



## CONCEPT MAPPING INFLUENCING STUDENTS' ABILITY TO SUMMARIZE READING PASSAGES

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### Abstract:

Concept mapping has been advocated as a facilitative tool for enhancing meaningful learning of reading comprehension of students in several ways. In particular, this strategy positively influences how students comprehend texts and summarize important ideas or information given in a particular text passage. However, research into the effects of concept mapping on students' ability to summarize passages has not been explored in the context of teaching and learning English as a foreign language in Vietnam. This paper therefore examines the effects of concept mapping on students' ability to summarize reading passages within a community college context in the Mekong Delta. Using an experimental study, pretest, posttest, and questionnaire were undertaken with twenty six sophomores over the second semester of a reading course. The findings show that concept mapping had positive effects on students' ability to summarize reading passages and that students perceived the use of this reading strategy as being a facilitative tool for meaningful learning. The paper concludes by discussing the pedagogical implications and insights into the relationship between concept mapping and summarizing skills in reading comprehension in wider contexts.

**Keywords:** concept mapping, reading comprehension, summarizing, facilitative tool

### 1. Introduction

Concept mapping as an efficient teaching and learning strategy was first developed by Joseph Novak and a team of researchers at Cornell University in 1972. These authors investigated how concept mapping functions first as a tool for representing science knowledge of students and then as a means of enhancing meaningful learning in sciences. In particular, research in this area has indicated its growing interest in

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extending reading comprehension of learners and allowing them to make their learning easier and more meaningful ([Ausubel, 1968](#); [Novak & Cañas, 2008](#); [Phan, 2017](#)). Concept mapping is defined as a schematic way that represents meaning and understanding of the relationships between concepts and ideas. Therefore, it is critical that concept mapping is associated with how learners learn new knowledge by integrating this type of information into knowledge they already possess and experience in the form of maps or graphic representations ([Pham, 2017](#)). From the constructivist perspectives, learners become active participants rather than passive receivers of knowledge.

Although several studies have shown the effects of concept mapping on EFL students' reading comprehension, little is known about its effects on students' ability to summarize reading passages within the context of teaching and learning like Vietnam. This paper therefore timely offers insights into the extent to which concept mapping influences EFL students' ability to summarize reading passages.

In Vietnam, increased pressure has been placed on teachers at all levels to promote the quality of teaching and learning foreign languages to meet learners' needs in the global integration, particularly their language use of English, as indicated in the National Foreign Language 2020 ([Ministry of Education and Training, 2008](#)). However, the teaching staff are not qualified enough to help students keep up with the changes of the current educational reforms and government initiatives ([Nguyen, 2013](#); [Pham, 2017](#)). In particular, the traditional lecturing and rote memorization-oriented instruction still remain at tertiary levels. This type of instruction results in passive student learning and habitually neglected attitudes towards learning. Concept mapping may therefore supplement the traditional lecturing approach not only to enrich teaching practices but also to provide students with opportunities to demonstrate and foster their understanding of independent learning while taking greater responsibility for their learning process, specifically in processing, filtering, and understanding what is read through summarizing printed materials. Thus, it is important to get insights into how students make sense of or interpret reading texts through summarizing while they access and process their learning materials.

Although summarizing has been addressed in the literature to exert positive impact on reading comprehension ([Cordero-Ponce, 2000](#); [Gorgen, 2015](#); [Marzec-Stawiarska, 2015](#); [Mudzielwana, 2013](#); [D. B. Torres, 2015](#)), little research has been carried out to examine the effects of concept mapping on students' ability to summarize reading passages within the context of teaching and learning reading such as that in Vietnam. This paper is therefore aimed at investigating the effects of concept mapping on EFL students' ability to summarize reading passages.

The research questions guided this study were,

- 'To what extent does concept mapping influence EFL students' ability to summarize reading passages?', and
- 'What are students' perceptions about using concept mapping as a reading strategy?'

In the following section of this paper, there is a description of the concepts of concept mapping and summarizing, which are relevant to this study.

## 2. Concept mapping

Concept mapping has been widely recognized as a potential learning tool for enhancing reading comprehension. It is defined as a graphic representation of knowledge through concepts ([Novak & Cañas, 2008](#); [Novak & Gowin, 1984](#)). This relationship connected by lines indicate the interpretation of ideas or meanings from a given text passage. New meanings developed from the concepts from the prior knowledge and such relationships are known as concept maps. Concept maps are also seen as “perceived regularities or patterns in events or objects, or records of events or objects, designated by a label” ([Novak & Cañas, 2006, p. 177](#)). In this sense, readers can relate or link their background knowledge to new information labeled by symbols, words, or phrases to form meaningful statements or ideas.

Concept mapping is associated with two theories of learning: Ausubel’s assimilation theory and Novak’s constructivist theory, discussing how learners learn new information by incorporating new knowledge with knowledge they have already known ([Pham, 2017](#)). As learning progresses, meaningful learning occurs as a result of the assimilation of new concepts and propositions into existing knowledge structures ([Novak, 1990](#); [Novak & Cañas, 2006](#)). From the constructivist view, concept mapping denotes learners who are active participants rather than passive recipients of knowledge, endeavoring to bring new meanings to information they already possess.

Drawn on the above perspectives, concept mapping is defined, for the purposes of this study, as a learning tool in which learners outline a particular text and master its content.

## 3. Summarizing

Summarizing is a strategy used to select the most important part of source information. It therefore provides students or readers with an opportunity to retain important ideas given in a particular text ([Brown & Day, 1983](#); [Nguyen & Nguyen, 2017](#)). This learning strategy is a complex process that requires readers to filter the whole text from important to unimportant ideas, synthesize these ideas to create a new text which includes the basic information from the original material ([Dole, Duffy, Roehler, & Pearson, 1991](#); [Khoshima & Tiyyar, 2014](#)). Similarly, Friend (2001) argues that “to make a good summary, a student must be able to relate new ideas with old ones and put unique ideas forward” (p.320). In his view, a summary must be short and provides enough information of the writer and it is written by students’ own words. Such perspectives suggest that summarizing requires students to make sense of the meaning of source information, retain it for a long time, and identify what is important to be included in the summary writing.

Another view on summarizing is that readers not only recap the text after reading but also design their own texts from what they read ([Fountas & Pintell, 2001](#); [Nguyen, Ho, and Nguyen, 2018](#)). Thus, summarizing is a strategy that places emphasis on how readers analyze, comprehend the information and get across the writer's intentions or messages in a concise way. Summarizing involves identifying ideas and refining statements of important concepts from a reading text, either in oral or writing forms. It may encourage deeper engagement with a text and encourage students to reread as they construct a summary ([Kamil, 2004](#)). Nguyen and Nguyen (2017) further assert that summarizing, a learning strategy, is a sophisticated process that students need to work out in their learning process since it requires them to filter the whole text from important to unimportant ideas, synthesize these ideas to create a new shortened version from the original source. By focusing on key ideas and concepts of an entire reading text and determining what to include or exclude in their summary writing, this strategy influences students' reading comprehension and learning at a deeper level.

#### **4. Concept mapping as a tool to summarize reading passages**

A wealth of studies has been conducted to confirm the impact of concept mapping on summarizing ability with regard to improving reading comprehension. For example, a study by Ruddell and Boyle ([1989](#)) reported on the effects of the use of cognitive mapping on summarizing and comprehending expository texts. The results indicated that students scored significantly higher on holistic scores based on summarizing performance by identifying more details to support main ideas and condensing texts in a better way. Such positive effect of concept mapping could aid students in developing procedural knowledge, thereby generating and synthesizing more effective summaries. Another study by Chang, and his colleagues ([2002](#)) examined the effects of concept mapping on facilitating text comprehension and summarization. The results revealed that concept-mapping could enhance students' text comprehension and summarization abilities as these two aspects were closely interrelated.

#### **5. Methodology**

An experimental study was used to explore the effects of concept mapping on students' ability to summarize reading passages. The design of the study included a one group pre-test and post-test and questionnaire. This quasi-experimental study was seen as most appropriate and useful for obtaining better understanding of the topic under investigation ([Creswell, 2014](#)). Questionnaires were delivered to students to gain deep insights into students' perceptions towards the use of concept mapping as a reading strategy.

The study was conducted in a community college in the Mekong Delta province of Vietnam during the 2016-2017 academic years. For the most part, student learning is largely based on traditional lecturing and memorization of knowledge. As such,

students did not have opportunities to practice any reading skills or strategies, particularly concept mapping to summarize their lessons.

Twenty-six sophomores majoring in English studies were invited to participate in the study. Twenty-two participants were females and four were males with their age range from 18 to 21. Students were arranged into one experimental group because there was only one class at the time of the study. Before doing the pre-test and post-test, students had been introduced with two terms of concept mapping and summarizing. In particular, students were guided how to construct maps and to summarize a given text in order to familiarize themselves with these concepts throughout the research process. Reading 3 course was used as the main source of material used at the second semester. Before doing the pre-test, students were asked to complete two exercises. Each exercise included two types of text passages. For Text One, students were asked to complete the exercise by choosing the correct answer that best summarizes the key idea for each of the three passages. For Text Two, students were required to draw the map of concepts, connect related ideas, and then summarize the text passage by writing down one to two sentences in their own words.

The pre-test and post-test were designed and then piloted to students who were at similar level of English proficiency at the college at the time of the study under investigation. The Cronbach's alpha coefficient of the pilot pre-test was calculated at  $\alpha = .88$ , and that of the pilot post-test was at  $\alpha = .79$ . Thus, these values indicate that the tests could be used for collecting the data of the present study.

A thirty-item questionnaire using five-point Likert scale was administered to the experimental group of twenty-six students one week after the post-test. The scale ranges from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was categorized into four clusters of perceiving concept mapping as (1) a facilitative tool for meaningful learning, (2) a means to enhance critical thinking, (3) a learning tool (4) a tool to summarize passages.

The questionnaire was designed in both English and Vietnamese in order to ensure that participating students understood all contents of the items and felt at ease. Both versions of the questionnaire were sent to his supervisor for revision and feedback. The reliability coefficient of the piloted questionnaire was high ( $\alpha = .753$ ), indicating that the questionnaire was confirmed to be reliable.

Table 1 below summarizes items for each cluster in the questionnaire. For detailed information, see Appendix 1.

**Table 1:** Summary of the four-cluster questionnaire

Clusters	Items
A facilitative tool for meaningful learning	1, 6, 7, 8, 18, 19, 30
A means to enhance critical thinking	4, 5, 15, 23, 26, 27, 28
A learning tool	2, 3, 9, 11, 13, 14, 21, 24
A tool to summarize passages	10, 12, 16, 17, 20, 22, 25, 29

The quantitative data were collected and analyzed using the computer software Statistics Package for the Social Sciences (SPSS) version 20. A descriptive statistics test

and paired samples *t*-test were utilized to investigate the effects of concept mapping on students' ability to summarize passages.

## 6. Findings

This section presents the findings of the study to respond to the two research questions. The first question focuses on the extent to which concept mapping influences students' ability to summarize reading passages, followed by insights into how students perceived the use of concept mapping as a reading strategy within the context of teaching at a community college.

### 6.1 Effects of concept mapping on students' ability to summarize passages

The students' pre- and posttests of the effects of concept mapping on their ability to summarize reading passages are shown in Table 2.

**Table 2:** Descriptive Statistics of students' pre- and posttests

Test	N	df	p	Min	Max	M	SD
Pre-	26	25	.000	5.0	7.25	6.09	.751
Post-	26			6.75	9.75	8.07	.841

Table 2 shows that students obtained higher mean post-test scores ( $M= 8.07$ ;  $SD=.841$ ) on summarizing compared to pre-test scores ( $M=6.09$ ;  $SD=.751$ ) and there is a statistically significant difference between the means at  $p<.05$  level ( $p=.00$ ). As shown in Table 3, the Pearson correlation coefficient ( $r= .868$ ,  $p=.00$ ) illustrates that there was a positive correlation between students' use of concept mapping and their ability to summarize reading passages. In other words, this indicates a positive effect of concept mapping on the summarizing skill of students in reading comprehension and therefore concept mapping can be an effective strategy for improving students' ability to summarize reading passages.

**Table 3:** Correlations

Paired samples correlations			
	N	Correlation	Sig.
Pre-test	26	.868	.000
Post-test	26		

### 6.2 Students' perceptions about using concept mapping as a reading strategy

Quantitative analysis from the questionnaire is organized into four themes, considering concept mapping as a facilitative tool for meaningful learning, a means to enhance critical thinking, a learning tool, and a tool to summarize passages.

#### A. Concept mapping as a facilitative tool for meaningful learning

Students' perceptions to concept mapping as a facilitative tool for meaning learning were examined with seven questionnaire items (See Table 1). Table 4 shows the mean

scores were found at a high level ( $M=3.51$ ). The result of One-Sample  $t$ -Test, as shown in Table 5, reveals that the difference in the mean scores was significant ( $t=7.78$ ;  $df=25$ ;  $p=.00$ ). This indicates that students perceived concept mapping as a facilitative tool for meaningful learning while summarizing a text.

**Table 4:** Concept mapping as a facilitative tool for meaningful learning

	N	Min	Max	Mean	SD
Meaningful learning	26	2.86	4.14	3.51	.338
Valid N (listwise)	26				

**Table 5:**  $t$ -Test of a facilitative tool for meaningful learning

test value = 3.0

t	df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the difference	
				Lower	Upper
7.78	25	.000	.516	.379	.653

### B. Concept mapping as a means to enhance critical thinking

Table 6 shows the mean score ( $M=3.54$ ,  $SD=.254$ ) of students' perceptions about concept mapping as a means to enhance the critical thinking.

**Table 6:** Concept mapping as a means to enhance the critical thinking

	N	Min	Max	Mean	SD
Critical thinking	26	3.00	4.00	3.54	.254
Valid N (listwise)	26				

As presented in Table 7, the  $t$ -value of 11 was significant at the  $p=.00$  level (with  $df=25$ ), indicating that students had positive effects on students' critical thinking while reading.

**Table 7:**  $t$ -Test of concept mapping a means to enhance critical thinking

test value = 3.0

t	df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the difference	
				Lower	Upper
11.00	25	.000	.549	.446	.652

### C. Concept mapping as a learning tool

Table 8 shows the mean score of students' perceptions about concept mapping as a learning tool was at a high level ( $M=3.44$ ). The result of One-Sample  $t$ -Test ( $t=10.31$ ;  $p=.00$ ;  $df=25$ ), as shown in Table 9, indicates that the sample mean was significantly different from the average mean of 3.0, supporting the conclusion that students perceived the importance of concept mapping as a learning tool.

**Table 8:** Descriptive Statistics of concept mapping as a learning tool

	N	Min	Max	Mean	SD
Learning tool	26	3.13	3.75	3.44	.218
Valid N (listwise)	26				

**Table 9:** *t*-Test of concept mapping as a learning tool

test value = 3.0					
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
10.31	25	.000	.442	.354	.530

#### D. Concept mapping as a tool to summarize passages

Table 10 shows the descriptive statistics of the mean score of students' perceptions of concept mapping as a tool to summarize reading passages at a high level ( $M=3.88$ ).

**Table 10:** Descriptive statistics of concept mapping as a tool to summarize passages

	N	Min	Max	Mean	SD
Tool to summarize passages	26	3.25	3.88	3.54	.176
Valid N (listwise)	26				

The result of *t*-test, as shown in Table 11, was significant at the  $p=.00$  (with  $df=25$ ). This indicates that students had a positive perception about concept mapping as a reading strategy to summarize reading passages.

**Table 11:** *t*-Test of concept mapping as a tool to summarize passages

test value = 3.0					
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the difference	
				Lower	Upper
15.68	25	.000	.543	.472	.614

## 7. Discussion

This section discusses the findings of the study in relation to the research questions. The first question was sought to investigate how concept mapping influenced EFL students' ability to summarize reading passages. Analysis from the tests reveals that concept mapping had positive effect on students' summarizing ability. These findings are consistent with those of a study by Chang and his colleagues (2002), who indicate that concept mapping, could be used to improve students' reading performance. In particular, concept mapping can be an effective way to tie text comprehension to summarizing abilities, as advocated by Kinchin and his colleagues (2000). These authors also claim that when constructing a concept map, students focused on key concepts, key words, and relationships among these concepts, thereby maximizing the potential use of summarizing reading passages.

Regarding the second question, the findings reveal that students had positive perceptions about concept mapping in their reading comprehension classes. As a reading strategy, concept mapping was perceived as a facilitative tool for meaningful learning, a means to enhance critical thinking, a learning tool, and a tool to summarize reading passages.

First, students perceived concept mapping as a tool for *meaningful learning* in comprehending and summarizing reading passages. The findings from this study



support the conclusion of studies by Hill (2005) and Torres and his colleagues (2010) who indicate that by using concept mapping, students could transfer their learning into a more meaningful way. Using concept mapping stimulates students to think more deeply about the ideas in a text because they must figure out relationships between ideas and their textual organization. The findings of this study also aligns with a study by Cañas and his colleagues (2003) who claims that meaningful learning allows for the integration of thinking and performing a given reading text. It can be inferred that this type of learning could assist students in accessing background knowledge, restructuring that knowledge, and placing new information into long-term memory. Understanding such influence of concept mapping suggests that meaningfully acquired knowledge can facilitate student learning in the long run.

Second, students positively perceived concept mapping as a means to enhance *critical thinking*. The findings from this study are in line with a study by Novak (2010) who found that applying concept maps as a reading strategy could help facilitate students' understanding of a lesson or a given topic by engaging them in thinking about how to connect ideas in a logical way. The process of making knowledge explicit makes learners aware of what they know; as a result, they can construct new knowledge. Learning is a making meaning process; therefore, concept mapping shifts learning direction from lecture-based to student-centeredness.

The findings from the questionnaire analysis show that students had positive perceptions about concept mapping as *a learning tool to summarize passages*. In particular, they understood structures and interrelations of passage contents in relation to revising other topics. This useful reading strategy not only helps students summarize texts in a convincing way but also gives them a sense of confidence while learning reading. Such impact builds on the studies by Ruddell and Boyle (1989), and Chang, Sung and Chen (2002) who asserted that concept mapping could aid students in comprehending and summarizing reading texts.

## 8. Conclusions

The findings highlight the effects of concept mapping as a reading strategy that influenced how students summarized reading passages. However, with a small sample size, this study cannot be generalized. Time constraint also did not allow students for more practice or construction of concept mapping strategy. Despite its limitations, positive effectiveness of concept mapping raises several pedagogical implications for teachers, students and further research for the sake of quality teaching and learning with regard to meaningful learning and critical thinking.

As for teachers, it is recommended that concept mapping should be applied to involve students in understanding how to summarize a text reading passage through the use of concept maps and its links. Since concept mapping was found to be an effective strategy for improving students' learning outcomes, this strategy should be incorporated in the existing curriculum to shift the traditional lecturing method to student-centered approach. Such challenge will create learning environments to suit

students' interest and majors. It is plausible to suggest that concept mapping instruction may serve as a tool to foster students' critical thinking, meaningful learning and creativity.

As for students, learning how to summarize texts is crucial for their processing information. Thus, students should be given opportunities to apply the concept mapping strategy to develop their critical thinking and independent learning while learning reading. Students are encouraged to make best use of concept mapping as a facilitative learning tool for summarizing a specific text passage by identifying the connections between ideas and messages while mapping knowledge. In doing so, meaningful learning can occur as an active learning process.

The findings could be more convincing and comprehensive if more classes were included in the study in a longer period of time and if interviews were included to supplement questionnaires and tests. More research is needed on the effects of concept mapping on students of varying reading levels in similar or wider contexts to assess student learning of reading as well as examine how concept mapping strategy continues to be a meaningful tool for students to enhance their summarizing skill. Future studies about such strategy on speaking and listening are worth considering so that students can develop their language use more communicatively and comprehensively.

### **About the authors**

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### **References**

1. Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. New York: Holt, Rinehart and Winston.
2. Brown, A. L., & Day, J. D. (1983). Macrorules for summarizing texts: The development of expertise. *Journal of Verbal Learning and Verbal Behavior*, 22(1), 1-14.

3. Canas, A. J., Coffey, J. W., Carnot, M. J., Feltovich, P., Hoffman, R. R., Feltovich, J., & Novak, J. D. (2003). A summary of literature pertaining to the use of concept mapping techniques and technologies for education and performance support. Pensacola, Florida: Institute for Human and Machine Cognition.
4. Chang, K.-E., Sung, Y.-T., & Chen, I.-D. (2002). The effect of concept mapping to enhance text comprehension and summarization. *The Journal of Experimental Education*, 71(1), 5-23. doi: <http://dx.doi.org/10.1080/00220970209602054>
5. Cordero-Ponce, W. L. (2000). Summarization instruction: Effects of foreign language comprehension and summarization of expository text. *Reading Research and Instruction*, 29(4), 329-350.
6. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4th Ed.)*. Thousand Oaks, California: SAGE Publications.
7. Dole, J., Duffy, G., Roehler, L., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264.
8. Fountas, I. C., & Pintell, G. S. (2001). *Guiding readers and writers Grades 3-6: Teaching comprehension, genre, and content literacy*: Pearson Education, Canada.
9. Friend, R. (2001). Effects of strategy instruction on summary writing of college students. *Contemporary Educational Psychology*, 26(1), 3-24.
10. Gorgen, I. (2015). The extent to which pre-service Turkish language and literature teachers could apply summarizing rules in informative texts. *Educational Research and Reviews*, 10(3), 308-312.
11. Hill, L. H. (2005). Concept mapping to encourage meaningful student learning. *Adult Learning*, 16(3-4), 7-13.
12. Kamil, M. L. (2004). Vocabulary and comprehension instruction: Summary and implications of the National Reading Panel findings. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research*. Baltimore, MD: Paul H. Brookes.
13. Khoshsima, H., & Tiyyar, F. R. (2014). The effect of summarizing and presentation strategies on reading comprehension of Iranian intermediate EFL learners. *International Journal of Applied Linguistics and English Literature*, 3(4), 88-96.
14. Marzec-Stawiarska, M. (2015). The influence of summary writing on the development of reading skills in a foreign language. *System*, 59, 90-99.
15. Ministry of Education and Training. (2008). *Teaching and learning foreign languages in the national education system from 2008 to 2020*. Hanoi, Vietnam: Retrieved from <http://tailieu.vn/doc/de-an-day-va-hoc-ngoai-ngu-trong-he-thong-giao-duc-quoc-dan-1331102.html>.
16. Mudzielwana, N. P. (2013). Research-based teaching comprehension strategies: Bridging the gap. *Journal of Language Teaching and Research*, 4(2), 317-327.
17. Nguyen, H. B. (2013). Beliefs about support for teacher change in English for Specific Purposes university classes. *New Zealand Studies in Applied Linguistics*, 19(2), 36-48.

18. Nguyen, H.B., Ho, T.P., & Nguyen, T.T.N. (2018). *Advanced Writing Skills II*. Can Tho: Can Tho University Publishing House.
19. Nguyen, H. B., & Nguyen, N. T. K. (2017). Summarizing strategies: Potential tool to promote English as a foreign language (EFL) students' reading comprehension at a vocational school, Vietnam. *European Journal of Education Studies*, 3(8), 51-72.
20. Novak, J. D. (1990). Concept mapping: A useful tool for science education. *Journal of Research in Science Teaching*, 27(10), 937-949.
21. Novak, J. D. (2010). *Learning, creating, and using knowledge: Concept maps as facilitative tools in schools and corporations*: Routledge.
22. Novak, J. D., & Cañas, A. J. (2006). The origins of concept mapping tool and the continuing evolution of the tool. *Information Visualization*, 5(3), 175-184.
23. Novak, J. D., & Cañas, A. J. (2008). The theory underlying concept maps and how to construct and use them. *Technical Report IHMC Cmap Tools*.
24. Novak, J. D., & Gowin, D. B. (1984). *Learning how to learn*. New York: Cambridge University Press.
25. Pham, Q. N. (2017). *The effects of concept mapping on EFL students' ability to summarize reading passages*. (Master's thesis), Can Tho University, Can Tho, Vietnam.
26. Phan, T. T. (2017). *The effects of concept mapping on EFL students' reading comprehension*. (Master's Thesis), Can Tho University, Can Tho, Vietnam.
27. Ruddell, R. B., & Boyle, O. F. (1989). A study of cognitive mapping as a means to improve summarization and comprehension of expository text. *Reading Research and Instruction*, 29(1), 12-22. doi: <https://doi.org/10.1080/19388078909557992>
28. Torres, D. B. (2015). Effectiveness of the use of graphic organizers and summaries: A case study of adult EFL students in a reading comprehension course. *Revista de Lenguas Modernas*, 22, 267-295.
29. Torres, P. L., Forte, L. T., & Bortolozzi, J. (2010). Concept maps and meaningful learning. In P. L. Torres & R. D. C. V. Mariott (Eds.), *Handbook of Research on Collaborative Learning Using Concept Mapping* (pp. 430-448).

## Appendix 1

Please indicate your level of agreement or disagreement with each of the following statements regarding the effects of concept mapping on summarizing reading passages. Place an X mark in the box of your answer. 1= strongly disagree; 2=disagree; 3= neutral; 4= agree; 5= strongly agree

	Statements	1	2	3	4	5
1.	Concept mapping helped me to improve my reading.					
2.	Concept mapping increased my motivation to learn reading.					
3.	Concept mapping helped me to summarize passages.					
4.	Concept mapping helped me to think analytically.					
5.	Concept mapping helped me to think independently.					
6.	Concept mapping helped me to gain better understanding of my reading.					
7.	Concept mapping was useful in developing reading comprehension.					
8.	Concept mapping helped me to save time when reading a text.					
9.	Concept mapping helped me to summarize a passage easily.					
10.	I learned how to use concept mapping to summarize passages.					
11.	I understood the outline of the reading passages through concept mapping.					
12.	I felt self-confident using concept mapping in summarizing activities.					
13.	I felt comfortable when preparing the test.					
14.	I felt comfortable when writing the test.					
15.	I can apply the summarizing strategy in my learning.					
16.	Concept mapping is a useful tool for summarizing passages.					
17.	Concept mapping is a useful tool for learning other subjects.					
18.	I feel encouraged after learning how to use concept mapping to summarize reading passages.					
19.	I now enjoy using concept mapping to summarize passages.					
20.	I understand how to apply concept mapping to summarize passages.					
21.	I use concept mapping to summarize passages when learning other topics.					
22.	Summarizing skills learnt from using concept mapping can help me understand the content of reading passages.					
23.	Summarizing skills learnt from using concept mapping can help me in learning other subjects.					
24.	Summarizing skills learnt from using concept mapping can help me in revising other topics.					
25.	Analyzing skills learnt through using concept mapping on summarizing passages helped me to learn better.					
26.	Summarizing passages learnt through using concept mapping helped me to think critically.					
27.	Summarizing passages learnt through using concept mapping helped me to think independently.					
28.	Summarizing passages learnt through using concept mapping helped me to think analytically.					
29.	Summarizing passages learnt through using concept mapping helped me to generalize reading texts.					
30.	Summarizing passages learnt through using concept mapping benefits me in learning.					

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