

## Using e-Mapping to Improve Reading Comprehension and Summary Skills of EFL Students

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### Abstract

The objective of this investigation was to enhance reading comprehension and summary skills of EFL students through electronic mind mapping for the purpose of analyzing and summarizing reading passages. The purposive sampling method was applied by selecting 50 second-year English major students. The instrument used was 14 reading passages which the students analyzed for the entire second semester of 2015 and each passage was intended for use in a three-hour period in one week. The students were required to read and analyze the text before each lesson, both in groups and individually for classroom presentation and discussion. Suggested answers were given by the teacher at the end of each class. The data were collected by using pre- and posttests, as well as a questionnaire, and interviews. The test scores were then analyzed statistically for mean and standard deviation whereas the data from the questionnaire and interview were analyzed for percentage and also descriptively. The analysis results revealed that, for comprehension skills, the mean of the pre-test was 5.86 with a standard deviation of 1.51, whereas the posttest exhibited a mean of 7.32 with a standard deviation of 1.04. For summary skills, the mean of the pre-test was 4.70 with a standard deviation of 1.42, while the posttest results showed a mean of 6.38 with a standard deviation of 1.07. The data from the questionnaire and interview indicated that this approach enabled the students to analyze and summarize the contents of the reading passages better, faster and more accurately. The majority of the students perceived the technique to be beneficial for analyzing the gist of a reading passage.

**Keywords:** reading, electronic mind mapping, comprehension, summary skills

### บทคัดย่อ

การศึกษาค้นคว้าครั้งนี้มีวัตถุประสงค์เพื่อพัฒนาทักษะการอ่านเพื่อความเข้าใจและการสรุปความของนักศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศโดยใช้แผนภูมิโน้ตอิเล็กทรอนิกส์ในการวิเคราะห์และสรุปเนื้อเรื่องที่อ่าน กลุ่มตัวอย่างคือนักศึกษาชั้นปีที่ 2 วิชาเอกภาษาอังกฤษจำนวน 50 คน โดยการใช้การสุ่มตัวอย่างแบบเจาะจง เครื่องมือวิจัยประกอบด้วยเรื่องอ่านจำนวน 14 เรื่องสำหรับนักศึกษาใช้ในการวิเคราะห์ตลอดภาคเรียนที่ 2 ปีการศึกษา 2558 โดยเรื่องอ่านแต่ละเรื่องใช้เวลา 3 ชั่วโมง ซึ่งนักศึกษาจะต้องอ่านมาก่อน

ล่วงหน้าแล้วนำมาปรึกษาและนำเสนอในชั้นเรียนเป็นกลุ่มและเป็นรายบุคคล พร้อมกันนี้ครูผู้สอนเฉลยคำตอบท้ายชั่วโมง มีการเก็บข้อมูลโดยใช้การทดสอบก่อนและหลังเรียน แบบสอบถามและการสัมภาษณ์ ผลการทดสอบนำมาวิเคราะห์เชิงสถิติเพื่อหาค่าเฉลี่ยและค่าเบี่ยงเบนมาตรฐาน ส่วนข้อมูลที่ได้จากแบบสอบถามและการสัมภาษณ์นำมาวิเคราะห์เพื่อหาค่าร้อยละและการบรรยาย

ผลการศึกษาพบว่าค่าเฉลี่ยผลสอบก่อนเรียนทักษะการอ่านเพื่อความเข้าใจเท่ากับ 5.86 และค่าเบี่ยงเบนมาตรฐานเท่ากับ 1.51 ในขณะที่ค่าเฉลี่ยผลสอบหลังเรียนเท่ากับ 7.32 และค่าเบี่ยงเบนมาตรฐานเท่ากับ 1.04 ค่าเฉลี่ยผลการทดสอบก่อนเรียนทักษะการการสรุปความเท่ากับ 4.70 และค่าเบี่ยงเบนมาตรฐานเท่ากับ 1.42 ในขณะที่ค่าเฉลี่ยผลการทดสอบหลังเรียนเท่ากับ 6.38 และค่าเบี่ยงเบนมาตรฐานเท่ากับ 1.07 ผลการวิเคราะห์ข้อมูลจากแบบสอบถามและการสัมภาษณ์พบว่าวิธีการดังกล่าวช่วยให้นักศึกษาวิเคราะห์และสรุปเรื่องที่อ่านได้ดีขึ้น รวดเร็วขึ้นและถูกต้องมากขึ้น กลุ่มตัวอย่างส่วนใหญ่พบว่าเทคนิคดังกล่าวมีประโยชน์มากในการวิเคราะห์แก่นของเรื่องที่อ่าน

**คำสำคัญ:** การอ่าน, แผนภูมิโน้ตทัศน์อิเล็กทรอนิกส์, ความเข้าใจ, ทักษะการสรุปความ

## Introduction

Reading is defined as a message-taking and problem-solving activity. In message-taking, the readers attempt to interpret meanings of the message in their brain while interacting with the written texts in order to understand what they read. At the same time they have to solve problems regarding new and unfamiliar words or sentence structures by relating them to their prior or existing knowledge, so that their reading activities can be meaningful and understandable (Scharer, 2012: 1-2). Reading is also an interaction between a reader and a printed text. While we read, we make an attempt to translate, interpret and analyze what is explicitly and implicitly presented in the text in order to understand what the writer means and the messages he/she attempts to put across. Of all the four language skills, reading is the last competence that language learners acquire, because they have to accumulate sufficient lexical, semantic and syntactic knowledge in order to comprehend written messages.

Reading is an essential skill in this globalized age, where knowledge and information are free flowing regardless of geopolitical boundaries. It is a proven fact that those who read more will become more knowledgeable, competent, skilled and well-rounded, because reading can truly open one's mind to the world. Reading is thus encouraged as a lifelong learning activity for literate people of all ages, whether it is in one's native language or is through international languages such as English.

The Thai language is a monosyllabic, tonal and non-inflectional language, the official language of Thailand and thus, the language for classroom instruction. In order for Thai students who study and learn English as a foreign language to become

proficient, it is important that they read materials printed in English as a means to expose themselves to this language even more. Therefore, intensive reading is one of the most efficient and effective ways for non-native speakers to master the language (Erfapour, 2013). Such reading activities enable learners to accumulate more lexical items, expressions, as well as grammatical competency in an authentic context, resulting in better understanding and faster reading speed of texts in the long term.

When reading, students should learn how to separate main ideas from supporting details, since the latter only elaborates the former. This skill should help them to focus mainly on the gist of the reading passage. Moreover, this competency enables them to summarize the passage more effectively, a crucial skill for effective reading and learning at higher education levels. Nevertheless, a large majority of Thai students have not been equipped with effective reading comprehension and summary skills, and thus they are not well prepared for intensive higher education study. The situation is even worse for those in the English program as they are expected to have a fairly solid background in English gained during high school years. As English majors, they are required to study and practice English skills at a much deeper level than those in high school. In reality, however, they are not as qualified as the program expects them to be, at least in our particular institution. A large portion of them are students from ethnic minority backgrounds who study English as a third language.

As a means to prepare and equip students with more effective comprehension and summary skills, an electronic mind mapping (e-mapping) method was implemented in the English Reading 2 Course for the second-year English major students in the first semester of the 2015 academic year. Since the students are familiar with the conventional teaching methods, where teachers provide them the necessary knowledge, using the e-mapping approach would require them to read more critically and analytically in order to create better mapping and summaries. This approach required them to read the passages prior to classroom, both in groups and individually. Group work was then assigned in the first half of the semester, and was carried out with an aim to encourage and inspire them to learn cooperatively, as well as to develop teamwork skills and constructive discussions.

A concept map is a graphical tool for organizing and representing knowledge in a hierarchical manner with relationships or links between concepts in different segments or domains (Novak & Canas, 2008: 1-2). A number of studies have indicated that mind or concept mapping is an effective tool to analyze reading texts and to help learners grasp essential skills to summarize what they have read. The mappings have positive effects on reading comprehension of subjects, as it is a meaningful learning method by reorganizing the relationships between various concepts in a reading passage (Villalon & Calvo, 2011). Furthermore, concept mapping can enhance text comprehension, summarization abilities and critical thinking skills of students (Chang, Sung, & Chen, 2002; Ellozy & Mostafa, 2010). It also provides greater achievements in reading comprehension and self-efficacy of learners (Khajavi & Kebati, 2012).

This approach has been implemented nationally in Thai classrooms. Study results have indicated that concept maps enable students to understand English reading better and therefore, this is a useful technique that can be applied to other non-English subjects (Phantharakpong & Pothitha, 2014; Sriphanich & Laohawiriyanon, 2010). This instructional technique is also proven to be an effective tool in teaching English grammar since it helps students visualizing and remembering grammar rules (Hongthong & Modehiran, 2015).

### **Objective of the study**

The objective of this investigation was to attempt to enhance reading comprehension and summary skills of English major students at Chiang Mai Rajabhat University, Thailand, by utilizing the electronic mind mapping method to enable them to read, analyze and summarize reading passages both critically and effectively.

### **Research question**

Would this instructional approach enhance reading comprehension and summary skills of the students?

### **Research hypothesis**

It is hypothesized that implementing the electronic mind mapping technique could improve reading comprehension and summary skills of the students.

### **Methodology**

#### **1 Participants**

The participants involved in this classroom research were 50 sophomore English major students, four males and 46 females, who had enrolled in the English Reading 2 Course in the first semester of the 2015 academic year. Their overall English proficiencies were relatively low as they came from rural schools, where English subjects were either electives or were not part of the main academic focus. Other students were ethnic minority students who studied English as their third language. All students were accustomed to passive learning styles, where teachers are regarded as the center of knowledge. Therefore, teaching English to this group is often a daunting task,

as it requires a drastic change in their mindset, from knowledge receivers to knowledge generators and seekers. Considering the unique background of students in this group and the fact that only one class was offered to demonstrate the efficiency of this approach, this teaching method was indeed an experiment in its own virtue.

## 2 Research instruments

There were three research instruments used for this investigation. The first one was the pre- and posttests of the same reading passage with 20 questions to assess students' reading comprehension abilities. The pre-test was administered in the first week and the post-test was administered in the last week so as to determine whether there had been any improvements in the students' levels of comprehension and summary skills. The second instrument was 14 reading passages, assigned each week for a three-hour session, where students analyzed the content, drafted an electronic mind map based on the reading passage, and prepared a short but precise summary about their findings for classroom discussion and presentation. The last instrument was a questionnaire on students' opinions to assess the benefits of using this teaching technique, their accomplishments, the accuracy of their reading comprehension and summary skills as well as the utilization and effectiveness of the technique in general.

To ensure the reliability of these research instruments, the pre- and posttests were tried out on 20 English major students, who were not in the sample group and whose levels of English proficiency were diverse. The purpose of this trial was to determine the tests' discrimination, difficulty and reliability values of the question alternatives. The concept map and summary of each reading passage were graded separately by another two English language teachers and their average scores were then calculated.

## 3 Intervention

This classroom research took place from mid-August to mid-December in 2015, totaling 14 weeks of classroom sessions and two weeks of midterm and final examinations. The first week was dedicated to orientation and pre-test administration. The students were also assigned to sign on for the free online mind mapping website, *mindomo.com*, within the "students" category. This web-based software is user-friendly and there is no need for installation. Besides from the features such as formatting, curved lines, relationships, and editing, relevant pictures and hyperlinks can be added from popular web browsers such as Google. The orientation session also provided instructions regarding the use of the website and ways to create an electronic mind map, to save a file in the PDF format, and finally to submit the file to the teacher's email for further marking and providing comments. In order to promote collaborative learning, constructive discussions and teamwork, the students were asked to form into groups of five during the pre-midterm period. Group formation was meant to encourage learners' autonomy by discussing and sharing ideas and opinions amongst group members, which would ultimately generate new knowledge by themselves. Group members were assigned responsibilities as leader, secretary and members. Each group was required to read, analyze and to complete comprehension questions, as well as draw an electronic mind map, and to summarize an assigned passage for the following week in advance,

which had to be ready for classroom presentation and discussions. During the post-midterm period, individual work was assigned based on the assumption that participants were familiar with this type of learning approach and thus, presentations were randomly selected due to time constraints. At the end of each session, correct answers for comprehension questions and suggested answers for the e-mapping and summary were provided. The final week was mostly concerned with informal interviews regarding this instructional technique and the questionnaire, as well as to administer the posttest processes.

The rubric for grading the e-mapping included primary and secondary branches, relevance of concepts, major relationships and concept mapping skills. The rubric for grading a summary was the inclusion of main ideas, relevant details, appropriate additions and paraphrasing, as well as grammatical structures.

#### 4 Data collection and analysis

The quantitative data were collected from the pre- and posttests and analyzed statistically for mean and standard deviation. The qualitative data were derived from the informal interviews and the questionnaires and were analyzed descriptively.

#### Analysis results

As mentioned earlier, this investigation attempted to enhance reading comprehension and summary skills of the participants through the use of electronic mind mapping as a tool to analyze the reading passages. The data were collected from the pre- and posttests and were analyzed to obtain the mean and standard deviation. The analysis results are shown in the following tables:

**Table 1 Dependent sample test of reading comprehension skill**

score	N	$\bar{X}$	S.D.	t	Sig.
Pre-test	50	5.86	1.512	7.865	.000**
Posttest	50	7.32	1.039		

When the dependent sample test was statistically conducted, it was found that the mean of the pre-test was 5.86 with a standard deviation of 1.512. When the posttest was administered after the implementation of the e-mapping approach, the mean was 7.32 with the standard deviation of 1.039. The students' posttest scores were more clustered, implicitly indicating that their comprehension abilities were more similar after implementing the approach. The t-test indicates that there is a significant difference between the pre- and posttest mean scores at a 0.01 level.

**Table 2 Dependent sample test of summary skill**

score	N	$\bar{X}$	S.D.	t	Sig.
Pre-test	50	4.70	1.418	10.487	.000**
Posttest	50	6.38	1.067		

When the dependent sample test was statistically conducted, it was found that the mean of the pre-test was 4.70 with a standard deviation of 1.418. When the posttest was administered after the implementation of the e-mapping approach, the mean was 6.38 with a standard deviation of 1.067. The students' posttest scores were more clustered, implicitly indicating that their comprehension abilities were more similar after implementing the approach. The t-test indicates that there is a significant difference between the pre- and posttest mean scores at a 0.01 level.

The data from the questionnaire were analyzed for percentage points and the topics included the benefits of using e-mapping, achievements in using the approach in analyzing reading texts, and opinions on the overall use of the approach. Regarding the benefits of e-mapping for analyzing the texts, it was found that over 90% of the respondents found that the technique enabled them to understand, analyze and summarize the reading passages better and faster. After learning how to search for main ideas by reading analytically, they were able to identify which information was relevant to main ideas, resulting in an improved ability to answer the questions more correctly, drawing up more orderly and more precise mapping, and summarizing the passages more accurately. As for their achievements in creating the e-mapping and summary, over 85% confirmed that their electronic mind maps and summaries were correct or similar to the ones provided by the teacher. Additionally, they thought that the e-mapping technique was beneficial to them in helping to analyze reading passages systematically and correctly.

The data from the informal interviews of the students revealed that the e-mapping technique required them to read more critically and analytically in order to create better mind maps and summaries, so they were required to read carefully and more than once. This technique could also be transferred to other subjects, such as writing, by incorporating similar steps into their work so as to create coherent and clearly defined pieces. The technique also promotes creative abilities by systematically transforming abstract ideas in printed texts to concrete and visual representations of ideas, resulting in more accurate and better summaries. Furthermore, the e-mapping technique is easy and convenient to use and more aesthetic by using relevant pictures or icons from the Internet. It is also paperless, which is friendly to the environment and reduces personal expenses on buying stationery materials. Moreover, it promotes computer skills in students, which is one of the important competencies of learners in the twenty-first century. Finally, group work encourages cooperative learning, promoting knowledge sharing and constructive discourse, as well as productive discussions and debates among group members.

## **Discussion and conclusion**

The analysis results clearly indicate that the e-mapping technique can enhance reading comprehension and summary skills of students, as shown in the significant difference demonstrated by the posttest scores. The findings confirm the research hypothesis that this instructional technique enables the students to improve and better their reading comprehension and summary skills. The same findings were confirmed by the studies of Salehi et al. (2013), Ellozy and Mostafa (2010), Chang, Sung, and Chen (2002), Khajavi and Kebati (2012), Shaul (2011), Sahin ((2013), and Chiou (2008). This is due to the fact that the mapping is a graphic representation of main ideas of a reading passage that students can relate to and perceive visually. The links of the ideas also help facilitate them to write better and more accurate summaries of the passages. This technique also requires students to read carefully, critically and analytically in order to construct the mapping and the summary. Before the construction could be carried out, they have to understand the whole text thoroughly, so that they are able to visualize the entire mapping construction and summary. Furthermore, the approach promoted a collaborative learning environment, where constructive discussions and debates could occur.

Some pedagogical implications from these findings are that the technique should be incorporated into other reading and writing courses so as to enhance EFL students' abilities in mastering their English skills. To achieve this goal, students are required to read as much and as often as possible in an attempt to expose themselves to the language. Implementing this particular technique can assist them to analyze reading passages more systematically, which would ultimately result in becoming proficient English language learners and users. This improved proficiency is a value-added factor in a fiercely competitive labor market and in the age of globalization, where labor movements have no geopolitical boundaries.

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