



THE IMPACT OF QUESTIONING AND SEMANTIC MAP IN PRE-READING STAGE ON STUDENTS' READING COMPREHENSION: A COMPARATIVE STUDY

Tran Thi Thanh Thuy¹ⁱ,

Phuong Hoang Yen²

¹EFL teacher at Phan Ngoc Hien high school for the gifted,
Ca Mau city, Vietnam

²Vice Dean, School of foreign languages,
Can Tho University, Vietnam

Abstract:

Pre-reading activities play an important role in language reading classrooms since they help to activate students' background knowledge of the topics being taught, which results in improving students' reading comprehension. Most studies in the literature focus on exploring the effects of individual pre-reading activities such as brainstorming, pre-teaching vocabulary, questioning on students' performance in doing comprehension tasks. Few studies have been conducted to explore whether one technique is better than the others in activating students' schemata in reading lessons. The current study investigates the impact of Questioning and Semantic map in Pre-reading stage on EFL gifted high school students' reading comprehension. The participants were 52 gifted students from two science classes for twelfth graders (they were non gifted English students). They shared the same culture, native language, educational background and age. The data were collected through two reading proficiency tests (pre-test and post-test) and individual interviews. The findings revealed that both Questioning and Semantic map had positive impacts on gifted students' reading comprehension. Especially, the students who received Semantic treatment had significantly better improvement in their reading skill. The findings shed lights on what can be done to improve EFL students' reading performance.

Keywords: gifted students, reading comprehension, Questioning, Semantic map

1. Introduction

Reading is the foundation of learning (Berninger & Richards, 2002; Cunningham & Stanovich, 2001). It is an active, purposeful process of constructing meaning from texts

ⁱ Correspondence: email tranthithanhthuy.nvk@gmail.com

to create new knowledge (Armbruster et al., 2001). Reading failure may give rise to long-term learning difficulties which further lead to low self-confidence and motivation to learn (Armbruster et al., 2001; Nation, Clarke, & Snowling, 2002). In recent years, reading has been considered a multileveled and interactive process, in which readers construct a meaningful representation of text using their background knowledge (Al-Issa, 2006). In their studies, researchers such as Zhao & Zhu (2012), (Al-Issa, 2006), and Ajideh (2006) find that the more unfamiliar the learners are with the topic of the text they are reading, the more difficulties they encounter in their understanding of the text. As a result, they conclude that background knowledge plays a very crucial role in the process of comprehending the text and constructing meaning in L2. They also suggest the need for providing pre-reading activities before students read the text in order to help learners activate relevant background knowledge or to better comprehend the text because all texts are laden with knowledge.

Being a teacher who teaches English as a foreign language in a high school, especially a gifted high school, I realize that students at a gifted school often deviate their study for some specific subjects that they are gifted. For students who are in non-gifted English classes, they often lack some necessary skills to acquire English as a result of their study deviation for their gifted subjects for a long time. Among essential skills and knowledge of English, reading may be the most challenging because reading ability requires not only reading strategies but also their knowledge of lexical pattern, culture, and structure. The traditional reading methods fail to improve students' reading skills and increase their reading speed. Based on the theory of Schema, learners' schema can be used to help guide students to comprehend a text from the global point of view. Therefore, the role of Schema theory in reading comprehension cannot be ignored. However, when built up or activated through two pre-reading activities: Questioning and Semantic Map, whether schema theory still works well on non-gifted English students or not and if there are any differences between these two techniques is still a question for researchers of EFL.

The purpose of this paper is threefold. The first is to investigate the impact of Questioning and Semantic map in Pre-reading stage on EFL gifted high school students' reading comprehension. The second goal is to compare the effect on students' reading comprehension between these two pre-reading activities. The last one is to discuss the implications of these techniques in L2 reading classroom.

2. Literature Review

2.1. Reading skills in EFL context

2.1.1. Definition

Theorists vary on the nature of reading comprehension. Traditional opinions regard reading as a passive decoding process when *"meaning is embodied in the text and the reader can extract the meaning from the print if he understands it letter by letter and word by word"* (Goodman, 1988).

Different from the above ideas, schema theorists believed that we comprehend something only when we can relate it to something we already know, that is, when we can relate the new experience to an existing knowledge structure, as in Rumelhart's saying "*one's background knowledge plays a more important role than new words and new structures in reading comprehension*" (Rumelhart, 1985). Having the same idea, Goodman has described reading as a "*psycholinguistic guessing game*" (1967) in which "*the reader reconstructs, as best as he can, a message which has been encoded by a writer as a graphic display*" (1971, p.135). Carrell (1983, p.82) considered the process of comprehending a text as "an interactive one between the listener or reader's background knowledge of content and structure, and the text itself" because he believed that "*the text alone does not carry meaning; rather, a text only provides guidance for listeners or readers as to how they should construct the intended meaning from their own previously acquired knowledge*". Kingston also viewed reading as "*a process of communication by which a message is transmitted graphically between individuals*" (1967, p.72). Based on these opinions, Rumelhart (1985) also suggested that teacher of reading skill should teach the background knowledge first to prepare in advance the knowledge that the passage will be about to help students predict the meanings from the printed words.

2.1.2. Models of reading

Standing on the ground of nature of reading, some models of reading have been suggested. Based on specific models of reading, Pearson (1984) listed five models of reading, namely *Interactive Compensatory Model*, *Word Recognition Model*, *Simple View of Reading Model*, *Dual-Coding Model*, and *Psycholinguistic Guessing Game Model*. However, when viewed as metaphorical interpretation of many processes, reading is classified with three main models: *Bottom-up models*; *Top-down models*; and *Interactive models* (Pearson, 1984; Carrell, 1983; Bobrow & Norman, 1975; Goodman, 1988; Nuttall, 1996).

Metaphorically, "*bottom-up*" or "*data-driven*" process suggests that all reading follows a mechanical pattern in which the reader creates a piece-by-piece mental translation of the information in the text, with little interference from reader's own background knowledge. In contrast, "*top-down*" or "*conceptually driven*" process assumes that reading is primarily directed by reader goals and expectations. The reader samples the text to confirm or reject hypotheses about its content. The reader's expectations represent a form of processing which should expedite and speed up subsequent analysis. The combination of the two above models is "*interactive*" modals which suggest that the reader can take useful ideas from a bottom-up perspective and combine them with key ideas from a top-down view. *Interactive model* may be the best and the most suitable way for the reader to convey and comprehend a text because it covers both the meaning as well as the author's intended message.

2.1.3. Challenges of EFL learners when learning reading skills

A lot of research on reading comprehension has focused on identifying skills or factors that may challenge the process of reading comprehension or may account for poor readers' deficits. These factors can be classified into three main groups.

The first and most popular factor mentioned is *vocabulary difficulty* (Johnson, 1982; Freebody & Anderson, 1983) that may be a barrier preventing learners from approaching the text if they meet unfamiliar vocabulary.

The second factor is *text cohesion* (Randi et al., 2013; Freebody & Anderson, 1983). Oakhill, Cain, and Bryant (2003) summarized the reading comprehension deficits of poor comprehenders at the discourse level as:

"...difficulty making inferences, regardless of prior knowledge; lack of ability in identifying referent pronouns; lack of skill in using context clues, especially when abstract thinking is involved; weak comprehension monitoring skills and lack of ability to repair comprehension or vary strategy to purpose; and incomplete understanding of text structure." (page 451)

The third factor is based on schema theory called *schema availability* (Freebody & Anderson, 1983; Johnson, 1982; Rumelhart, 1980; Armbruster, 1986). Schema theorist Rumelhart (1980) suggested three reasons for comprehension failure:

1. The reader may not access the appropriate schemata because the clues provided by the author are insufficient to suggest them.
2. The reader may not have the appropriate schema to understand the concepts communicated in the text.
3. The reader may formulate a coherent interpretation of the text, but it may not be the interpretation intended by the author.

Different from three above difficulty in reading groups, Hauptman (2000) simply suggested two factors explained for the nature of difficulty and ease in second language reading: *Language* (grammar and vocabulary); and *Text Length*.

Another suggestion, based on componential approach to reading, pointed out that the lack in *analytical abilities*, *practical abilities*, and *creative abilities* may challenge the reader during the process of reading (Randi et al., 2013).

2.2. Pre-reading activities

Pre-reading activities are activities that provide learners with "*activities that help students with cultural background, stimulate students' interest in the text, and pre-teach vocabulary*" (Lazar, 1993, p.83). Meanwhile, Ajideh (2006) thinks that "*pre-reading activities provide the reader with necessary background to organize activity and to comprehend the materials*".

Carrell (1984, p.333-339) suggested some ways to build, assess, and activate learners' schema in Pre-reading stage:

- viewing movies, slides, pictures;
- field trips;
- demonstrations;
- real-life experiences;
- class discussions or debates;
- plays, skits, and other role-play activities;

- teacher-, text-, or student-generated prediction about the text;
- text previewing;
- introduction and discussion of special vocabulary to be encountered in the text;
- key-word/ key-concept association activities;
- prior reading of related texts.

Carell also (1984) suggested that these pre-reading activities should work best when used in varying combinations.

Zhao & Zhu (2012, p.115) suggested some activities for Pre-reading stage:

- questions;
- brainstorming;
- pre-teaching;
- pre-texting;
- pre-discussing.

However, in his study, Ajideh (2006) only suggested two types of pre-reading activities:

- questioning;
- semantic map.

However, activities are used in the Pre-reading stage; all of them are considered as a Warm-up activity that help involve learners into the reading process, arouse their interest and curiosity, widen their background knowledge and activate their own schema. Among these activities, Semantic map and Questioning were chosen as treatments for experimental groups in the research because they may be suitable with the teaching context, especially for EFL Gifted adolescent learners.

2.2.1. Questioning

Questioning is one type of top-down processing activity (Ajideh, 2006). Questioning is one of the most conventional classroom activities used to scaffold students' learning processes to "*facilitate explanation construction, planning, monitoring, and evaluating, and making justifications*" (Ge & Land, 2003, p.24). Teachers use questions to promote students' knowledge construction and reflection (King, 1994), reasoning (McDaniel & Donnelly, 1996), problem solving (King, 1991) and metacognition (Chen, Wei, Wu & Uden, 2009; Ge & Land, 2004).

King (1994) suggested that comprehension questions should be applied in the pre-reading stage to prompt students' important concepts in the reading piece. Or based on Ajideh's research (2006) teachers can adopt the comprehension questions that appear in the textbook after the reading selection or in the teachers' manual to form effective pre-reading questions.

2.2.2. Semantic map

According to Johnson (1982), vocabulary study may result in a word-by-word, bottom-up approach that is detrimental to comprehension. So pre-teaching vocabulary probably requires that the words be taught in semantically and topically related sets so that word meaning and background knowledge improve concurrently (Ajideh, 2006). It

was proved in Zimmerman's study (1997) that direct vocabulary instruction focusing semantic mapping as an acquisition strategy is more effective than vocabulary acquisition activities that teach only words rather than strategies for acquiring words.

Freedman & Reynolds (1980), Heimlich & Pittleman (1986) believed that the first major activity that activates students' appropriate background knowledge of a given topic is the semantic map.

"The semantic map is an organized arrangement of vocabulary concepts which reveals what students already know about the topic and provides them with a base upon which they can construct the new information learned from the text." (Ajideh, 2006).

2.3. Schema

Bartlett defined schema as *"an active organization of past reactions or experiences"* (1932, p.201). *"Schema is prototypical or generic characterizations of objects, events, and situations"* (p.253) is what Armbruster (1986) thought of schema. Many researchers have considered Schema as structure, such as a definition from Rumelhart *"schema is a data structure for representing the genetic concepts stored in memory"* (1980,p.34); Anderson and Pearson defined it as *"an abstract knowledge structure"* (1984,p.42); Medin and Russ (1992,p.246) simply put schema as *"a general knowledge structure used for understanding"*; Graesser & Nakamura ((1982) defined schema as *"general knowledge structures that guide the comprehender's interpretation, inferences, expectations, and attention"* (p. 60); Schema is also thought of as *"interacting knowledge structures"* (Rumelhart & Ortony, 1977, p.100) or *"building blocks of cognition"* (Rumelhart, 1980). In general, schema is considered as a structure where prior knowledge is stored and memory is gained. When readers' schema is activated logically, comprehension will be gained effectively.

As a cognitive framework which consists of a number of organized ideas, Schema plays a crucial role in Reading. The view of schema theory asserts that activating or building readers' existing knowledge prior to reading would improve and alter reading comprehension and recall. Thus, the provision of real experiences would fill in or expand the readers' existing culturally determined background knowledge of a topic and would prepare them to comprehend a retain material on that topic in the reading passage that followed. Zhao & Zhu (2012) believed that *"by the application of Schema (the stored knowledge structures), one can deal with a problem in reading quite easily"*.

2.4. Previous studies on the effect of Pre-reading activities on EFL students' reading comprehension

Many studies have been conducted, with different subjects and different methodology, to figure out the relationship between readers' schema construction or activation through pre-reading activities and reading comprehension. Different results have been found.

Several recent studies have called into question which pre-reading activities are more effective to reading comprehension (Rasheed, 2014; Lee, 2012; Mihara, 2011). In

this area, the researchers have gathered data using quasi-experimental design. Both Mihara (2011) and Lee (2012) present evidence that there are differences in using different types of pre-reading activities. While Mihara (2011) compares vocabulary pre-teaching with comprehension question presentation, Lee (2012) compares pre-teaching vocabulary, pre-questioning and visual materials. Both authors acknowledge that pre-teaching vocabulary is less effective to learners' reading comprehension than other pre-reading activities. Meanwhile, Rasheed (2014) find there were no statistically significant differences between vocabulary pre-teaching and pre-questioning.

Ajideh (2006), Karakas (2006), and Alemi & Ebadi (2010) have conducted research about the impact of pre-reading activities in general on different subjects of students majoring in engineering courses and ELT trainee teachers. However, they have got nearly the same findings. These authors acknowledge that giving prior information through pre-reading activities might become a useful tool for teachers to facilitate the learners' reading comprehension ability, to activate learners' schema and to provide any language preparation that might be needed for coping with the passage. In line with these findings, after a research conducted at Jinan University among 100 student subjects and 5 Chinese teachers of English with all three stages: pre-reading, while-reading, and post-reading, Zhao & Zhu (2012) indicate that the application of schema theory in reading teaching is beneficial to cultivate students' reading interest, quicken their reading speed and make proper judgments.

The results from these studies suggest that to help learners with reading comprehension skill, teachers should prepare detailed, careful, and suitable lesson plan for pre-reading activities to provide learners with orientation to content and context and activate their schema and bridge their prior knowledge with the new knowledge, which help enhance their reading comprehension ability.

It is somewhat surprising that so few studies have evaluated the impact of schema construction/ activation through pre-reading activities in Vietnam, and especially on gifted students as the sample. That is also my aims to carry out this research in the setting at my gifted school.

3. Methodology

3.1. Research questions

This study aims to measure and evaluate the effectiveness of Questioning and Semantic map techniques in Pre-reading activities on reading comprehension of EFL gifted high school students. In addition, the study also shed light on whether there were differences between two techniques in term of reading comprehension level. Based on the research aims, this study attempts to address the following research questions:

1. To what extent does Questioning in Pre-reading stage affect EFL gifted high school students' reading comprehension?
2. To what extent does Semantic map in Pre-reading stage affect EFL gifted high school students' reading comprehension?
3. To what extent do the two groups differ in term of reading comprehension level?

3.2. Research design

A quasi-experimental design – *the nonequivalent control groups design* - was employed in the research to indicate the impact of using Questioning and Semantic map techniques in pre-reading activities to build up or activate EFL gifted students' content schema on their reading comprehension. The quantitative data were obtained by means of a pre-test and a post-test of reading. Some retrospective interviews were conducted right after the treatment to collect qualitative data.

3.3. Participants

52 twelfth graders from two non-gifted English classes at a gifted high school were invited to participate in the current study. All these students belong to science classes – classes 12C1 and 12C2 (they major in Maths, Physics, Chemistry, and Biology). The class 12C1 (with 26 students) received Questioning Treatment (Group 1) while the class 12C2 (with 26 students) received Semantic Map Treatment (Group 2). Thirty-two (61.5%) of participants are female and twenty (38.5%) are male. The subjects shared the same culture, native language, educational background and age. They all were born and grew up in Ca Mau. Moreover, they had to pass an entrance examination with Maths, Literature and English to win a place in the science classes at Phan Ngoc Hien high school for the gifted. The selection of subjects was performed carefully so as to minimize differences among variables during testing and hence promote a higher validity of research findings.

3.4. Research instruments

3.4.1. Tests on English Academic Reading

Two reading proficiency tests (pre-test and post-test) were constructed by the researcher to measure and evaluate students' reading proficiency and their improvement.

The tests consist of three passages ranging from 200 to 250 words: two passages are reading comprehension tests (accompanied by 7 and 8 multiple choice questions) and one is guided cloze test (with five questions). These tests have the same format as the reading tasks in the national examination.

The reading passages were selected regarding the course objective of helping students get the high score in reading task in the national examination and learners' level of English. The time limit of the text was 30 minutes. A score of 0.5 was awarded after each correct answer. Accordingly, the maximum points on the test were 10.

The pre-test and post-test were piloted to ensure the validity. Thirty-five participants (from class 12L – science class) got involved in the pilot test. These participants were of the similar background and level of English as those in the official study. After improving the test drafts based on the results from the pilot, the researcher delivered the revised drafts to the participants to validate the instrument.

3.4.2. Materials

Reading passage from the pre-test and post-test were selected from the book “English exercises 12” (Mai Lan Huong & Nguyen Thanh Loan, 2010) and “Testing and assessment in Reading comprehension for twelfth graders (Luu Hoang Tri, 2010). These two books were published by Education Publishing House in Vietnam. According to Rajatanun’s theory (2009), the criteria for the selection of the reading passages are as follows:

- **Authenticity:** To help students familiarize themselves with texts written for native speakers of English, no attempt was made to simplify the original texts. Some, however, were slightly adapted to make them shorter so that they were of suitable length as reading passages for a textbook or to make them more suitable for practicing particular reading strategies.
- **Interest:** The texts are informative and the issues discussed in the texts are presumed to be of interest to students.
- **Validity:** To familiarize students with a wide range of issues, vocabulary items and expressions, the text covers a variety of subjects.
- **Practicality:** The texts – in their original forms or after they have been adapted – are suitable for the practice of particular skills.

These books were highly appreciated by virtue of consistency with the respondents’ proficiency level in term of the criteria above. The topic of the reading texts were selected regarding the knowledge domain of the current course book “Textbook 12” (MOET, 2008).

3.5. Procedure of the treatment

Before the treatment, both groups did a Pre-test of reading comprehension. After the Pre-test, Group 1 was taught with Questioning technique in Pre-reading stage while Group 2 with Semantic map technique. These pre-reading activities were carried out immediately before the reading tasks.

The treatment lasted for 10 weeks with 3 topics: *Jobs*, *Endangered Species*, and *Women in society*. These topics were chosen because they fit with what students of twelfth grade are studying at school and are likely to appear in the national examination. At the end of the treatment, a Post-test was administered to both of the groups.

4. Findings and Discussions

4.1 Quantitative Data

An independent sample t-test using the data obtained from the pre-test indicates that students in the Questioning Group ($M=5.57$, $SD = 1.56$) and the Semantic Group ($M = 4.75$, $SD = 1.55$) were not statistically different in term of reading comprehension ($t(50) = 1.91$, $p = .06$). However, at the post-test stage, the Questioning Group ($M=6.56$, $SD = 1.60$) and the Semantic Group ($M = 7.42$, $SD = 1.46$) were statistically different in term of reading comprehension ($t(50) = 2.03$, $p = .04$).

An interesting finding in the data reported is that the students in the Semantic map group had a significantly better improvement in their reading comprehension than those in Questioning group. It is somewhat different from other previous studies when Mihara (2011) and Lee (2012) found that pre-teaching vocabulary is less effective to learners' reading comprehension than other pre-reading activities. Meanwhile, Rasheed (2014) revealed that there were no statistically significant differences between vocabulary pre-teaching and pre-questioning.

When compared in paired samples test, the data indicate that the students in both two groups differed significantly between the pre-test and post-test. They had a positive improvement in their reading skill after receiving the treatment. More specifically, in the Questioning Group, students gained statistically higher scores in the post test ($M=6.55$, $SD =1.60$) as compared with the pretest ($M =5.57$, $SD =1.56$), $t(25) = 5.88$, $p = .00$. Meanwhile, in the Semantic Group, students also improved their reading scores significantly from the pretest ($M=4.75$, $SD =1.55$) to the post test ($M=7.42$, $SD =1.46$), with $t(25) = 12.66$, $p = .00$.

The findings of current study are consistent with those of previous studies in the way that giving prior information through pre-reading activities might become a useful tool for teachers to facilitate the learners' reading comprehension ability, to activate learners' schema and to provide any language preparation that might be needed for coping with the passage (Ajideh, 2006; Karakas, 2006; Alemi & Ebad, 2010; Zhao & Zhu, 2012).

4.2 Qualitative Data

To find out how students think of Questioning and Semantic map and what they have learnt from these techniques as well as their desire for the reading teaching in the future, a retrospective interview was conducted with three students in each group.

For the Questioning Group, when being asked what they think of and what they have learnt from Questioning technique in Pre-reading activities stage, student A said that Questioning helped them list the main ideas of the text by collecting answers from other students because each would have their own answers for a question, from which she could infer the main content of the text and ask for more information. Student B added that the questions in pre-reading stage helped lead to the main topic of the reading text and from which he could understand some main points of the text. While student C said that questioning was interesting, and that it helped him answer all the questions after the reading text more easily.

Regarding students' like and dislike for Questioning technique, all three students agreed that they completely felt contented with Questioning technique in pre-reading stage because they could express their thought and opinions freely as well as asking questions to widen their knowledge (said A); it helped increase the interaction among students in class (said B); and it provided them with useful information to prepare in advance for the process of reading (said C). Only C felt a little bit annoyed because he thought that sometimes the classroom was noisy due to asking and answering questions to find information.

When being asked whether Questioning is useful for their reading skill and if they want it to be applied in reading period in the future, both A and B said that Questioning helped them a lot in improving their reading skill as they could express their thought, their opinions and receive other ideas from other students in class; that helped them get the main ideas of the reading text and improve their reading speed. C said that sometimes it was helpful, sometimes it was not because of the unrelated information. Whatever they thought, they all agreed that Questioning should be applied in the reading class in the future because it helped students absorb the lesson more quickly, made the reading time more interesting, and motivated students' learning.

For the Semantic Map Group, when being asked about their thinking and what they have gained from the Questioning technique, all three students said that Semantic map for learning vocabulary was new to them; it changed the way they learned new words, helped them remember words more easily because there was a connection among these words. They could think critically and logically (said D). From the semantic map, they could guess the main points of the reading text (said E). Semantic map helped them have an overview of the text (said F).

With regard to the question about like and dislike for Semantic map technique, all the three students D, E and F agreed that they really liked the Semantic map technique as they didn't spend much time for learning by heart new words, these words connected together, they remembered one word and could infer other words from the context. Moreover, this was the new technique and they found it really worked with their reading skill, so they thought that it was interesting and encouraging.

However, with Semantic map technique, they also found some problems. Student D said that she found it difficult to link all related words together in a map; and that it requires complicated performance in their handwriting, with which it was difficult for them to write their lesson at first (student E). In addition, they could not know some other parts of speech of new words (student F).

When being asked if Semantic map is useful for their reading skill and whether they want it to be applied in reading period in the future, all three students appreciated this technique and recommended that Semantic map should be applied in the reading lesson because of its benefits such as: improve their critical thinking and logical predictions (student D); save time for their reading process and easily to answer all the questions in the text (student E); improve their reading speed, helped them feel more confident when reading and doing tasks about reading skill (student F).

In short, an analysis of the students' responses suggested that they were all interested in the two new techniques in the Pre-reading stage: Questioning and Semantic map. They found it really useful for their reading skill and help them improve their reading speed. They hoped these techniques would be applied to reading lesson in the future.

The data from the pre-test and post-test as well as the interviews with some students indicated that activating learners' schema through Questioning and Semantic

map in the pre-reading stage had significant impact on learners' reading comprehension. Moreover, students in group 2 (Semantic map) performed better than those in group 1 (Questioning) in reading comprehension. These findings were in light with the hypotheses previously mentioned.

5. Conclusions and Implications

The current study was conducted to investigate the impact of Questioning and Semantic map in pre-reading stage on EFL gifted high school learners' reading comprehension. By examining students' reading improvement through pre-test and post-test, the study revealed that activating learners' schema through Questioning and Semantic map was significantly effective to learners' reading comprehension. The findings of this study suggest a number of pedagogical implications, especially in EFL settings for the gifted. With students who are gifted in science classes, they are likely to do better with logical predictions and critical thinking, as Pajares. F (1996) mentioned in his study, gifted students had higher math self-efficacy and self-efficacy for self-regulated learning than their peers. From the key findings in the present study, it can be seen that Questioning and Semantic map significantly work well with EFL gifted high school learners' reading comprehension, especially Semantic with science gifted students. These findings can be taken into account when employing techniques for reading teaching process.

However, as with any research design, this study is not without its own share of design limitations. Firstly, the small sample size (N=52) of this study does not permit the researcher to make strong generalizations about the impact of Questioning and Semantic map on EFL gifted high school learners' reading comprehension. Moreover, the results of this study cannot be generalized to all EFL gifted high school learners since this research was limited to Vietnamese EFL gifted learners. In addition, the recent study only investigated the impact of two pre-reading techniques only, which could lead to some bias findings about gifted learners' reading comprehension.

In an attempt to extend the scope of the current study, it would be interesting to explore different techniques in pre-reading stage on EFL gifted learners' reading comprehension to see which one works the best in the EFL gifted setting. Moreover, it would be better if these techniques were employed on a wide number of participants, especially outside Vietnam.

References

1. Ajideh, P. (2006). Schema-theory Based Considerations on Pre-reading Activities in ESP Textbooks. *The Asian EFL Journal*, (16).
2. Al-Issa, A. (2006). *Schema theory and L2 reading comprehension: Implications for teaching*. Retrieved on April 24th, 2009 from www.cluteinstitute-onlinejournals.com/PDFs/2006100.pdf

3. Alemi, M. & Ebadi, S. (2010). The effects of Pre-reading activities on ESP reading comprehension. *Journal of Language Teaching and Research*, 1, (5), 569-577.
4. An, S. (2013). Schema Theory in Reading. *Theory and Practice in Language Studies* 3, (1), 130-134.
5. Anderson, R.C., & Pearson, P.D. (1984). A Schema-theoretic view of basic processes in reading comprehension. *Handbook of reading research*. (255-292). New York: Longman
6. Armbruster, B.B. (1986). Schema Theory and the Design of Content-Area Textbooks. *Educational Psychologist*, 21, (4), 253-267.
7. Armbruster, B. B., Lehr, F., & Osborn, J. (2001). Put reading first: The research building blocks for teaching children to read (3rd ed.). Jessup, MD: National Institute for Literacy.
8. Bartlett, F.C. (1932). *Remembering: A study in Experimental and Social Psychology*. Cambridge: Cambridge University Press.
9. Berninger, V. W., & Richards, T. L. (2002). Brain literacy for educators and psychologists. New York, NY: Academic Press.
10. Carrell, P.L. (1984). Schema Theory and ESL Reading: Classroom Implication and Application. *The Modern Language Journal*, 68, (4), 332-341.
11. Carrell, P.L. (1983). Some Issues in Studying the Role of Schemata, or Background Knowledge, in Second Language Comprehension. *TESOL Convention, Toronto, Ontario, Canada*. 81-90.
12. Carrell, P.L. (1981a). The role of schemata in L2 comprehension. *TESOL Convention*. TESOL Convention, Detroit, Michigan.
13. Carrell, P.L. & Eisterhold, J.C. (1983). Schema Theory and ESL Reading Pedagogy. *TESOL Quarterly*, 17, (4), 553-569.
14. Chen, N.S., Wei, C.W., Wu, K.T., & Uden, L. (2009). Effects of high level prompts and peer assessment on online learners' reflection levels. *Computers & Education*, 52(2), 283-291.
15. Chen, N., Teng, D. C., & Lee, C. (2010). Augmenting Paper-Based Reading Activities with Mobile Technology to Enhance Reading Comprehension. *2010 6th IEEE International Conference on Wireless, Mobile, and Ubiquitous Technologies in Education*. doi:10.1109/wmute.2010.39.
16. Chen, N., Teng, D. C., & Lee, C. (2011). Augmenting Paper-Based reading activity with direct access to digital materials and scaffolded questioning. *Computers & Education*, 57(2), 1705-1715. doi:10.1016/j.compedu.2011.013.
17. Cunningham, A. E., & Stanovich, K. E. (2001). What reading does for mind. *Journal of Direct Instruction*, 1(2), 137-149.
18. Freedman, G., and Reynolds, E.. (1980). Enriching basal reader lessons with semantic webbing. *The Reading Teacher*, 33, 677-684.
19. Ge, S., & Land, S.M. (2003). Scaffolding students' problem-solving processes in an ill-structured task using question prompts and peer interactions. *Educational Technology Research and Development*, 51(1), 21-38.

20. Ge, S., & Land, S.M. (2004). A conceptual framework for scaffolding ill-structured problem-solving processes using question prompts and peer interactions. *Educational Technology Research and Development*, 52(2), 5-22.
21. Goodman, K. (1988). *Interactive Approaches to Second Language Reading*. Cambridge: Cambridge University Press. pp. 42-45.
22. Hemlich, J.E. and Pittleman, S.V. (1986). *Semantic mapping*. Newark, Del.: International Reading Association.
23. Hudson, T. (1982). The effects of included schemata on the “short circuit” in L2 reading: non-decoding factors in L2 reading performance. *Language Learning* 32, (1), 1-31.
24. Karakas, M. (2006). The effects of Pre-reading activities on ELT Trainee Teachers' comprehension of short stories. *Egitimde Kuram ve Uygulama*, 1, (1-2), 25-35.
25. King, A. (1991). Effects of training in strategic questioning on children's problem-solving performance. *Journal of Educational Psychology*, 83(3), 307-317.
26. King, A. (1994). Guiding knowledge construction in the classroom: effects of teaching children how to question and how to explain. *American Educational Research Journal*, 32(2), 338-368.
27. Lazar, G. (1993). *Literature and Language Teaching*. Cambridge: Cambridge University Press.
28. Lee, Y.H. (2012). The effects of Pre-reading activities on Korean high school students' English Reading Comprehension.
29. Lee, Y., Kinzie, M. B., & Whittaker, J. V. (2012). Impact of online support for teachers' open-ended questioning in pre-k science activities. *Teaching and Teacher Education*, 28(2012), 568-577.
30. Johnson, P. (1982). Effects on reading comprehension of building background knowledge. *TESOL Quarterly*, 15, (2), 169-181.
31. Johnson, P. (1982). Effects on reading comprehension of building background knowledge. *TESOL Quarterly*, 16, (4), 503-516.
32. McDaniel, M.A., & Donnelly, C.M. (1996). Learning with analogy and elaborative interrogation. *Journal of Educational Psychology*, 88(4), 508-519.
33. Mihara, K. (2011). Effects of Pre-reading strategies on EFL/ ESL reading comprehension. *TESL Canada Journal*. 28, (2).
34. Nation, K., Clarke, P., & Snowling, M. J. (2002). General cognitive ability in children with reading comprehension difficulties. *British Journal of Educational Psychology*, 72, 549–560.
35. Oakhill, J., Cain, K., & Bryant, P. (2003). The dissociation of word reading and text comprehension: Evidence from component skills. *Language and Cognitive Processes*, 18(4), 443-468. doi:10.1080/01690960344000008
36. Rajatanun, P. (2009). *Reading for information*. Bangkok, Thailand: Thammasat University Bookstore.
37. Rasheed, H.S.S. (2014). Examining the Effectiveness of Pre-reading Strategies on Saudi EFL College Students' Reading Comprehension. *English Language Teaching*, 7, (11).

38. Rumelhart, D.E. (1980). Schemata: The building blocks of cognition. In R.J. Spiro, B.C. Bruce, & W.F. Brewer (eds). *Theoretical issues in reading comprehension*. (77-85). Hillsdale, NJ: Erlbaum.
39. Rumelhart, D.E., & Ortony, A. (1977). The representation of knowledge in memory. *Schooling and the acquisition of knowledge*. (99-135). Hillsdale, NJ: Erlbaum.
40. Sinatra, R., Stahl-Gemake, J., & Berg, D. (1984). Improving Reading Comprehension of Disabled Readers through Semantic Mapping. *The Reading Teacher*, 38(1), 22-29. Retrieved from <http://www.jstor.org/stable/20198670>
41. Steffensen, M.S., C. Joag-dev, and R.C. Anderson (1979). A cross-cultural perspective on reading comprehension. *Reading Research Quarterly*, 15, (1), 10-29.
42. Stevens. K.C. (1982). Can we improve reading by teaching background information? *Journal of Reading*, 25, (4), 326-329.
43. Zhao, X. & Zhu, I. (2012). Schema Theory and College English Reading Teaching. *English Language Teaching*, 5, (11), 111-116.
44. Zimmerman, C.B. (1997). Historical trends in second language vocabulary instruction. In J. Coady and T. Huckin (Eds.), *Second language vocabulary acquisition* (pp. 5-19). Cambridge University Press.

Creative Commons licensing terms

Author(s) will retain the copyright of their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Education Studies shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflicts of interest, copyright violations and inappropriate or inaccurate use of any kind content related or integrated into the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons Attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).