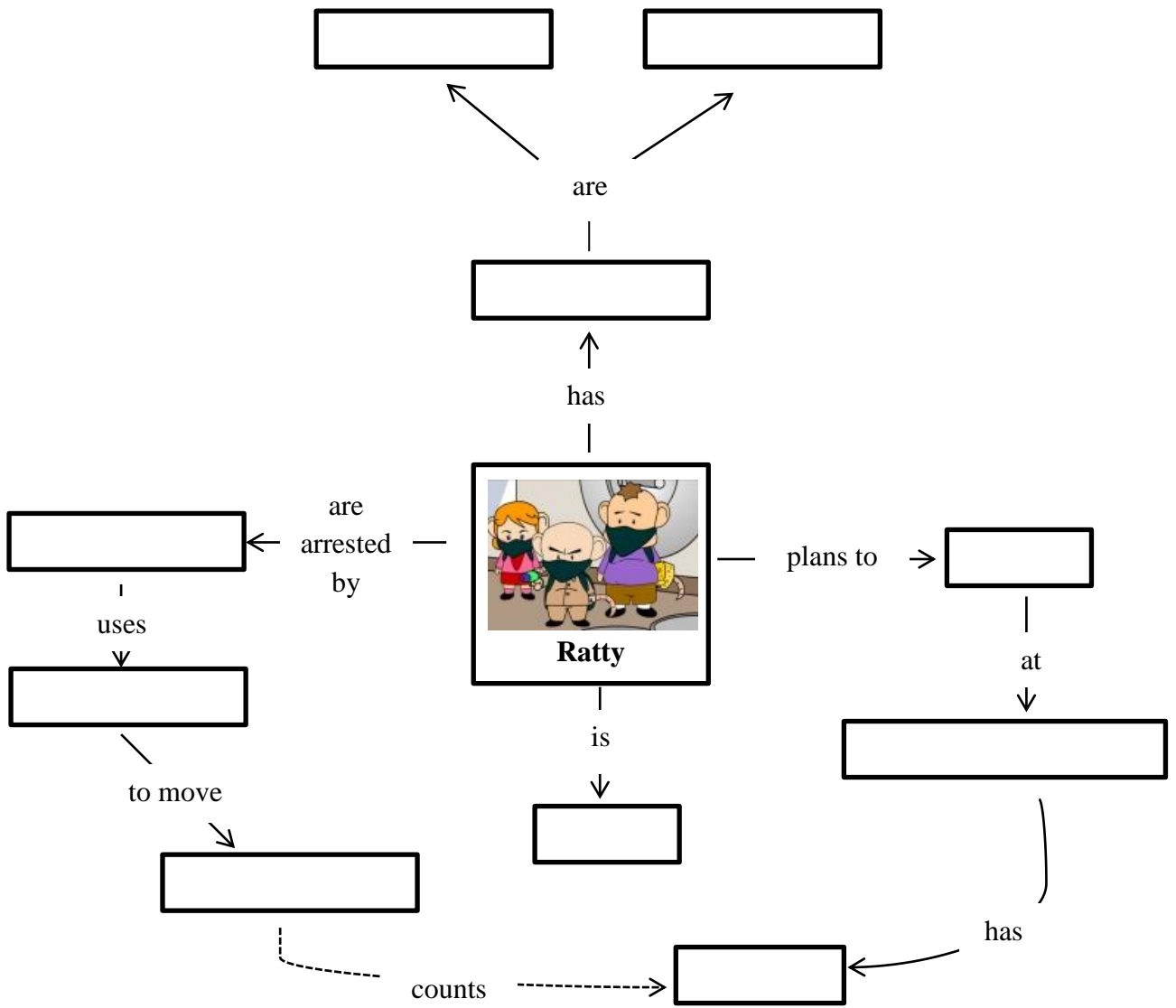
"The fun stops here rats. You're under arrest!"

Fill-in concept map: Exercise 2

Direction: Complete the concept map of this story using the given words.



- | | | | |
|--------|-----------------|-------------|-------------|
| Spycat | Bank of Britain | friends | the cashier |
| Cheese | rob | a magic pen | money |
| a rat | Miss Whiskers | | |



Name.....Class.....

Comprehension Exercise: Ratty Robs a Bank

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. What did Ratty and his friends plan to do?
 - a. Had a picnic with some cheese
 - b. Found some cheese at a bank
 - c. Saved money at a bank
 - d. Robbed a bank
2. Who could arrest the rats?
 - a. The police
 - b. The cashier
 - c. Spycat
 - d. The bank officer
3. What did the rats find?
 - a. Cheese and a banknote
 - b. Milk and a gold
 - c. Cookies and coins
 - d. A piece of cake and a diamond
4. Who are the main characters of the story?
 - a. The police and the rats
 - b. Spycat and the police
 - c. The cashier and the rats
 - d. The rats and Spycat
5. The Spycat was.....
 - a. friendly
 - b. clever
 - c. kind
 - d. silly
6. How could Spycat know who robbed the bank?

7. Which character do you like the most? Why?

Fill-in concept map practice 3**Why Anansi has thin legs!**

This is Anansi, the spider. He's got eight legs, a big head and a very fat body. Anansi loves eating.

Rabbit is Anansi's friend. He is cooking greens in his pot.

"Mmmm! I can smell greens!"

"They are not ready yet. Why don't you stay and wait?" says the rabbit.

"No, I can't stay, but I've got an idea. Pull the web when the greens are ready and I'll come running!"

"Okay, Anansi!" says the rabbit.

The monkey is cooking beans.

"Mmmm! I can smell beans!"

"Come and eat our beans with us. They are almost ready."

"No, I can't, but I've got an idea!"

"Pull the web when the beans are ready and I'll come running!"

"Okay Anansi!"

The hog is cooking sweet potatoes with honey.

"Mmmm! I can smell sweet potatoes – with honey!"

"Yes that's right. Come and eat my food with me."

"No, I can't, but I've got an idea!"

"Pull the web when the sweet potatoes are ready and I'll come running!"

"Okay Anansi!"

When Anansi arrives at the river all his eight legs are tied with webs.

All the food is ready and the animals pull the webs.

Anansi falls over and his legs get thinner and thinner.

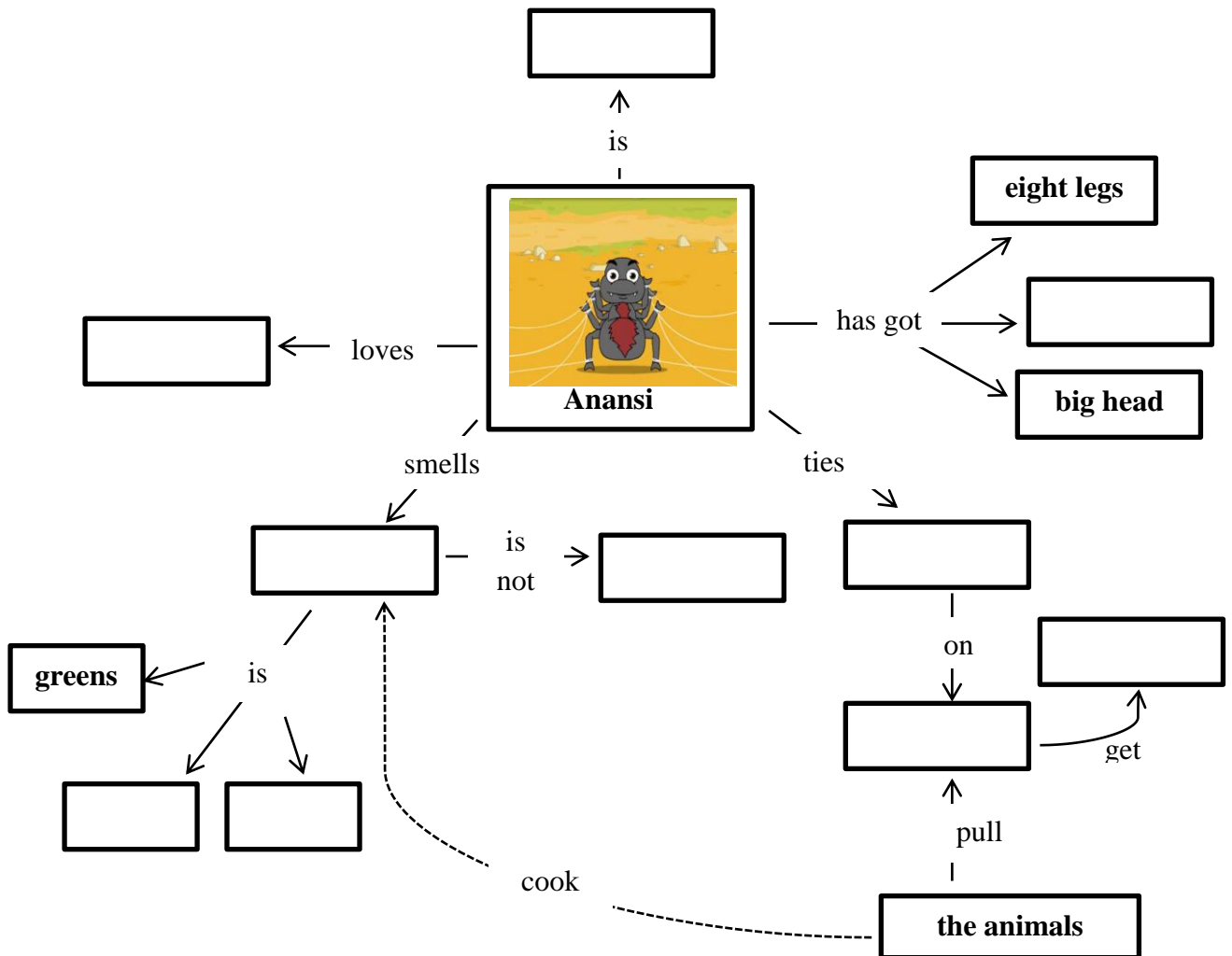
"Maybe that wasn't a good idea after all! Look at my thin legs. Oh well, maybe there's some food at home."

Fill-in concept map: Exercise 3

Direction: Complete the concept map of this story using the given words.

Why Anansi has thin legs!

- | | | | | |
|----------|------------|--------|----------|----------------|
| thinner | a fat body | eating | the webs | food |
| a spider | his legs | beans | ready | sweet potatoes |



Name.....Class.....

Comprehension Exercise: Why Anasi has thin legs!

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. Which food was **not** in the story?
 - a. Cake
 - b. Greens
 - c. Beans
 - d. Sweet potatoes
2. Who was cooking greens?
 - a. A spider
 - b. A rabbit
 - c. A cat
 - d. A monkey
3. Anansi tied the webs on
 - a. his arms
 - b. his legs
 - c. his body
 - d. his head
4. What did the animals do when the food was ready?
 - a. They waited for Anansi.
 - b. They took all the food to Anansi.
 - c. They had a picnic together.
 - d. They pulled the webs tying on Anansi's legs.
5. What was Anansi like?
 - a. Selfish
 - b. Friendly
 - c. Greedy
 - d. Stingy
6. Is Anansi friendly to his friends? How do you know?

7. Do you think Anansi is a good character or not? Why?

Fill-in concept map practice 4**Goldilocks and the three bears**

Once upon a time there was a little girl. Her name was Goldilocks. She had golden hair. One day Goldilocks was walking in the forest. She saw a house and knocked on the door. She went inside. Nobody was there. Goldilocks saw three bowls on the table. She was hungry.

“This porridge is too hot! This porridge is too cold! This porridge is just right!” Goldilocks ate all the porridge.

Goldilocks was tired now. “This chair is too big! This chair is too big, too! This chair is just right!” But the chair broke.

Goldilocks was very tired. She went upstairs. “This bed is too hard! This bed is too soft! This bed is just right!”

Soon, the bears came home. “Someone’s been eating my porridge!” said Daddy bear. “Someone’s been eating my porridge!” said Mummy bear.

“Someone’s been eating my porridge - and it’s all gone!” said Baby bear.

“Someone’s been sitting on my chair!” said Daddy bear.

“Someone’s been sitting on my chair!” said Mummy bear.

“Someone’s been sitting on my chair - and it’s broken!” said Baby bear.

“Someone’s been sleeping in my bed!” said Daddy bear.

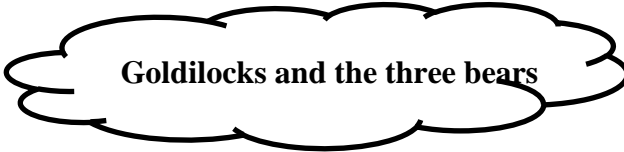
“Someone’s been sleeping in my bed!” said Mummy bear.

“Someone’s been sleeping in my bed - and she’s still there!” said Baby bear.

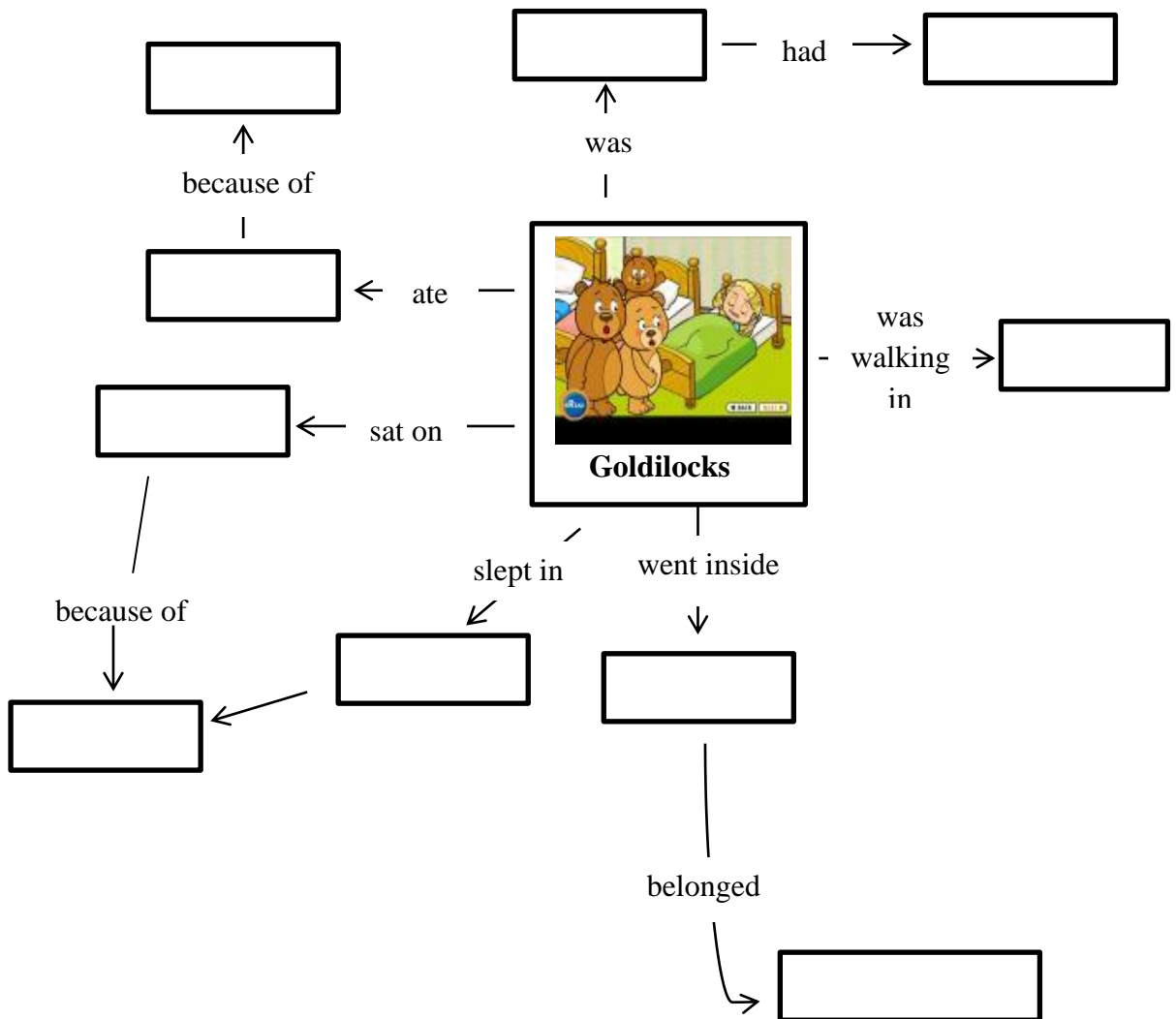
Goldilocks woke up and saw the three bears. “Help!” She ran downstairs and into the forest. She never came back again.

Fill-in concept map: Exercise 4

Direction: Complete the concept map of this story using the given words.



- | | | | | |
|-------------|--------------|------------|---------------|-----------------|
| a house | the porridge | the forest | hunger | the beds |
| golden hair | the chairs | tiredness | a little girl | the three bears |



Name.....Class.....No.....

Comprehension Exercise: Goldilocks and the three bears

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. How many characters are there in the story?
 - a. 2
 - b. 3
 - c. 4
 - d. 5
2. Where is the three bears' house?
 - a. near the lake
 - b. in the city
 - c. in the forest
 - d. on the tree
3. Which is **true**?
 - a. Goldilocks was a bear.
 - b. Goldilocks had golden hair.
 - c. Goldilocks liked the porridge in every bowl.
 - d. The three bears were sitting on a chair when Goldilocks came.
4. What did she do with the porridge?
 - a. She ate all the porridge.
 - b. She kept it in the fridge.
 - c. She poured it on the floor.
 - d. She took it away to her home.
5. Which is **not** true?
 - a. She sat on the chairs.
 - b. She cooked for the bears.
 - c. She ate all the porridge.
 - d. She slept in the beds.
6. Do you think Goldilocks liked all the three bowls of porridge? Why?

.....

.....
7. "Goldilocks went inside the three bear's house where nobody was there"
Is it good or not? Why?

.....

.....

Fill-in concept map practice 5**Teddy's adventure**

Teddy lay sadly on the bedroom floor, forgotten, when Kumiko went to nursery school.

Scraps, the dog, tossed the frightened teddy around.

Teddy landed in mother's shopping bag.

She went shopping. When she pulled out her purse, teddy fell out into a shopping trolley.

The trolley bounced poor Teddy straight into a bin.

A lorry took the rubbish to the dump. Teddy was terrified!

A huge bird carried him high in the sky.

Suddenly Teddy dropped, falling, falling.

The post lady picked him up and took Teddy inside a building.

They put him with the other toys.

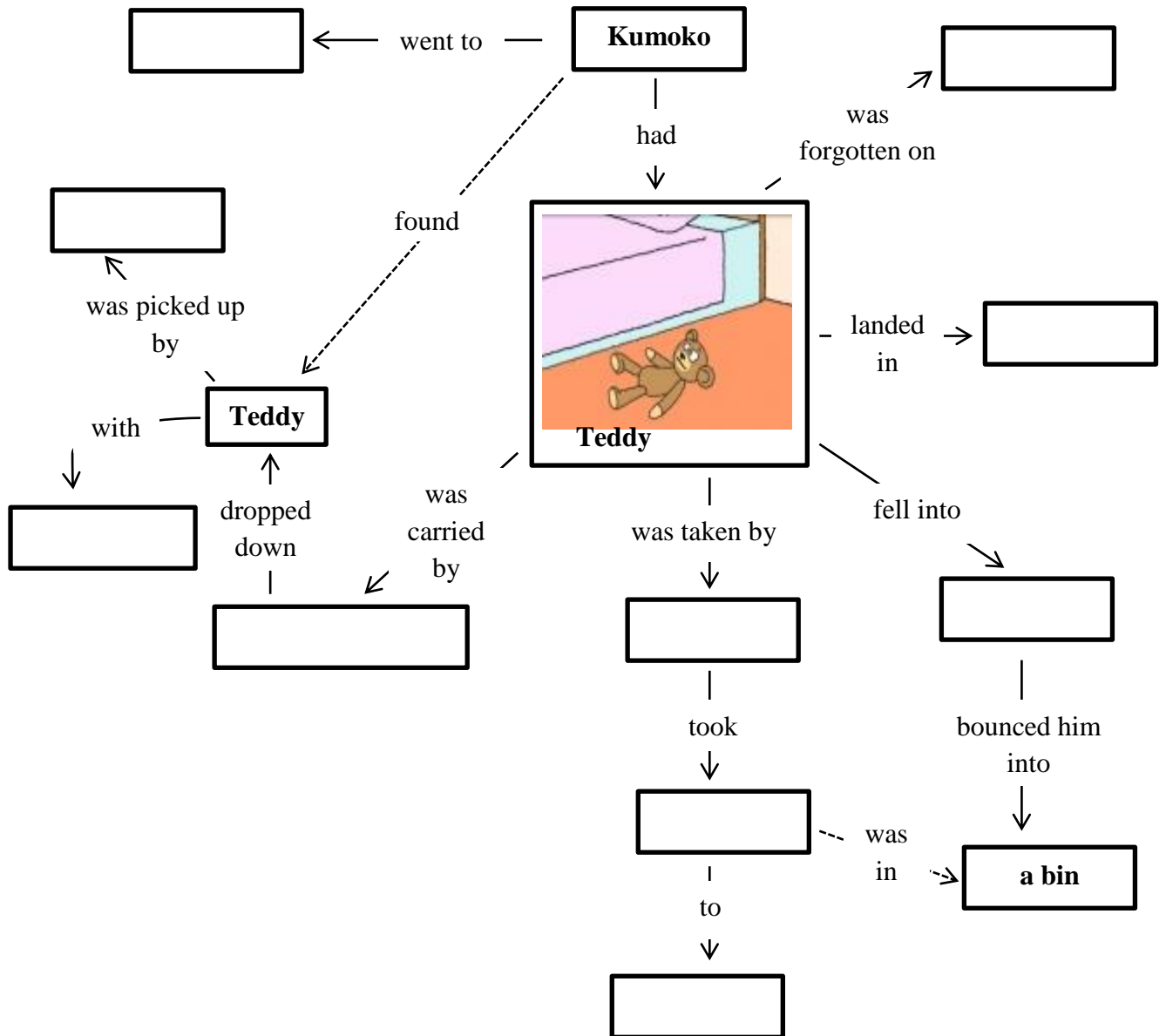
Soon Kumiko found him. "How did you come to school?" she asked.

Fill-in concept map: Exercise 5

Direction: Complete the concept map of this story using the given words.



- | | | | | |
|-----------|-------------|-------------|----------|-----------------------|
| school | the floor | a huge bird | a lorry | the post lady |
| a trolley | the rubbish | other toys | the dump | mother's shopping bag |



Name.....Class.....No.....

Comprehension Exercise: Teddy's adventure

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. What is the first Teddy's adventure?
 - a. He was taken to the dump.
 - b. He was carried in the sky.
 - c. He was taken to the shopping mall.
 - d. He was picked up and taken to Kumiko's school.
2. How did Teddy go to the shopping mall?
 - a. He was in a shopping bag of Kumiko's mother.
 - b. He went shopping with Kumiko.
 - c. He went shopping by himself.
 - d. A bird carried him there.
3. Which is true?
 - a. A lorry took Teddy to the dump.
 - b. Kumiko went to school with Teddy.
 - c. The trolley bounced Teddy down on the floor.
 - d. The post lady threw Teddy into a bin.
4. Where did Kumiko find Teddy?

a. At the dump	b. At her school
c. At the shopping mall	d. At her house
5. At last, Teddy was helped by
 - a. the post lady
 - b. a huge bird
 - c. Kumiko's mother
 - d. the dog
6. Do you think Teddy could get home lastly? Why do you think so?

.....

.....
7. If you were Teddy, do you like his adventure? Why?

.....

.....

Student-constructed concept map practice 1

The treasure map

Sanjay saw a bottle floating in the sea. There was something inside it.
He took it out.

“What is it?” asked Sarah.

“It’s a map! It’s a map!”

They looked round and saw a talking parrot.

“Buried treasure! Buried treasure!”

“Wow! A treasure map! Let’s follow it.”

“Maybe it’s gold!” “Or silver?” “Or jewels?”

“OK. We are here and the treasure is here.”

“Let’s go! I’ll read.” said the parrot.

“Walk 80 metres north.” “1, 2, 3.....78, 79, 80.”

“Turn right at the big coconut tree and go straight on until the crocodile pond.
Cross the bridge, turn left and keep walking.

Turn right in front of the big, round rock. Walk straight ahead for 50 metres.”

“1, 2,3.....48, 49, 50.”

“Go through the cave. Mind the bats! Mind the bats!

Walk straight on until the beach.

Go along the beach for 200 metres. The treasure is behind the square rock.”

“Over there! Over there!” Parrot shouted.

“It’s empty!” cried Sarah. Inside there was an old note.

‘Dear Finder,

Sorry, but I took my gold. I needed to buy a new pirate ship.

Bye,

Captain Redbeard.’

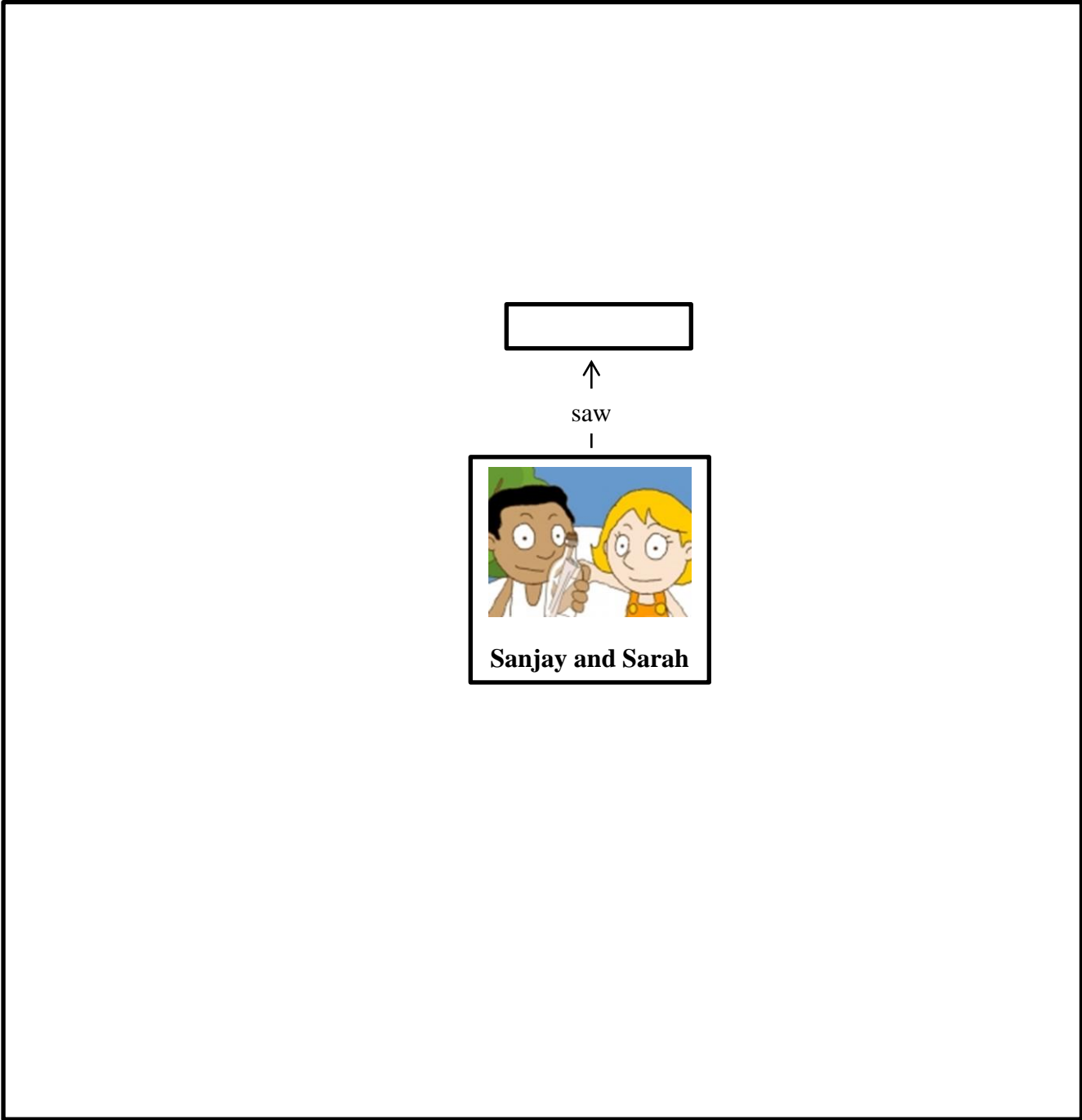
“Well, at least we had a nice walk.” said Sanjay.

“Yes, and we made a new friend!”

Student-constructed concept map: Exercise 6

Direction: Construct the concept map of this story using the concept words you have learned in the text. Use at least 10 words to complete the map.

The treasure map



[Empty rectangular box for concept map node]



saw



Name.....Class.....

Comprehension Exercise: The treasure map

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. What did Sanjay find in the bottle?
 - a. The map
 - b. The water
 - c. The treasure
 - d. The note
2. How many characters in the story and who are they?
 - a. 2 characters; Sanjay and Sarah
 - b. 3 characters; Sanjay, Sarah, and the parrot
 - c. 4 characters; Sanjay, Sarah, the parrot, and Captain Redbeard
 - d. 5 characters; Sanjay, Sarah, the parrot, Captain Redbeard and the finder
3. Which place was **not** in the map?
 - a. The crocodile pond
 - b. The bat cave
 - c. The bridge
 - d. The lake
4. What did Sanjay and Sarah find lastly?
 - a. Gold
 - b. Lots of silver
 - c. A pirate ship
 - d. Nothing just only the old note
5. The note was written by.....
 - a. Sanjay
 - b. Sarah
 - c. Captain Redbeard
 - d. the parrot
6. What was Captain Redbeard like?

.....

.....
7. What might Sanjay and Sarah do if they found the treasure?

.....

.....

Student-constructed concept map practice 2**Ali and the magic carpet**

One very hot day Ali finds a carpet in his uncle's shop.

“What's this?” says Ali

Suddenly the carpet jumps! It moves and flies off into the air.

“Hey! What's happening?”

A loud booming voice comes from the carpet.

“Welcome, O master. I am a magic carpet.”

“Do you want to adventure in any place around the world?”

“Yes, Let's go”

First they fly high up into the sky and then they land in a jungle.

It is hot and wet and it's raining.

Then they fly to the desert. It is very, very hot and dry.

“It is very, very hot today!”

After that they fly to the South Pole. There is lots of ice and snow.

It's freezing.

“Brrr!”

“Where are we now? I can't see!”

“In the mountains. Can you see me?”

“It's very foggy.”

Then they fly to a forest. It's very windy there.

“Oh, it's windy in the forest!”

Then they fly to an island in the sea. There is thunder and lightning.

“Aaagh! Let's go home!”

“What a storm!”

Finally they fly back home. The carpet lands in the shop and Ali gets off.

“Wow! What an adventure!”

Student-constructed concept map: Exercise 7

Direction: Construct the concept map of this story using the concept words you have learned in the text. Use at least 10 words to complete the map.



Name.....Class.....

Comprehension Exercise: Ali and the magic carpet

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. Where did Ali find the magic carpet?
 - a. In his house
 - b. In his uncle's shop
 - c. In a jungle
 - d. In the sky
2. Ali and the magic carpet **did not** go to
 - a. the South Pole
 - b. the desert
 - c. the island
 - d. the lake
3. Which is true about the South Pole?
 - a. It is hot and dry.
 - b. It is foggy.
 - c. It is windy.
 - d. It is freezing.
4. According to the story, which place was full of fog?
 - a. The jungle
 - b. The forest
 - c. The mountains
 - d. The desert
5. How many places did Ali and the carpet fly to?

a. 6 places	b. 5 places
c. 4 places	d. 3 places
6. What is the magic of the magic carpet?

7. Do you think the South Pole is a good place to live? Why?

Student-constructed concept map practice 3**The voyage of the animal orchestra**

It's a sad day. Our ship, Symphony, hit a rock this morning and we are sinking. We must abandon the ship and swim for our lives.

Day 1. We're alive. We swam all day and all night until we reached land. Who knows what's on this island? First we must sleep and rest.

Day 2. Today we walked around the island. We climbed a tree and all we saw was the deep blue sea and the hot sand. Ouch! Now we must find food.

Day 3. Today we went swimming and fishing. There were sea urchins in the sea. Ouch! Now we must find fresh water. Who knows how we can carry it?

Day 4. Today we climbed a volcano. At the top there was a pool of fresh rain water. It was delicious! Now we must explore more of the island.

Day 5. Today we walked across the island. There were banana trees and coconut trees. Ouch! Now we must make a shelter. Who knows how we can make one?

Day 6. Today we made a shelter out of bamboo and palm leaves. We have fish, fruit, milk, water and shelter. Now we must have some music!

Day 7. Today the band practiced on the beach. There was a ship on the horizon but it didn't see us. Who knows how we can stop the next ship?

Day 364. This morning the band was playing on the beach, (the music was a bit loud), when a ship sailed by! I blew my seashell and the ship stopped! It's a miracle! The ship heard the band and came to rescue us.

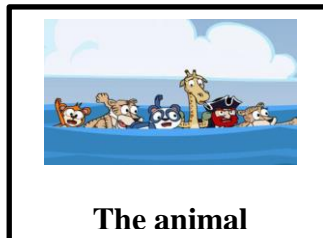
We're finally leaving the desert island.

We're going home! Hip hip hooray! Hip hip hooray!

Student-constructed concept map: Exercise 8

Direction: Construct the concept map of this story using the concept words you have learned in the text. Use at least 10 words to complete the map.

The Voyage of the animal orchestra



Name.....Class.....

Comprehension Exercise: The Voyage of the animal orchestra

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. What happened to Symphony ship?
 - a. It crashed corals.
 - b. It hit a rock and sank.
 - c. It sank because of a storm.
 - d. It was broken by the lightning.
2. Where did the animals find fresh water?
 - a. At the top of a volcano
 - b. From the bamboo tree
 - c. At the pool near their shelter
 - d. In the cave
3. Their shelter was made out of
 - a. pine trees
 - b. banana trees
 - c. coconut and bamboo leaves
 - d. bamboo and palm leaves
4. What did they do to stop the ship to help them?
 - a. Shouted loudly b. Waved the flag
 - c. Set on the fire d. Played the music
5. How long did they stay on this island?
 - a. For a week b. For a month
 - c. For a year d. For many years
6. Was the animal orchestra clever? How do you know?

7. Do you think this island is a nice place to live? Why?

Student-constructed concept map practice 4**Angel! Look out**

Angel and his Grandpa live on the Great Barrier Reef in Australia.

Grandpa is tired.

“I’m going to sleep now Angel. Be good, and don’t go past the coral! There are lots of dangerous animals out there.” said Grandpa.

A turtle came and said “Hi Angel, what are you doing?”

“I’m bored. Grandpa is asleep.”

“Do you want to come and play?”

“Yes, let’s go!”

“Look Turtle! A ball!”

“Look out!” That isn’t a ball! It’s a dangerous octopus! Swim!”

“Angel! Look out! There’s a dangerous fish behind you! Angel, you must be careful here. You’ve got to stay with me!”

“I’m sorry Turtle. Look! I’ve got a present for you.”

“Aargh! This is a dangerous cone shell! Drop it quickly, Angel!”

“I’m tired, Turtle. Can we rest here?”

“Don’t sit here, Angel! There’s a dangerous sea snake! Quick! Swim!”

“Where we are?”

“I don’t know. I think we’re lost. Look out Angel! That’s a box jelly fish!

“Swim!” The turtle shouted.

“Look out Turtle! A dangerous animal is behind you!”

“That’s not a dangerous animal. It’s Doug, he’s my friend.”

“Hello Doug, we’re lost. Can you help us?”

“Yes, I can help you. I’ll take you home.” Now, they arrived home safely.

“Hello Angel.”

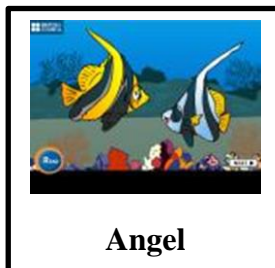
“Hello Grandpa.”

“Oh, you’ve been a very good fish, Angel. Here’s a present for you.”

“Thanks, Grandpa!”

Student-constructed concept map: Exercise 9

Direction: Construct the concept map of this story using the concept words you have learned in the text. Use at least 10 words to complete the map.



Name.....Class.....

Comprehension Exercise: Angel! Look out!

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. Where did Angel and his Grandpa live?
 - a. In the lake
 - b. In the river
 - c. On the island
 - d. On the Great Barrier Reef
2. Who did Angel adventure with?
 - a. Turtle
 - b. Octopus
 - c. Sea snake
 - d. Jelly fish
3. Which animal was **not** in the story?
 - a. Octopus
 - b. Cone shell
 - c. Jelly fish
 - d. Shark
4. Which is correct?
 - a. Grandpa could not find Angle when he woke up.
 - b. Angle and turtle could get home safely.
 - c. Octopus helped to take Angel home.
 - d. Angel and Doug are friends.
5. Who is Doug?
 - a. Angel's Grandpa
 - b. Turtle's Grandpa
 - c. Turtle's friend
 - d. Angel's friend
6. What might happen if Angel and the turtle did not meet with Doug?

7. "Angel went out with a turtle while his Grandpa was asleep" Is it a good or a bad act? Why?

Student-constructed concept map practice 5**The lantern – A Ramadan story**

Once upon a time there was a young prince who lived alone with his father, the caliph, after his mother died. The caliph married again but his new wife was often unkind to the prince. The caliph didn't care much and this made the young prince very unhappy.

On the 15th day of the month of Sha'aban, the son said to his pet pigeon, "Let's not stay here anymore. Let's run away because nobody here cares about us." So they both ran away into the jungle.

After a long time, they came to a grand palace which belonged to a lonely ghoul. "This is the awful ghoul's palace," said the prince, "but we are very hungry and cold and he might be asleep.

Let's sneak in and rest till the morning."

But the ghoul wasn't asleep. He was watching them.

The prince found a bed and fell asleep. When he woke up, he was surrounded by golden prison bars: he was in a jail! The ghoul said, "I know all about your evil step-mother. Your father doesn't love you. I'm lonely, so I'll keep you here as my pet!"

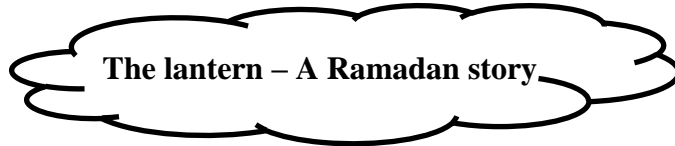
The little prince pleaded with the ghoul to set him free.

Finally, the ghoul growled, "I'll send your pigeon home.

If the caliph misses you, he'll follow the pigeon back here and save you. If not, you'll spend the rest of your life here!" The pigeon raced to the caliph's palace. Since his son had run away, the caliph cried and prayed every night that he would see him before the holy month of Ramadan. On the last night of Sha'aban, he felt that his son was close. He opened the window and found the pigeon sitting on the ledge! He knew that he had to follow the pigeon but it was really dark.

Student-constructed concept map: Exercise 10

Direction: Construct the concept map of this story using the concept words you have learned in the text. Use at least 10 words to complete the map.



Name.....Class.....

Comprehension Exercise: The lantern – A Ramadan story

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

1. Why did the prince run away from his palace?
 - a. He wanted to adventure in the jungle.
 - b. His step-mother drove him away.
 - c. His father had a new wife and she was unkind to him.
 - d. He quarreled with his father and then he was chased away.

2. Where did the prince go after he was away from home?
 - a. To the ghoul palace
 - b. To the giant tower
 - c. To his friend's house
 - d. To the Caliph castle

3. Who did the prince ask to sneak away with him?
 - a. His sister
 - b. His brother
 - c. His friend
 - d. His pigeon

4. Which is true?
 - a. The Caliph was sad when his son had run away.
 - b. The step-mother was kind to the prince.
 - c. The prince had to follow the light.
 - d. The ghoul did not allow the prince to go back home lastly.

5. What is the reward from the Caliph to his loyal subjects?

a. A candle	b. A gold
c. A lantern	d. A lot of money

6. Is it good or bad when the young prince ran away from his home?

7. Which character do you like the most? Why?

Appendix B

Reading Comprehension Test

Reading Comprehension Test

Subject: English

Time allocated: 90 minutes

Level: Grade 6

Date:

Name.....Class.....No.....

Direction: Choose the correct answer. (จงเลือกคำตอบที่ถูกต้อง)

Passage 1: Little Red Riding Hood

Little Red Riding Hood lived in a wood with her mother. One day Little Red Riding Hood went to visit her granny. She had a nice cake in her basket.

On her way Little Red Riding Hood met a wolf.

“Hello!” said the wolf. “Where are you going?”

“I’m going to see my grandmother. She lives in a house behind those trees.”

The wolf ran to Granny’s house and ate Granny up. He got into Granny’s bed. A little later, Little Red Riding Hood reached the house. She looked at the wolf.

“Granny, what big eyes you have!” “All the better to see you with!” said the wolf.

“Granny, what big ears you have!” “All the better to hear you with!” said the wolf.

“Granny, what a big nose you have!” “All the better to smell you with!” said the wolf.

“Granny, what big teeth you have!” “All the better to eat you with!” shouted the wolf.

A woodcutter was in the wood. He heard a loud scream and ran to the house.

The woodcutter hit the wolf over the head. The wolf opened his mouth wide and shouted and Granny jumped out.

The wolf ran away and Little Red Riding Hood never saw the wolf again.

Traditional story adapted by Cambridge English Online

1. Little red riding hood lived in a (Literal)
 - a. in a city
 - b. in a country
 - c. in a wood
 - d. in a basket
2. Who did Little Red Riding Hood visit? (Literal)
 - a. Her mother
 - b. Her grandmother
 - c. A wolf
 - d. A woodcutter
3. What did she have in the basket? (Literal)
 - a. Cake
 - b. Fruits
 - c. A hood
 - d. Dessert
4. She met on the way to her granny's house? (Literal)
 - a. a wood cutter
 - b. her mother
 - c. her granny
 - d. a wolf
5. What happened to her granny? (Literal)
 - a. She died on the bed.
 - b. The wolf ate her.
 - c. She ran to the house.
 - d. The woodcutter hit her.
6. Who came to help Little Red Riding Hood? (Literal)
 - a. A woodcutter
 - b. Her granny
 - c. Her mother
 - d. Her friend
7. Why did the wood cutter run to the house? (Interpretation)
 - a. He was afraid of the scream.
 - b. He wanted to save the girl.
 - c. He wanted to hide himself.
 - d. He was looking for Granny.
8. Which is **not** true? (Interpretation)
 - a. Granny was still alive.
 - b. The wolf may be hurt.
 - c. The woodcutter killed the wolf.
 - d. The wolf wanted to eat the girl.

9. The person who did the best thing in this story is..... (Evaluation)
- a. the woodcutter
 - b. granny
 - c. the wolf
 - d. little red riding hood
10. The most terrible character in the story is (Evaluation)
- a. little red riding hood
 - b. granny
 - c. the wolf
 - d. the woodcutter

Passage 2: Jack and the Beanstalk

Once upon a time there was a boy called Jack. He lived with his mother. They were very poor. All they had was a cow.

One morning, Jack's mother told Jack to take their cow to market and sell her. On the way, Jack met a man. He gave Jack some magic beans for the cow.

Jack took the beans and went back home. When Jack's mother saw the beans she was very angry. She threw the beans out of the window.

The next morning, Jack looked out of the window. There was a giant beanstalk. He went outside and started to climb the beanstalk.

He climbed up to the sky through the clouds. Jack saw a beautiful castle. He went inside. Jack heard a voice. "Fee, Fi, Fo, Fum!" Jack ran into a cupboard.

An enormous giant came into the room and sat down. On the table there was a hen and a golden harp.

"Lay!" said the giant. The hen laid an egg. It was made of gold. "Sing!" said the giant. The harp began to sing. Soon the giant was asleep.

Jack jumped out of the cupboard. He took the hen and the harp. Suddenly, the harp sang, "Help, master!"

The giant woke up and shouted, “Fee, Fi, Fo, Fum!” Jack ran and started climbing down the beanstalk. The giant came down after him.

Jack shouted, “Mother, help!” Jack’s mother took an axe and chopped down the beanstalk. The giant fell and crashed to the ground. Nobody ever saw him again.

With the golden eggs and the magic harp, Jack and his mother lived happily ever after.

Traditional story adapted by Cambridge English Online

11. Jack lived with..... (Literal)
- | | |
|------------|---------------|
| a. his cow | b. his father |
| c. a giant | d. his mother |
12. What did Jack’s mother want him to do with a cow? (Literal)
- a. Bought some food for it.
 - b. Sold it at the market.
 - c. Showed it at the market.
 - d. Fed it with some grass.
13. A man gave to Jack (Literal)
- | | |
|----------------|------------------|
| a. a cow | b. a golden harp |
| c. magic beans | d. hens |
14. Jack’s mother was verywhen she saw Jack went back with the beans. (Literal)
- | | |
|----------|----------|
| a. upset | b. happy |
| c. glad | d. sorry |
15. What happened after the beans were thrown out of the house? (Literal)
- a. Nothing happened.
 - b. There was a small beanstalk.
 - c. The beanstalk became a golden egg.
 - d. There was a giant beanstalk.

16. Who was in the castle? (Literal)
- a. His mother
 - b. A cow
 - c. A man
 - d. A giant
17. What might Jack and his mother do with the golden eggs? (Interpretation)
- a. Give them to their neighbors
 - b. Sell them to get money
 - c. Show them as a magic things
 - d. Throw them away
18. How many characters are there altogether in this story? (Interpretation)
- a. 4
 - b. 5
 - c. 6
 - d. 7
19. Which may be **true**? (Evaluation)
- a. The giant is selfish.
 - b. Jack is kind to his mother.
 - c. Jack's mother is always angry.
 - d. A man that Jack met is stupid.
20. Which action was **not** good? (Evaluation)
- a. Jack stole a hen and a harp from the giant.
 - b. A man gave Jack some magic beans for the cow.
 - c. Jack took the cow to the market and sold her.
 - d. Jack climbed up the beanstalk.

Passage 3: The Princess and the dragon

Once upon a time there was a king and queen who lived in a golden castle with their beautiful daughter. One night an ugly ogre captured the beautiful princess and locked her up in his tall, dark tower. "Help me!" the princess cried out. "Roar!" the ogre shouted.

The king and queen were very sad. They promised to give a bag of gold to the knight that rescued the princess. "Please save our princess!"

“We’ll save the princess!” All the knights in the land wanted to rescue the princess. They rode to the tower as fast as they could.

“Help me!” the princess shouted. “Roar!” The ugly ogre roared with anger when he saw the knights. His roar was so scary that they rode away as fast as they could.

One day a friendly dragon was flying over the ogre’s tower when he heard the princess cry for help. “Help me!”

The dragon flew down to the tower, took a big fiery breath and blew the ogre far away over the mountains and into the ocean.

“Come with me princess, don’t be scared!” “Thank you for saving me.” “My pleasure, princess!” The dragon rescued the princess from the tower and gently put her on his strong back. They flew high in the sky.

They flew over the tower and the castle, over the mountains and caves, and out towards the deep blue ocean. “Whee! I can fly!”

21. Who lived in the golden castle? (Literal)

- a. The king, the queen and the dragon
- b. The king, the princess and the ogre
- c. The king, the queen and the princess
- d. The king, the princess and the dragon

22. The ogre took the princess to..... (Literal)

- a. his cave
- b. his castle
- c. his tower
- d. his palace

23. What will the king and the queen give to a person who can rescue the princess? (Literal)

- a. A bag of silver
- b. A bag of money
- c. A bag of diamond
- d. A bag of gold

24. At the end, can help the princess. (Literal)
- the knight
 - the dragon
 - the king
 - the queen
25. What did the dragon do to rescue the princess? (Literal)
- Blew the ogre with his wings
 - Brought a lot of food to the ogre
 - Sang and danced till the ogre felt asleep
 - Took and blew the ogre with a fiery breath
26. The dragon was (Literal)
- friendly
 - selfish
 - rude
 - beautiful
27. The word “They” (line 6) refers to..... (Interpretation)
- the king and the queen
 - the ogres
 - the dragons
 - the knights
28. Where will the dragon and the princess fly to? (Interpretation)
- The king’s castle
 - The dragon’s cave
 - The ogre’s tower
 - The knight’s house
29. Which is true? (Evaluation)
- The dragon is brave.
 - The ogre is gentle.
 - The knights are strong.
 - The king is poor.

30. Who is the hero in this story? (Evaluation)

- a. The knight
- b. The dragon
- c. The king
- d. The ogre

.....

Appendix C

Vocabulary Test

แบบทดสอบวัดความรู้ด้านคำศัพท์

ชั้นประถมศึกษาปีที่ 6 วันที่ / / 255....

ชื่อ-นามสกุล.....เลขที่.....

คำอธิบาย

1. แบบทดสอบชุดนี้เป็นแบบทดสอบเขียนตอบสั้น จำนวน 40 ข้อ
2. ให้นักเรียนเขียนความหมายภาษาไทยของคำศัพท์ให้ถูกต้อง

ข้อ	คำศัพท์	ความหมาย
1	greedy	
2	selfish	
3	sank (v.2)	
4	angry	
5	lake	
6	rob	
7	cashier	
8	magic	
9	arrest	
10	thin	
11	spider	
12	web	
13	honey	
14	river	
15	tied (v.2)	

ข้อ	คำศัพท์	ความหมาย
16	forest	
17	porridge	
18	adventure	
19	trolley	
20	lorry	
21	bowl	
22	treasure	
23	map	
24	island	
25	volcano	
26	snow	
27	fly	
28	sky	
29	bamboo	
30	ship	
31	dangerous	
32	palace	
33	carpet	
34	prince	
35	foggy	
36	voyage	
37	gold	
38	sea	
39	turtle	
40	pull	

Appendix D

Interview Questions

Interview Questions

1. นักเรียนชอบนิทานเรื่องนี้หรือไม่ เพราะอะไร
 2. เนื้อเรื่องมีความเหมาะสม และง่ายต่อการทำ concept map หรือไม่
 3. นักเรียนมีวิธีการเชื่อมโยงความคิดเพื่อให้เข้าใจเนื้อเรื่องอย่างไร
 4. การทำกิจกรรมเป็นอย่างไร นักเรียนชอบหรือไม่
 5. นักเรียนมีปัญหาในการทำกิจกรรมหรือไม่ อะไรเป็นสิ่งที่ยากที่สุด
 6. นักเรียนมีวิธีการแก้ปัญหอย่างไร
 7. การทำ concept map ทำให้บรรยากาศการเรียนเป็นอย่างไร นักเรียนสนใจเรียนมากกว่า การฟังครูอธิบายอย่างเดียวหรือไม่
 8. นักเรียนรู้สึกอย่างไร เมื่อมีโอกาสทำกิจกรรม และทำความเข้าใจเนื้อเรื่องด้วยตัวเอง
 9. นักเรียนได้ประโยชน์อะไรบ้าง จากการทำ concept map
 10. การทำ Concept map ทำให้นักเรียนเข้าใจเรื่องที่อ่านมากขึ้นหรือไม่ อย่างไร
 11. นักเรียนสามารถพัฒนาศัพท์ภาษาอังกฤษ ได้มากขึ้นแค่ไหนจากเรื่องนี้
-

Appendix E

Questionnaire on English Reading Attitude

แบบสอบถามเพื่อวัดเจตคติของนักเรียนชั้นประถมศึกษาปีที่ 6 ที่มีต่อการอ่านภาษาอังกฤษ

คำชี้แจง

ให้นักเรียนตอบว่าชอบหรือเห็นด้วยกับข้อต่อไปนี้เพียงใด โดยทำเครื่องหมาย / ลงในช่องที่เหมาะสมกับคำตอบของนักเรียนมากที่สุด

ข้อที่	รายการ	น้อยที่สุด	น้อย	ปานกลาง	มาก	มากที่สุด
1	ฉันชอบอ่านหนังสือภาษาอังกฤษที่ห้องสมุดโรงเรียน					
2	ฉันชอบอ่านหนังสือภาษาอังกฤษที่บ้าน					
3	ฉันชอบอ่านหนังสือภาษาอังกฤษในชั้นเรียน					
4	ฉันชอบอ่านนิทานภาษาอังกฤษ					
5	ฉันชอบอ่านการ์ตูนภาษาอังกฤษ					
6	ฉันคิดว่าการอ่านภาษาอังกฤษเป็นเรื่องง่าย					
7	ฉันชอบทำกิจกรรมอย่างอื่นมากกว่าการอ่านหนังสือภาษาอังกฤษ					
8	ฉันชอบไปยืมหนังสือภาษาอังกฤษที่ห้องสมุด					
9	การอ่านภาษาอังกฤษทำให้ฉันสนุกและเพลิดเพลิน					
10	ฉันคิดว่าการอ่านภาษาอังกฤษเป็นเรื่องที่น่าสนุก ไม่น่าเบื่อ และท้าทายความสามารถ					
11	การอ่านภาษาอังกฤษทำให้ฉันพัฒนาศัพท์ที่ได้มากขึ้น					
12	ฉันคิดว่าการอ่านภาษาอังกฤษ ทำให้ฉันพัฒนาความสามารถการอ่านได้ดีขึ้น					
13	ฉันอ่านภาษาอังกฤษจากหนังสือเรียนเพียงอย่างเดียว					
14	ฉันชอบอ่านหนังสือภาษาอังกฤษหลากหลายประเภท					
15	ฉันชอบอ่านออกเสียงภาษาอังกฤษ					
16	ฉันชอบอ่านหนังสือภาษาอังกฤษให้เพื่อนฟัง					
17	ฉันภูมิใจที่ได้อ่านภาษาอังกฤษให้เพื่อนฟังและให้เพื่อนอ่านตาม					
18	ฉันอยากอ่านหนังสือภาษาอังกฤษ แม้จะอ่านยากเพราะทำให้ได้ความรู้ใหม่ๆ					
19	ฉันยังอ่านหนังสือภาษาอังกฤษต่อไป แม้บางครั้งฉันอ่านไม่ออกก็ตาม					
20	ถ้าฉันรู้คำศัพท์มากขึ้น จะทำให้ฉันอยากอ่านหนังสือภาษาอังกฤษมากขึ้น					

Appendix F
Manuscripts

Paper 1

Deema, M., & Charumanee, N. (2016). The Use of Concept Maps to Develop English Reading Comprehension Ability and Vocabulary Knowledge. *Journal of liberal Arts*, Prince of Songkla University. (submitted manuscript).

The use of concept maps to develop English reading comprehension ability and vocabulary knowledge

การใช้ผังมโนทัศน์ในการพัฒนาความสามารถในการอ่านภาษาอังกฤษเพื่อความเข้าใจและความรู้ด้านคำศัพท์

*Muneeroh Deemae*¹

มุนีเราะห์ ดีแม

*Nisakorn Charumane*²

นิสกร จารุมนี

Abstract

The research aimed to study the effects of using concept maps to develop English reading comprehension ability and vocabulary knowledge of the students. The participants were 30 Grade 6 students studying at Ban Dalor School, Pattani, in the second semester of the 2015 academic year. The research was a quasi-experimental design of one group pre-test, mid-test and post-test. The treatment included 1) 10 traditional narrative stories as reading texts, 2) fill-in concept map exercises and student-constructed concept map exercises. The research instruments were 1) a reading comprehension test covering 3 levels of comprehension proposed by Richard (1992) and Robin (1993): literal level, interpretation level and evaluation

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นักศึกษาปริญญาโท (สาขาการสอนภาษาอังกฤษเป็นภาษานานาชาติ) ภาควิชาภาษาและภาษาศาสตร์ คณะศิลปศาสตร์ มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตหาดใหญ่

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รองศาสตราจารย์ ดร. อาจารย์ภาควิชาภาษาและภาษาศาสตร์ คณะศิลปศาสตร์ มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตหาดใหญ่

level, 2) a vocabulary test used for pre, post, and retention test. Means, standard deviations, and paired-sample t-test were used in the data analysis.

The results revealed that the students' overall reading comprehension score improved significantly at the level of 0.01** after using concept maps indicating that the two types of concept maps help students to improve their reading comprehension ability. A further comparison on 3 levels of comprehension also showed that there was a significant difference in the progression of 3 levels. Regarding students' vocabulary development, students could improve their vocabulary knowledge significantly at the level of 0.01**. The result also showed that the mean score in the retention test was slightly increased from the post-test, even with no significant difference. This indicated that students could improve and retain their vocabulary knowledge.

Keywords: Concept maps, Fill-in concept map, Student-constructed concept map, Reading comprehension, Vocabulary development

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลของการใช้ผังมโนทัศน์ในการพัฒนาการอ่านภาษาอังกฤษเพื่อความเข้าใจและการพัฒนาคำศัพท์ กลุ่มตัวอย่างคือนักเรียนที่กำลังศึกษาอยู่ชั้นประถมศึกษาปีที่ 6 โรงเรียนบ้านตาล จังหวัดปัตตานี ในภาคเรียนที่ 2 ปีการศึกษา 2558 จำนวน 30 คน การวิจัยครั้งนี้เป็นการวิจัยกึ่งทดลอง โดยใช้แบบแผนการวิจัยแบบการทดลองกลุ่มเดียว (ทดสอบก่อน ทดสอบระหว่างการทดลอง และทดสอบหลังการทดลอง) เครื่องมือที่ใช้ในการทดลองประกอบด้วย 1) บทอ่านภาษาอังกฤษซึ่งเป็นนิทานจำนวน 10 เรื่อง 2) แบบฝึกผังมโนทัศน์แบบเติมคำและผังมโนทัศน์แบบนักเรียนสร้างเอง เครื่องมือที่ใช้ในการเก็บข้อมูลประกอบด้วย 1) แบบทดสอบวัดความสามารถการอ่านเพื่อความเข้าใจ ครอบคลุมความเข้าใจ 3 ระดับตามทฤษฎีของ Richard (1992) และ Rubin (1993) คือ ความเข้าใจระดับตัวอักษร ความเข้าใจระดับการตีความ และความเข้าใจระดับการประเมินค่า ใช้ทดสอบก่อน ระหว่าง และหลังเรียน และ 2) แบบทดสอบความรู้ด้านคำศัพท์ใช้ทดสอบก่อนเรียน หลังเรียน และทดสอบความคงทนของคำศัพท์ สถิติที่ใช้ในการวิจัยได้แก่ ค่าเฉลี่ย ค่าส่วนเบี่ยงเบนมาตรฐาน และค่าความแตกต่าง

ผลการวิจัยพบว่านักเรียนมีคะแนนทดสอบการอ่านภาษาอังกฤษเพื่อความเข้าใจหลังการเรียนโดยใช้ผังมโนทัศน์เพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ 0.01** ซึ่งแสดงให้เห็นว่าการเรียนโดยใช้

ผังมโนทัศน์สามารถพัฒนาความสามารถทางการอ่านภาษาอังกฤษเพื่อความเข้าใจของนักเรียนได้ และเมื่อเปรียบเทียบคะแนนทดสอบการอ่านในแต่ละระดับพบว่า นักเรียนมีคะแนนทดสอบก่อนเรียน และหลังเรียนเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ 0.01** ในทุกระดับ จึงอาจกล่าวได้ว่า ผังมโนทัศน์ทั้งสองแบบสามารถพัฒนาการอ่านภาษาอังกฤษเพื่อความเข้าใจของนักเรียนได้ดีในทุกระดับ ส่วนด้านการพัฒนาคำศัพท์นั้น พบว่านักเรียนมีคะแนนทดสอบความรู้ด้านคำศัพท์หลังการเรียนโดยใช้ ผังมโนทัศน์เพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01** ส่วนค่าเฉลี่ยของการทดสอบคำศัพท์หลังเรียน 2 สัปดาห์เพิ่มขึ้นเล็กน้อย ถึงแม้ว่าไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติ ซึ่งแสดงให้เห็นว่านักเรียนสามารถพัฒนาและจดจำคำศัพท์ได้ดี

คำสำคัญ: ผังมโนทัศน์, ผังมโนทัศน์แบบเติมคำ, ผังมโนทัศน์แบบนักเรียนสร้างเอง, การอ่านเพื่อความเข้าใจ, การพัฒนาคำศัพท์

Introduction

Reading is considered as one of the most important skills for students in accessing and acquiring the knowledge. It is an essential skill for academic success. Due to the globalization where knowledge is widely spread and easily to access, English has become an international language in transferring all forms of knowledge. Being good at reading in English, thus, can enable students to catch up in the knowledge-based society.

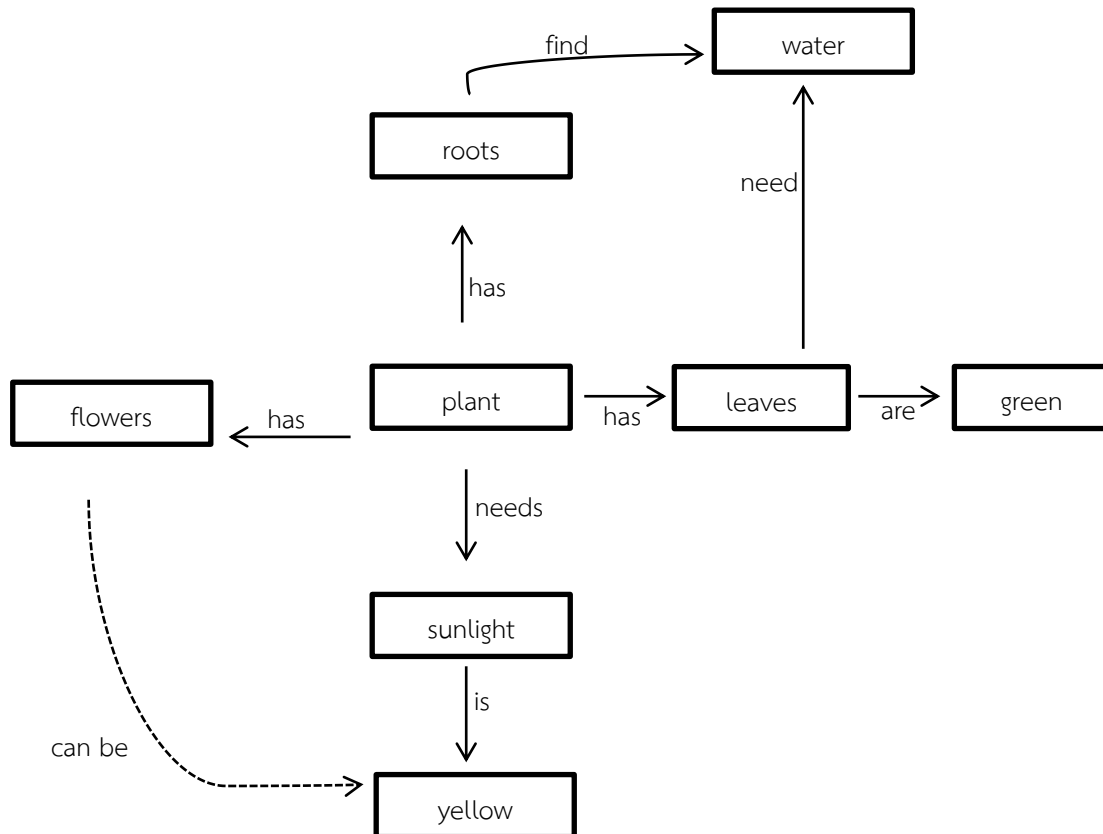
In Thailand where English is used as a foreign language, reading texts are the main sources that Thai students can be exposed to. However, it was found that English reading has been a crucial problem for Thai learners. Many Thai learners at all educational levels are still poor in reading (Mungsiri, 2002). They find that English is difficult and this blocks their desire or motivation to read. Similar results were indicated by Mede (2010) that most EFL learners have difficulties in reading English because they are not aware of how to read and may not understand a text. According to the results of Ordinary National Education Test (O-NET), it was also found that students in sixth grade scored 36.99, 33.82 and 36.02 in English subject in the 2012, 2013 and 2014 academic year respectively. The scores were much lower than the “passed” level which was 50. It shows that the students need to improve their reading ability urgently.

As English reading has become a serious problem in Thailand, teachers should teach students how to read effectively right from the early level in primary schools. Thai learners have to be implanted reading habit starting from reading the easy texts which they are interested in, and properly match their proficiency level in order to develop their reading performance and good attitudes towards reading. Providing them with an appropriate instruction and technique can be a powerful way to help them achieve their reading ability (Graham & Bellert, 2004).

To improve students' reading comprehension, teachers are always looking for an effective way to develop their reading ability. Many techniques have been proposed to help the students improve their reading performance. Concept mapping is one of the recommended techniques that is widely used in second language teaching. It is used to represent students' knowledge and enhance their thinking (Birbili, 2006); scaffold for understanding (Novak & Canas, 2006); point up the relationships among concepts (Workman & Anziano, 1994) and encourage critical thinking (Gallenstein, 2003).

Concept maps are graphical tools for representing knowledge. They include concepts which are usually enclosed in circles or boxes, and the relationships between concepts are indicated by a connecting line linking two concepts. Words on the line refer to linking words or linking phrases to specify the relationship between the two concepts (Novak & Canas, 2008). For concept mapping, it involves the importance of connecting new information to prior knowledge and experience (Novak & Gowin, 1984). According to Plotnik (1997), the main advantages of concept mapping are the use of visual symbols because they are easily recognized, easy to scan for a specific word and it also allows for more understanding of a concept. It can promote vocabulary knowledge and reading comprehension since it focuses on the key words or the key concepts of the texts for students to link them to make the text easy to understand. Figure 1 shows an example of a concept map.

Figure 1: An example of concept map.



This technique is now widely applied in teaching area. The concept map itself has been approved by many researchers and there are many versions including expert-constructed concept map (teacher-constructed), student-constructed concept map, construct-on-scaffold concept map (fill-in concept map), and cooperative concept map. Many studies have been conducted to investigate the effect of using concept maps on education and most found positive results. For example, Soleimani and Nabizadeh (2012) studied the effects of learner constructed concept map, fill-in concept map, and summarizing strategy on students' reading comprehension. They found that despite the efficacy of all three strategies, the fill-in concept map version was the most influencing one. More evidence is from the study of Saedi et al. (2013) who found that students can improve their reading comprehension after the use of concept map and the best way to use concept map is teacher-generated concept maps with texts.

As mentioned above, the results from many studies show that concept maps can enhance students' learning as well as improving comprehension. Nonetheless, the use of concept mapping technique in understanding the narrative texts particularly with young learners is rare. Thus, the present study aimed to investigate the effects of using concept maps along with story texts to develop English reading comprehension ability and vocabulary development of the elementary students. Specifically, the study attempted to answer the following questions:

- 1) To what extent do the students improve their reading comprehension?
- 2) To what extent do the students improve and retain vocabulary knowledge after using concept maps?

Research Methodology

1) Participants

The participants of the study consisted of 30 EFL students. They were studying in Grade 6 during the second semester of the 2015 academic year at Ban Dalor School located in Yaring district, Pattani Province. They were purposely chosen on the basis of the consistently poor performance in English from Grade 1 to 5 as indicated by their grades in English which were mostly average at C level. The ages of the participants ranged from 11 – 12 years old. These participants had never been participants of any language research.

2) Instruments

2.1) The reading materials and the concept maps

Ten traditional narrative stories adapted by Cambridge English Online were used in the current study. The stories were from British Council website and were randomly selected. The criteria for selection included 1) the relevance to the students' interest by allowing them to select ten stories they wanted to read the most 2) the proper length of texts (150-300 words), 3) the readability in terms of vocabulary and language complexity.

The study employed two types of concept maps: 1) fill-in concept map and 2) student-constructed concept map. Based on the first five texts, the fill-in concept maps (the incomplete concept maps with some given concepts and linking words)

were constructed and comprehension exercises were used to check their understanding. Students had to fill the missing concepts to complete the maps by choosing the words provided from a list based on the passages they read and then did the comprehension exercises. With the last five texts, students were free to construct their own concept maps called student-constructed concept maps and completed the provided comprehension exercises.

2.2) Reading comprehension test

In this study, a 4 multiple-choice reading comprehension test was used three times as pre-, mid-and post- tests. All the three tests were parallel except that the test items were rearranged to avoid the problem of familiarity. Three stories which were at the same level as the stories in the experiment were selected for the reading comprehension test. Each story consisted of 10 questions: 6 questions of literal level, 2 questions of interpretation level and 2 questions of evaluation level. The whole test included 30 questions. To assure the content validity and the reliability of the test, it was checked by the three experts and then revised as suggested. The IOC was 0.94. Then the test was piloted with thirty Grade 6 students who were not involved in the study. This group of students was chosen because their learning background, learning context, and English proficiency level were comparable to those of the participants in the study. The reliability of the test was 0.76.

2.3) Vocabulary test

The test was used to examine the vocabulary development and retention level. It was conducted in pre, post- and retention periods. One hundred words were drawn from the 10 stories used in this experiment (10 words from each story including noun, verb, and adjective). The list was given to the target students to identify the words they knew by giving the meaning in Thai. The 40 words highly frequently unknown to all students were selected for the vocabulary test which required students to write the meaning of each word in Thai language.

3) Treatment and data collection procedure

The study was conducted in the supplementary class, which occupied a weekly ninety-minute period. In the first week, all participants had to do the

pre-test of reading comprehension containing 30 items of multiple-choice questions and 40 items of vocabulary test. After that, the researcher began the training phase which aimed at teaching them to be familiar with concept maps technique. The reading texts used in the training phase were narrative texts sharing common features with those used in the treatment. The training phase took 2 weeks.

After 2 weeks of training phase, the fill-in concept map was used during weeks 4-8 which was the first phase of the experiment. Five stories were introduced in this phase. Each story took a ninety-minute period of teaching. After reading each story, students were assigned to complete the fill-in concept map and then did one other comprehension exercise. The scores each student obtained from each concept map and exercise were collected.

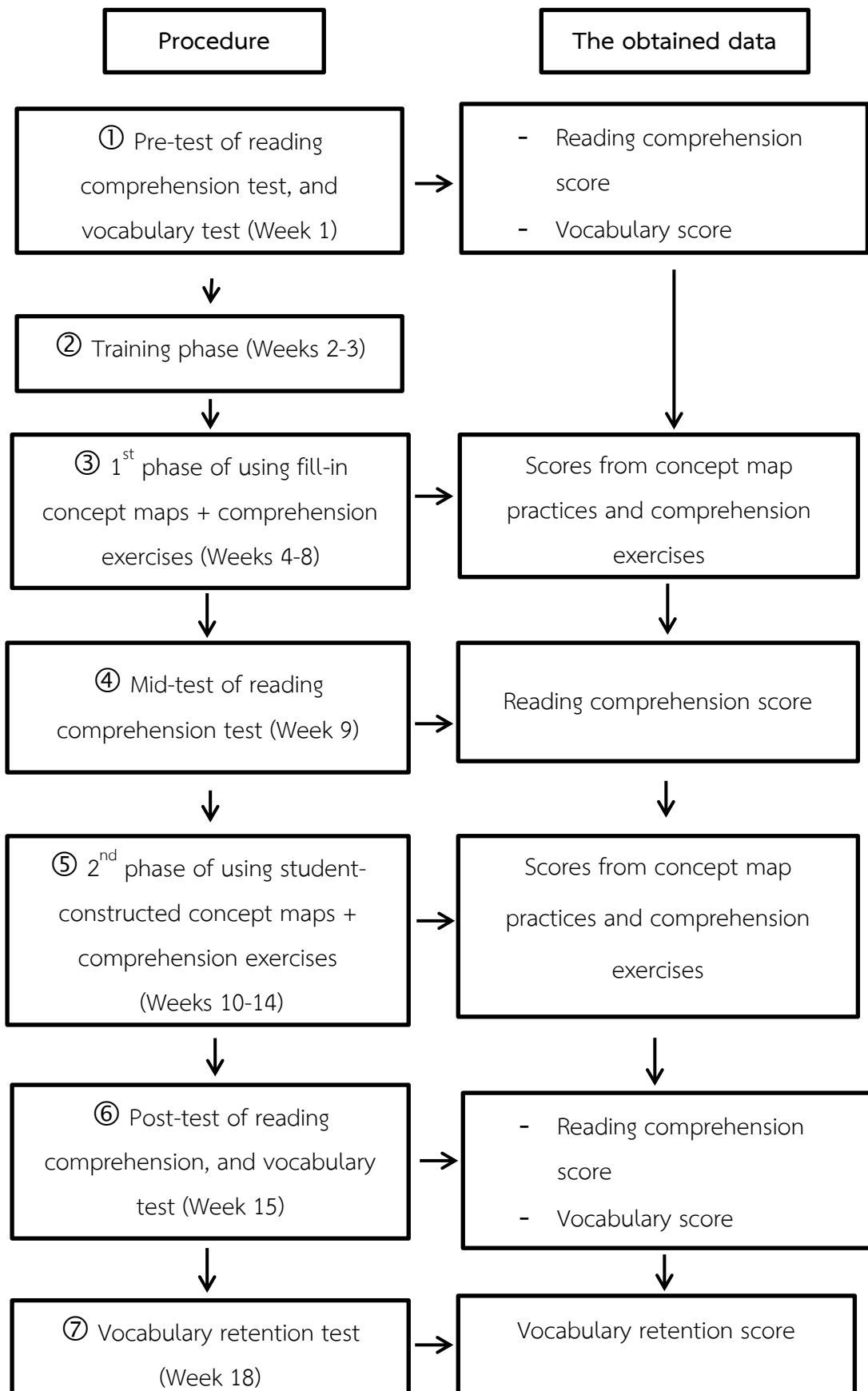
In week 9, the mid-test was administered to measure the reading comprehension development of the students and this did not include the vocabulary test.

During weeks 10-14, the second phase, student-constructed concept map was implemented. Similarly to the first phase, the other five stories were introduced in class. Students were assigned to construct the concept maps by themselves and did a reading comprehension exercise after reading each story. As with the first phase, the concept map scores from the second phase were kept.

The post-test, the same version as in the pre- and mid- test was administered after the last class ended. The vocabulary test was also included. Two weeks after the post-test, the participants took the vocabulary retention test. Figure 2 summarizes the described procedure.

Figure 2 shows the phases of treatment and the data collection procedure taking place during the second semester of 2015 academic year from November 2015 to January 2016.

Figure 2: The treatment and data collection procedure



3) Data analysis

The researcher calculated the scores from concept maps practice, reading comprehension test and vocabulary test by using means, standard deviations, and paired-sample t-test.

Results

Research Question 1: To what extent do the students improve their reading comprehension?

To answer the first research question as to what extent do the students improve their reading comprehension after using two types of concept map, the researcher used scores from concept map exercises and scores from the pre-test, mid-test and post-test to calculate means, standard deviations and paired sample t-test. The results are presented in chart1 and Table 1 below.

Chart 1: The illustration of concept map scores

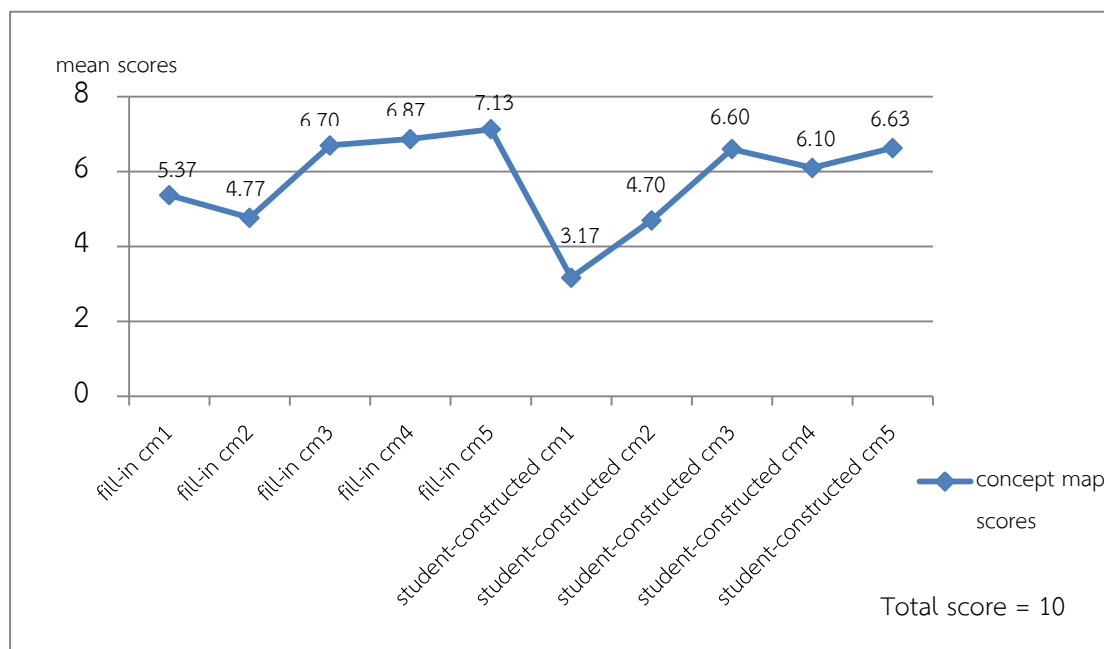


Chart 1 shows the students' scores from concept maps through the two phases of treatment. It revealed that students had lower scores on the first two maps of fill-in concept map exercises ($\bar{X} = 5.37$ and 4.77) and then the scores

continually increased on the last three maps (\bar{X} = 6.70, 6.87 and 7.13 respectively). However, the mean score decreased to the lowest after the first two maps of student-constructed concept maps (\bar{X} = 3.17 and 4.70). Similarly to the fill-in concept map exercises, the scores increased again on the last three maps of student-constructed concept map (\bar{X} =6.60, 6.10, and 6.63 respectively).

The data from the concept map scores clearly showed that students might struggle at the beginning of the practice of each type of concept maps but later on they gradually improved their ability in completing the maps as well as improved their understanding of the texts as shown in table 1 below.

Table 1: Comparison of reading comprehension scores in the pre-test, mid-test and post-test

The period	Total score	\bar{X}	S.D.	Mean Difference	t-value	df	p-value
Pre-test	30	9.80	2.92				
Mid-test	30	13.07	5.03	3.27	-6.47**	29	.00
Mid-test	30	13.07	5.03				
Post-test	30	15.27	4.37	2.20	-4.08**	29	.00
Pre-test	30	9.80	2.92				
Post-test	30	15.27	4.37	5.47	-13.56**	29	.00

**Significant at 0.01

Table 1 shows that the mean score of students' reading comprehension in the post-test (\bar{X} = 15.27) was higher than that in the pre-test (\bar{X} = 9.80) and the mid-test (\bar{X} = 13.07). A further look at the mean difference between the pre-test and the mid-test showed that there was a significant difference at 0.01 level (mean difference = 3.27, p = 0.00). As for the mean difference between the mid-test and the post-test, there was a significant difference at 0.01 level (mean difference = 2.20, p = 0.00). With the continually improving scores, it was identified that there was a significant difference at 0.01 level between the mean score of the pre-test and the post-test (mean difference = 5.47, p = 0.00).

The finding indicated the students' ongoing improvement in their reading comprehension both in the mid-test and the post-test. This suggested that the two types of concept map technique could promote better understanding of the texts.

In addition to the examination of the effect of using concept maps on students' reading comprehension, the study also investigated whether the use of concept maps improved any of the three different comprehension levels: literal level, interpretation level, and evaluation level. The results are presented in Table 2 below.

Table 2: Comparison of reading scores on the different levels of comprehension

Levels of comprehension	The period	Total score	\bar{X}	S.D.	Mean Difference	t-value	df	p-value
Literal level	Pre-test	18	6.80	2.48	1.20	-4.70**	29	.00
	Mid-test	18	9.00	4.22				
	Mid-test	18	9.00	4.22	1.67	-3.20**	29	.00
	Post-test	18	10.67	3.25				
	Pre-test	18	6.80	2.48	3.87	-9.59**	29	.00
	Post-test	18	10.67	3.25				
Interpretation level	Pre-test	6	1.30	1.06	0.17	-1.22	29	.23
	Mid-test	6	1.47	1.17				
	Mid-test	6	1.47	1.17	0.50	-1.68	29	.10
	Post-test	6	1.97	1.10				
	Pre-test	6	1.30	1.06	0.67	-2.34*	29	.03
	Post-test	6	1.97	1.10				
Evaluation level	Pre-test	6	1.70	1.26	0.90	-5.57**	29	.00
	Mid-test	6	2.60	1.40				
	Mid-test	6	2.60	1.40	0.03	-0.14	29	.89
	Post-test	6	2.63	1.50				
	Pre-test	6	1.70	1.26	0.93	-3.90**	29	.00
	Post-test	6	2.63	1.50				

*Significant at 0.05

**Significant at 0.01

As shown in Table 2, the mean scores on literal level in the mid-test ($\bar{X} = 9.00$) and the post-test ($\bar{X} = 10.67$) were higher than the mean score in the pre-test ($\bar{X} = 6.80$). The Paired sample t-test also showed that there were significant differences at 0.01 both between the pre-test and the mid-test (mean difference = 1.20, $p = 0.00$) and between the mid-test and the post-test (mean difference = 1.67, $p = 0.00$). As for the pre-test and the post-test, it was found that there was a significant difference at 0.01 level (mean difference = 3.87, $p = 0.00$). This indicated that concept maps technique could continually help students to significantly improve their literal comprehension level.

As for the interpretation level, the students did better in the mid-test and the post-test than in the pre-test. The mean scores in the pre-test, the mid-test and the post-test increased respectively ($\bar{X} = 1.30, 1.47$ and 1.97). Although the results of mean score difference from t-test revealed no statistically significant differences both between the pre-test and the mid-test (mean difference = 0.17, $p = 0.23$) and between the mid-test and the post-test (mean difference = 0.50, $p = 0.10$), the mean scores of the pre-test and the post-test showed a significant difference at 0.05 level (mean difference = 0.67, $p = 0.03$). The results indicated that concept maps technique could gradually make students progressed at interpretation level.

The results on evaluation level revealed that the mean score in the post-test ($\bar{X} = 2.63$) improved more than in the pre-test ($\bar{X} = 1.70$) and the mid-test ($\bar{X} = 2.60$). A closer look at the score of the mean difference between the pre-test and the mid-test showed that there was a significant difference at 0.01 (mean difference = 0.90, $p = 0.00$), while there was no significant difference between the mid-test and the post-test. However, the result of mean scores in the pre-test and post-test were found to have significant difference at 0.01 (mean difference = 0.93, $p = 0.00$), indicating that concept maps technique could also help students improve their reading at evaluation level.

Research Question 2: To what extent do the students improve and retain vocabulary knowledge after using concept maps?

To examine whether the students could improve and retain their vocabulary knowledge, the researcher administered the vocabulary test before instruction (pre-test), immediately after instruction (post-test), and two weeks after instruction (retention test). The results are presented in Table 3 below.

Table 3: Comparison of vocabulary scores in the pre-test, post-test and retention - test

The period	Total score	\bar{X}	S.D.	Mean Difference	t-value	df	p-value
Pre-test	40	5.97	3.81				
Post-test	40	18.63	9.90	12.66	-9.78**	29	.00
Post-test	40	18.63	9.90				
Retention-test	40	19.50	12.22	0.87	-0.85	29	.40

**Significant at 0.01

Table 3 shows that the mean score of students' vocabulary knowledge significantly increased from 5.97 in the pre-test to 18.63 in the post-test (mean difference = 12.66, $p = 0.00$). As for the mean score in the retention test, it was also found that students improved the vocabulary knowledge more than in the post-test ($\bar{X} = 18.63$ and 19.50 respectively) even though the scores were not statistically different ($p = 0.40$).

These results seemed to indicate that concept mapping technique was effective in terms of improving and retaining vocabulary knowledge. It provided students a positive effect on vocabulary development and retention.

Conclusion and discussion

The findings of the study are summarized and discussed as follows:

1) Reading comprehension ability

The results of reading comprehension ability after using two types of concept map technique suggested that the students in this study could improve their reading comprehension significantly both for the overall comprehension and for each level of comprehension namely literal, interpretation and evaluation level. A closer look at

which type of concept map could help students understand the texts better, the result revealed that the students obtained a higher score of mean difference in the mid-test than in the post-test. This may imply that the fill-in concept map might provide students a better improvement on reading comprehension than student-constructed concept map. This study echoed one study on improving reading comprehension through the use of presentation of prepared concept maps and the method of concept mapping. The study suggested that the best way to use concept map is teacher generated concept maps with texts (Saeedi et al., 2013). As for enhancing student's reading comprehension ability, the finding of the current study was also consistent with other similar studies showing that concept maps technique is effective in improving students' reading comprehension as well as promoting students' summarizing ability, developing their vocabulary knowledge and promoting joyful learning interaction (Dolehanty, 2008; Liu, Chen, & Chang, 2010; Soleimani & Nabizadeh, 2012; Jaya & Latief, 2013; Deylamsalehi, Barjasteh, & Vaseghi, 2015).

There are several possible explanations for the positive effects on reading comprehension after using concept maps along with a story as a reading text. First, the texts chosen by students may motivate them to read. Second, concept maps learning technique provided students with the opportunities to become active readers. When students read a text and constructed a concept map, the main information and the concept or important words were highlighted and then were used to present their understanding in a concrete format or visual representation of their knowledge. They had to extract the main ideas of the text, thought about their relations before constructing the concept maps. Last, as a visual representation could be easily recognized more than the text alone, so it supported students in understanding and retaining information in a meaningful way. This confirms Novak and Gowin (1984) who stated that ones have a better capacity in recalling specific information through visual image than remembering the details from the direct text.

2) Vocabulary development

The findings revealed that two types of concept maps technique could enlarge vocabulary knowledge of the students significantly. Students showed significant growth in the post-test and obtained the highest mean scores on their

retention of vocabulary test. This finding was consistent with the previous studies such as Dolehanty (2008); Deylamsalehi, Barjasteh, & Vaseghi, (2015) and Lui, Chen, & Cho (2010) that the concept mapping technique could promote positive effect on English vocabulary learning of the students. This positive effect of concept maps on vocabulary development can be supported by the following explanations. First, holding the ideas by concept maps consisting of the key words, students were able to clarify language, identify key vocabularies and organize those words into a meaningful map (Cicognani, 2000). Another reason is determining the relationship between words could enable students to recognize the meaning of words easily.

Implications and Recommendations

The following implications are drawn from the findings.

1. The concept mapping can be an enabling technique in teaching reading and vocabulary. However, the types of concept maps will need to be carefully considered as each type has different complexities that may lead to different scaffolding techniques.
2. As the findings show that students got low score at the beginning of Phase 1 (fill-in concept map) and Phase 2 (student-constructed concept map), this implies that the two weeks of training phase before the experiment may not be enough to make the students be familiar with 2 types of concept maps. The training phase should take more times in the next study.
3. The reading passages used in the study were traditional narrative stories which were not too long for the elementary students and the choices were made by the students. Further study with different levels of students may apply other kinds of reading texts relevant to students' needs and interests.

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Paper 2

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Students' Opinions towards the Use of Concept Maps in English Reading Class and Their Changing Attitude

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Abstract – This study investigated the elementary students' opinions on the use of two types of concept maps and students' attitude towards reading in English before and after using this technique. The study was carried out at Baan Dalor School located in Yaring district, Pattani province, Thailand with the participation of 30 students in the sixth grade. Quantitative data were collected through an English Reading Attitude Questionnaire before and after the use of concept maps. Qualitative data were obtained through the interview and the classroom observation. The results showed that reading stories along with the use of concept maps could help them understand the texts easier and they can increase their vocabulary knowledge during the learning process. It is also found that the students' attitude towards reading in English has significantly improved in all domains namely affective, behavioral and cognitive. It can be inferred from the findings that the concept mapping technique can be an enabling tool in a reading class as it can improve English reading attitude and increase more desires in reading practice.

Keywords – Concept mapping; English reading attitude

INTRODUCTION

Reading plays an important role in the era of knowledge based society. It is a way of acquiring information or new knowledge which emerges and changes all the time, most of which is written in English. Reading provides readers with new experiences, great knowledge and the better understanding of the world. Thus, reading skill development is considered as the essential goal in teaching English. Specifically in an EFL context, students who learn English are more frequently exposed with the reading texts than the speaking situation (Eskey, 1996). However, it is not easy to teach students to be interested and efficient readers. Reading teachers need to find techniques to help students develop good attitude towards reading as well as the ability to read. Therefore, to experiment on a teaching reading technique may bring about the success in motivating students to read and to become efficient readers.

BACKGROUND

Considering reading situation in Thailand, it was indicated that on average Thais read just 35 lines annually, while people in the neighboring countries read much more than

Thais did. Most Malaysians read 40 books, Singaporeans read 45, and Vietnamese people read 60 books each year (Saengpassa, 2012). Moreover, the recent study found that Thais spent only about 28 minutes a day in reading which reduced from the previous year (PUBAT, ECON CHULA & SAB, 2015). The current reading situation seems to imply that Thai citizens are not moving towards a knowledge-based society. Besides, in Thai context where English is used as a foreign language, it is likely that English reading among Thai students may be ignored. Thai readers find that English is too difficult and this blocks their desire or motivation to read (Bolton, 2008). Thus, English reading ability has been a problem for Thai students at all levels of study (Mungsiri, 2002). The current situation calls for the implant of reading habit among Thai learners which should start right from the elementary level. To grow reading habit, the primary aspect involved is motivation or attitude.

Attitude towards reading is a great factor which affects reading performance and achievement (Guthrie & Wigfield, 2000; Seitz, 2010; Yamashita, 2013). A lot of students have low motivation and negative attitude in reading due to the lack of vocabulary knowledge and poor reading skills (Therrien, Wickstrom, & Jones, 2006). However, the positive reading attitude will be replaced as the students become fluent readers (Nichino, 2007). Interest can be an essential factor in students' learning (Schiefele, 1991). One way to promote the positive attitude in reading is to implant reading habit in children, starting from having them read the easy texts which are readable, enjoyable and interesting to them. Students who do not enjoy reading texts often lose their reading achievement. So, text selection which suits students' interest and their language level is a way to motivate students to increase the will to read and to promote the success in reading (Worthy, 1996). Moreover, students' attitude can be improved by using a variety of attractive teaching strategies (Ghazali, Setia, Muthusamy & Josuff, 2009). Concept mapping (CM) has been identified as one of the most effective techniques to facilitate students in learning a language (Novak, 1990). According to Plotnik (1997), the main advantages of concept mapping are the use of visual symbols because they are easily recognized, easy to scan for a specific word and it also allows for more understanding of a concept. It can promote vocabulary knowledge and reading comprehension since it focuses on the key words or the key concepts of the texts for students to link them to make the text easy to understand (Deylamsalehi, Barjasteh, & Vaseghi, 2015; Kalhor & Shakibaei).

It was expected that the reading comprehension, vocabulary knowledge and reading attitudes of the students could be improved after using this technique. Thus, this study aimed to experiment on the use of the concept maps in a reading class and to examine the sixth grade students' opinions towards the use of concept maps and to investigate their attitudes towards reading in English before and after using concept maps.

Research questions

1. What are students' opinions towards the use of concept maps?
2. What are students' attitudes towards reading in English? Has it changed after using concept maps?

LITERATURE REVIEW

The concept map

The technique of concept mapping is based on the idea of constructivism and meaningful learning (Novak & Musonda, 1991). Concept map is a graphic organizer used as a teaching strategy to facilitate students' understanding of a topic individually or in groups (Hay & Kinchin, 2006). According to Novak and Canas (2006), they proposed that a concept map consists of concepts, usually enclosed in circle or boxes. The relationships between concepts are indicated by a connecting line linking two concepts while there are linking words on the lines to determine the relationship between two concepts. This technique is now widely applied in teaching area. The concept map itself has been approved by many researchers and there are many versions of concept map including expert-constructed concept map (teacher- constructed), student-constructed concept map, construct-on-scaffold concept map (fill-in concept map), and cooperative concept map (Soleiman & Nabizadeh, 2012).

Teachers can use a concept map in various stages of teaching; before teaching as an advanced organizer; in teaching process as a device for presenting new information or clarifying concept; and after teaching for summarizing, reviewing and also for testing the students' achievements (Kalhor & Shakibaei, 2012). Concept maps can help teachers to indicate the key concept of the content and present a summary to the students. Concept maps do not only provide the key concept and the important information through visual presentation, but also point out the links, structures or characteristics not being observed in the text and present it in a summarized version. Therefore, concept maps can facilitate the meaning and the retaining of the information guiding students to have meaningful learning (Novak, 1990)

Reading Attitude

Ajzen and Fishbein (1975) defined attitude as a system of feeling that refers to the person's behave either in negative or positive way. Mizokawa and Krening (2000) suggested that reading attitude is included in three domains; affective, behavioral and cognitive domain. The affective domain refers to the feeling of "like" or "dislike" in reading. Behavioral domain, in addition, refers to the action or behavior of a person that may promote or obstruct reading. The last domain is cognitive domain; it refers to beliefs about the outcome of reading.

For students, in order to develop into efficient readers, they must have both the skill and the will to read. Students' attitude towards reading is a main factor affecting reading performance. According to Richek (1989), reading attitude is an important factor for achievement in reading skills. Students who have positive attitude towards reading tend to read more (Ro & Chen, 2014) and also be successful in reading than those who have poor one (Sani & Zain, 2011). To promote positive attitude towards reading, teachers should be more concerned about reading activity and reading materials. Concept map has been proposed as an effective tool on improving reading comprehension and

promoting positive attitude towards reading. Many studies have been conducted to investigate the effect of using concept maps on education, and most found positive results. Soleiman & Nabizadeh, (2012) discovered that students can improve their reading comprehension and self-efficacy after the use of three types of concept map. As with Ghazali et. al. (2009) and Tabatabaei (2014), it was claimed that concept maps created positive attitude towards learning in English.

The review of concept map ideas and the influences of reading attitude on reading skill development served as a theoretical framework in designing instruments and methods for this quasi-experimental study focusing on two types of concept maps: fill-in concept map and student-constructed concept map as the former type would serve as the scaffold for the latter one to develop.

METHODOLOGY

Participants

The participants of the study consisted of 30 EFL students. They were in the sixth grade during the second semester of the 2015 academic year at Baan Dalor School located in Yaring district, Pattani Province. They were purposely chosen on the basis of the consistently poor performance in English from grade 1 to 5 as indicated by their grades in English which were mostly average at C level. The ages of the participants ranged from 11 – 12 years old. These participants have never been participants of any language research.

Research instruments

The reading materials and the concept maps

Ten traditional narrative stories adapted by Cambridge English Online were used in the current study. The stories were from British Council website and were mostly selected by the students. (see the list of stories in the appendix A) The study employed two types of concept maps: 1) fill-in concept map for the first five texts and 2) student-constructed concept map for the last five texts.

Interview form

The interview form was designed for the whole group interview to gather in-depth data related to the students' reflection or reaction to the practice. The interview questions included students' opinions on using concept maps, problems which they had during the activity, what helped them to do the maps, and what benefits they found, for example. The researcher asked the students questions in Thai after they had read the text and completed their weekly concept map.

To assure the content validity of the interview questions, they were verified by three experts and then revised as suggested. The questions in the interview are shown below.

1. Do you like this story? Why/ Why not?

2. Is the story proper and easy to do the concept maps?
3. How do you link your idea to understand the story?
4. Do you like doing concept maps activity after reading? Why/ Why not?
5. Do you have problems in doing concept maps activity? What is most difficult in doing such activity?
6. How do you solve the problems?
7. How is the learning atmosphere in class when you are working on concept maps activity?
8. How do you feel when you are able to understand the texts by yourself?
9. What do you get from doing concept maps activity?
10. Do you get more understanding of the texts by using concept maps?
11. Do the concept maps help you to memorize the vocabularies easily? Does your vocabulary knowledge increase?

Questionnaire on English reading attitude

The questionnaire on English reading attitude was designed and written in Thai to investigate students' attitude towards reading in English and was administered twice (before and after the treatment). The questionnaire consisted of 20 items of questions about attitude towards reading in English employing a Likert scale. It was adapted from Reading Attitude Survey (RAS) for Students Studying English as Foreign Language (Chiang, 2015).

The content validity of the questionnaire was evaluated by three experts using IOC. The IOC was 0.964. Then the test was piloted with thirty Grade sixth students who were not involved in the study. This group of students was chosen because their learning background, learning context, and English proficiency level were comparable to those of the participants in the study. The reliability of the questionnaire was 0.875. (See questionnaire items in the appendix B)

Observation form

An observation form was a guideline for the teacher to collect more detailed information as to which types of concept map worked or did not work, why participants could do or could not do the activity. It was also to discover if there were any problems while doing the activity.

Data Collection

The study was conducted during the second semester of 2015 academic year from November 2015 to January 2016. The introduction took 2 weeks and the treatment which followed took 10 weeks. The treatment and the administration of the instruments are described below.

The treatment

The treatment itself was divided into two phases, each of which took 5 weeks. Within each week, class met in a 90-minute period. The first phase was for the practice on fill-in concept map activity and the second phase was for the student-constructed concept map activity. The fill-in concept map practiced in phase 1 could be described as the incomplete framework of teacher-constructed concept map with some blanks provided as a scaffold for students. Students had to fill the missing concepts from a list of words provided. On the other hand, the student-constructed concept map practiced in phase 2 required the students to freely construct their own concept map based on their understanding of the text and the provided words. (See examples of reading texts and concept map exercises in the Appendix C)

The questionnaire administration

A week prior to the treatment, students were asked to answer the questionnaire on English reading attitude and this same questionnaire was administered again when the treatment was over in order that data from the two administrations could be compared.

The interviews

An interview session was conducted after the students had finished their reading activity in each week. The researcher spent about 30 minutes each week for the group interview. The data were kept in a form of notes.

The observations

At the end of each lesson, the teacher wrote the notes about the students' practice and the problems.

Data analysis

Means, standard deviations, t-test were used to compute quantitative data from the questionnaires to show students' reading attitude. Data from the interviews and observations were grouped and analyzed for percentages and described.

FINDINGS

Two major findings are as follows.

1. Students' opinions towards the use of concept maps

The analysis of data from interviews and observations revealed 3 main points: the content of the stories, problems during activity, and benefits from the concept mapping.

1.1 The content of the stories

This study showed that the content in the selected stories was favorable and lended themselves to concept mapping activities. It was found that the most popular stories

among students were adventure story. Approximately 86.67% and 83.33% of the students liked “Ali and the Magic Carpet” and “The Voyage of the Animal Orchestra” respectively. They mentioned that the stories were fun and enjoyable. While reading, they felt like they played a part in the stories and took adventure with the characters. The least popular story was “The Lantern - A Ramadan Story”, only 53.33% of the student liked it. The reason why they disliked was the length of the story. About 93.33% of the students seemed to think that the stories selected were suitable to do the concept maps and also suited their interests and their linguistic level. However, slightly more than half of the students indicated that the stories used early at the beginning of the experiment were quite difficult for them because they contained new and unfamiliar words, phrases and sentence structure or tense.

1.2 Problems during activity

The areas of difficulty arose from grammatical structures, vocabulary and the type of concept map. As most of the selected stories were in past tense, many students were confused with the past form of verbs shown in the stories. Most of the students thought that they lack proficiency in English both vocabulary knowledge and sentence structure and these was the main obstacles in reading and completing the maps. This was consistent with results from the observation. It could be observed that students found it hard to choose words which could be in the boxes and those serving as the linking words especially during the student-constructed concept map phase. About 90% of the students stated that “It is very difficult to choose words that go into the boxes and ones that could be on the lines”. Some further revealed that they did not know how to start it and were confused with the kind of words to be used in the map. However, this problem was an issue only at the beginning of the second phase. After two weeks of the phase2 treatment passed with more help from the teacher’s scaffolding, they mentioned that the stories seemed to be easier to understand and doing the concept maps was no longer too difficult. This may be because most of the stories used in the experiment included some repeated vocabularies. 73.33% of the students preferred to do the fill-in concept map more than the student-constructed concept map. Although students show more preference of the fill-in concept map, interestingly 26.67% agreed that student-constructed concept map was more flexible and challenging for them. They reasoned that they were free to choose any sensible vocabularies to do the map without being restricted to the given choice.

1.3 Benefits from the concept mapping.

As stated by the students, the gained benefits involve vocabulary power, reading comprehension, and positive attitude towards concept mapping process. Most of the students expressed that they had acquired a huge amount of vocabulary from the concept mapping after reading the stories. Some statements are as follows: ‘I learned more vocabularies from reading the story and the concept mapping’, and ‘I learned many new vocabularies that I did not know before’, and ‘to do the concept maps after reading the story has increased my vocabulary bank together with promoting my understanding of the texts’. About 76.67% of the students agreed that they would enjoy the stories more if they were good at English and had enough vocabulary knowledge. In addition, 60% of the students expressed that they could categorize parts of speech of the

words better. They recognized nouns, verbs or adjectives because they had to use them when they constructed the map by themselves in the student-constructed concept map phase.

Most of the students agreed that their English reading comprehension improved after learning by using concept maps. They reasoned that during the concept mapping, they had to try to understand what they had read and then transferred their understanding into the concept map. Almost half of the students confirmed that the process in linking the key words to form the whole story was the process that promoted students' comprehension. Interestingly, they suggested that 10 weeks of learning were too short. They would like to learn and practice more to be better in reading. This attitude towards "reading plus concept mapping" seemed to correspond with the results from the questionnaire which are presented below.

2. Students' attitude towards reading in English

To examine whether the students' attitude towards reading in English changed after using the concept maps, the researcher compared data from the two administrations of the questionnaires. The 5 point Likert Scale could be interpreted as follows: 5 was strongly agree (mean 4.21-5.00), 4 was highly agree (mean 3.41-4.20), 3 was moderately agree (mean 2.61-3.40), 2 was slightly agree (1.81-2.60) and 1 was disagree (mean 1.00-1.80). The results are presented in the Table 1 below.

Table 1: Students' attitude towards reading in English before and after the treatment

Reading Attitude	Before treatment		After treatment		Mean difference	t	df	Sig. (2-tailed)
	\bar{x}	S.D.	\bar{x}	S.D.				
Affective domain (Items no.4, 5, 6, 9, 10, 14, 17)	2.33	0.90	2.89	0.86	0.56	3.445**	29.00	0.00
Behavioral domain (Items no. 1, 2, 3, 7, 8, 13, 15, 16)	2.36	0.48	2.70	0.47	0.34	4.052**	29.00	0.00
Cognitive domain (Items no. 11, 12, 18, 19, 20)	3.27	0.93	3.76	0.96	0.49	2.992**	29.00	0.00
Total	2.58	0.68	3.03	0.67	0.45	4.152**	29.00	0.00

**significant at 0.05

Table1 shows that students' overall attitude towards reading changed significantly from slight ($\bar{x} = 2.58$) to moderate level ($\bar{x} = 3.03$). The most significant change was related to affective domain (mean difference = 0.56, $P = 0.00$) which covered the items on the "Likes" and the "Enjoyment" received from reading. Another significant improvement from moderate ($\bar{x} = 3.27$) to high level ($\bar{x} = 3.76$) was related to cognitive domain which included the items on what reading can do or help them (mean difference = 0.49, $P = 0.00$). Last was behavioral domain changing from slight ($\bar{x} = 2.36$) to moderate level ($\bar{x} = 2.70$) with the significant difference of 0.34 ($P = 0.00$). These findings may be

signaling that students learned and enjoyed the idea of “reading plus concept mapping” as shown in their more positively changing attitude.

CONCLUSIONS AND DISCUSSION

The main findings can be concluded and discuss below.

1. This current study found that students were pleased with the use of concept maps as the devices to reflect their understanding of the reading texts. This similar result was found by Tabatabaei (2014) that students had positive attitude towards using a concept map technique in a reading class. One important influence may come from the choice of texts and the content which were favorable and interesting to the students. This factor may help them develop positive attitude towards reading as suggested by Ghazali et. al. (2009) that the texts selection which suits students’ interest and language level, and using a several of attractive teaching techniques can motivate students to read more and improve their reading attitude.
2. The use of fill-in concept map and student-constructed concept map are suitable for students at this level provided that the texts or stories lended themselves to the construction of the maps. Students claimed of learning more vocabulary (both meaning and parts of speech) and improving their reading comprehension. This similar result was found by Soleiman & Nabizadeh, (2012) that learner constructed and fill in the map CM technique and summarizing strategy had positive effect on students’ reading comprehension.
3. The change of students’ attitude towards reading in English after the use of concept maps to facilitate reading comprehension can be observed in this study. Their desires to continue this concept mapping are evident to confirm their improving attitude related to the “fun” (affective domain), the “importance” (cognitive domain), and “their action” (behavioral domain) related to English reading.

IMPLICATIONS

The following implications are drawn from the findings.

1. The concept mapping can be an enabling tool in acquiring reading skill and vocabulary. However, the types of concept maps will need to be carefully considered as each type has different complexity.
2. Scaffolding needs to be taken into consideration when applying concept mapping technique. This study showed that students struggled during the first two weeks of the use of student-constructed concept map which demands the independent construction from the students. More scaffolding is necessary with this kind of concept map.
3. Choosing a reading text only by its content may not guarantee its readability. Some texts used in this study posed some problems related to vocabulary and language complexity. Thus, the criteria for choosing the right texts for the target students should be carefully applied.

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Appendix A: List of the stories and some examples of student's maps

List of the stories

1. The greedy hippo
2. Ratty robs a bank
3. Why Anansi has thin legs!
4. Goldilocks and the three bears
5. Teddy's adventure
6. The treasure map
7. Ali and the magic carpet
8. The voyage of the animal orchestra
9. Angel! Look out
10. The lantern-A Ramadan story

Appendix B: Questionnaire on English reading attitude

Items	Rating scale				
	1	2	3	4	5
1. I often read English books in a school library.					
2. I often read English books at home.					
3. I often read English books in a class.					
4. I like to read English stories.					
5. I like to read cartoon books in English.					
6. I think reading in English is easy.					
7. I frequently do other activities than reading English books.					
8. I usually borrow some English books at a library.					
9. I always have fun and enjoy when I read English books.					
10. I think reading English books is enjoyable, and challenging.					
11. I can improve my vocabulary knowledge through reading English books.					
12. I think reading English books can improve my reading ability.					
13. I usually read English through student's book only.					
14. I like to read English in various kinds of book.					
15. I like to pronounce words in English.					
16. I often read English to my friends.					
17. I am proud to read it and my friends read after me					
18. I want to do well in reading English, though it is hard because I can learn new knowledge from reading.					
19. I still read it continually though there are some words I do not understand.					
20. If I know more vocabularies, I would love reading in English.					

Appendix C: Examples of texts and concept map exercises

The greedy hippo

There was a greedy hippo. He ate everything in sight. From cheese to peas, chips and cake, he always had a bite. Now Hippo he was selfish. He ate everybody's food. He ate the cat's, the dog's, the cow's. He was very, very rude. One morning after breakfast, he jumped into the lake. One big splash and he was stuck. That was a big mistake. The hippo, he sank deeper, and then began to shout. "Help, please help, I'm sinking. Won't someone pull me out?" The animals all pulled and pulled, as hard as they were able. Out he popped, ran past them all and ate everything on their table. The animals were angry, and thought they'd play a trick. They made a pie from fish and soap to make old Hippo sick. "Here you are, we've made a pie, especially for you." "Thanks," he said, "I'll eat it now. I've nothing else to do." First a nibble, then a bite, then a great big swallow, he then went back into the lake, the place he loved to wallow. But something wasn't right, thought Hippo, "I feel quite odd inside." Now he had a tummy ache as the cooks looked on with pride. Hippo learnt his lesson. It was the end of all their troubles. He was last seen leaving town, blowing fishy bubbles.

Contributed by Cambridge English Online

An example of fill-in concept map exercise

Fill-in concept map: Exercise 1

Direction: Complete the concept map of this story using the given words.

The Greedy hippo

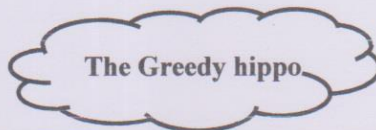
the animals	fish	soap	selfish	a trick
everybody's food	Pie	the lake	greedy	tummy ache

Name.....Class.....No.....

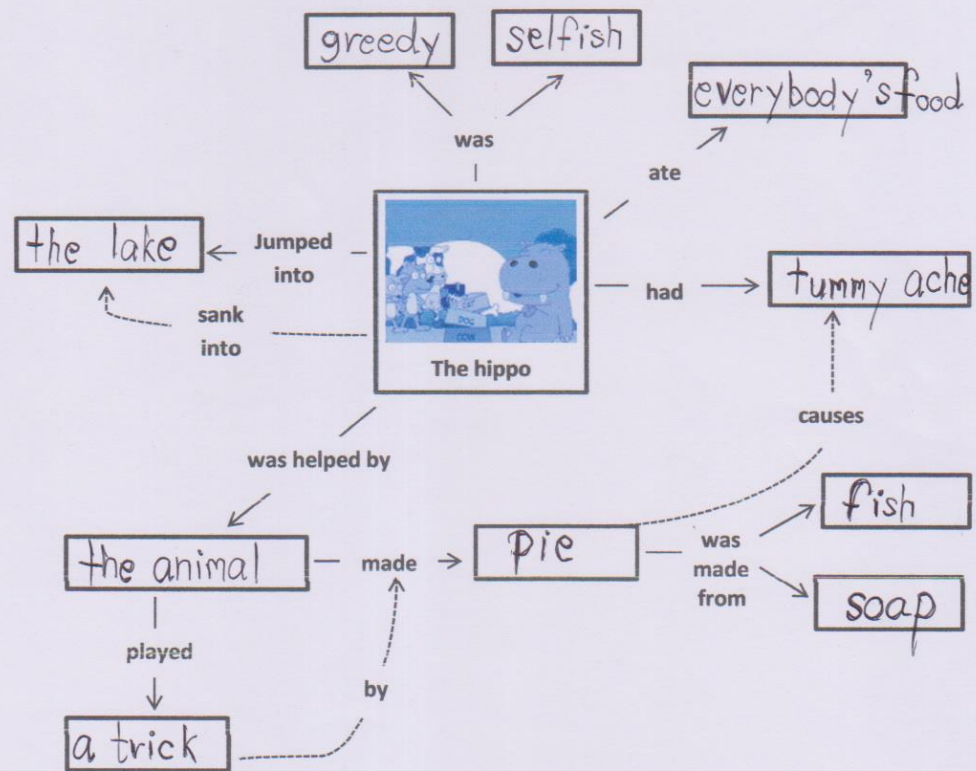
An example of student's map on fill-in concept map exercise

Fill-in concept map: Exercise 1

Direction: Complete the concept map of this story using the given words.



- | | | | | |
|------------------|------|----------|---------|------------|
| the animals | fish | soap | selfish | a trick |
| everybody's food | Pie | the lake | greedy | tummy ache |



Name Amanee Doloh Class 6 No. 16

An example of texts for student-constructed concept map

The treasure map

Sanjay saw a bottle floating in the sea. There was something inside it. He took it out.
“What is it?” asked Sarah. “It’s a map! It’s a map!” They looked round and saw a talking parrot. “Buried treasure! Buried treasure!”
“Wow! A treasure map! Let’s follow it.”
“Maybe it’s gold!” “Or silver?” “Or jewels?”
“OK. We are here and the treasure is here.”
“Let’s go! I’ll read.” said the parrot.
“Walk 80 metres north.” “1, 2, 3.....78, 79, 80.”
“Turn right at the big coconut tree and go straight on until the crocodile pond. Cross the bridge, turn left and keep walking. Turn right in front of the big, round rock. Walk straight ahead for 50 metres.” “1, 2,3.....48, 49, 50.” “Go through the cave. Mind the bats! Mind the bats! Walk straight on until the beach. Go along the beach for 200 metres. The treasure is behind the square rock.”
“Over there! Over there!” Parrot shouted. “It’s empty!” cried Sarah. Inside there was an old note.
‘Dear Finder, Sorry, but I took my gold. I needed to buy a new pirate ship. Bye, Captain Redbeard.’
“Well, at least we had a nice walk.” said Sanjay.
“Yes, and we made a new friend!”

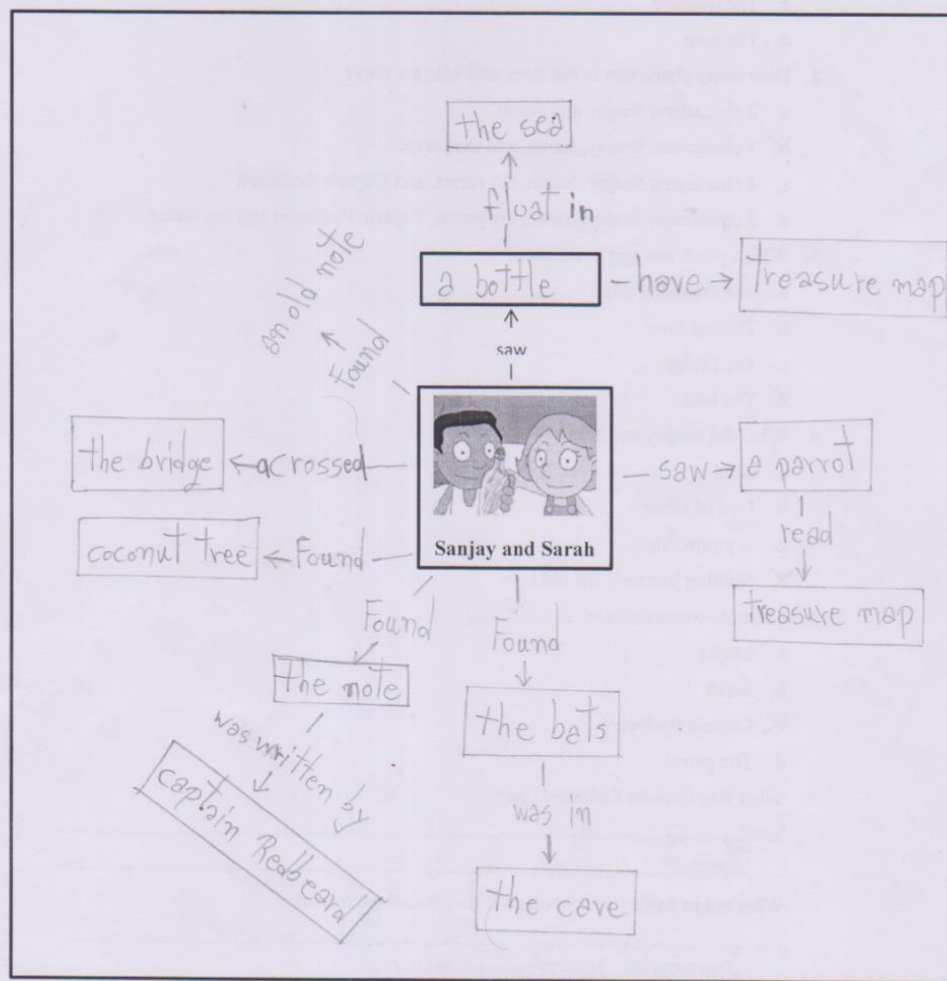
Contributed by Cambridge English Online

An example of student's map on student-constructed concept exercise

Student-constructed concept map: Exercise 6

Direction: Construct the concept map of this story using the concept words you have learned in the text. Use at least 10 words to complete the map.

The treasure map



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