A CASE STUDY ON THE EFFECT OF GRAPHICORGANIZERS ON CHINESE HIGH SCHOOL STUDENTS' CRITICAL THINKING IN EFL READING CLASS

GUO SI MIN

SULTAN IDRIS EDUCATION UNIVERSITY

2022

A CASE STUDY OF GRAPHIC ORGANIZERS' EFFECTS ON CHINESE HIGH SCHOOL STUDENTS' CRITICAL THINKING IN EFL READING CLASS

GUO SI MIN

DISSERTATION PRESENTED TO QUALIFY FOR A MASTER'S DEGREE IN EDUCATION
(RESEARCH MODE)

FACULTY OF LANGUAGES AND COMMUNICATIONS
SULTAN IDRIS EDUCATION UNIVERSITY
2022

UPSI/IPS-3/BO 32
Pind : 00 m/s: 1/1

UNIVERSITI PENDIDIKAN SULTAN IDRIS
SULTAN IDRIS EDUCATION UNIVERSITY

Please tick (√)
Project Paper ☐
Masters by Research ☐
Master by Mixed Mode ☐
PhD ☐

INSTITUTE OF GRADUATE STUDIES

DECLARATION OF ORIGINAL WORK

This declaration is made on the …….. day of……..20……..

i. Student's Declaration:

I, _____ (PLEASE INDICATE STUDENT'S NAME, MATRIC NO. AND FACULTY) hereby declare that the work entitled _____ _____ is my original work. I have not copied from any other students' work or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

_____
Signature of the student

ii. Supervisor's Declaration:

I_____(SUPERVISOR'S NAME) hereby certifies that the work entitled _____ _____ _____(TITLE) was prepared by the above named student, and was submitted to the Institute of Graduate Studies as a * partial/full fulfillment for the conferment of_____(PLEASE INDICATE THE DEGREE), and the aforementioned work, to the best of my knowledge, is the said student's work.

_____ _____
Date Signature of the Supervisor

UPSI/IPS-3/BO 31
Pind.: 01 m/s:1/1

UNIVERSITI PENDIDIKAN SULTAN IDRIS
SULTAN IDRIS EDUCATION UNIVERSITY

INSTITUT PENGAJIAN SISWAZAH /
INSTITUTE OF GRADUATE STUDIES

BORANG PENGESAHAN PENYERAHAN TESIS/DISERTASI/LAPORAN KERTAS PROJEK
DECLARATION OF THESIS/DISSERTATION/PROJECT PAPER FORM

Tajuk / *Title*: _____

_____

No. Matrik /*Matric's No.*: _____

Saya / *I* : _____

(Nama pelajar / *Student's Name*)

mengaku membenarkan Tesis/Disertasi/Laporan Kertas Projek (Kedoktoran/Sarjana)* ini disimpan di Universiti Pendidikan Sultan Idris (Perpustakaan Tuanku Bainun) dengan syarat-syarat kegunaan seperti berikut:-
acknowledged that Universiti Pendidikan Sultan Idris (Tuanku Bainun Library) reserves the right as follows:-

1. Tesis/Disertasi/Laporan Kertas Projek ini adalah hak milik UPSI.
   The thesis is the property of Universiti Pendidikan Sultan Idris
2. Perpustakaan Tuanku Bainun dibenarkan membuat salinan untuk tujuan rujukan dan penyelidikan.
   Tuanku Bainun Library has the right to make copies for the purpose of reference and research.
3. Perpustakaan dibenarkan membuat salinan Tesis/Disertasi ini sebagai bahan pertukaran antara Institusi Pengajian Tinggi.
   The Library has the right to make copies of the thesis for academic exchange.
4. Sila tandakan (√) bagi pilihan kategori di bawah */ Please tick (√) for category below:-*

☐	**SULIT/*CONFIDENTIAL***	Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub dalam Akta Rahsia Rasmi 1972. / *Contains confidential information under the Official Secret Act 1972*
☐	**TERHAD/*RESTRICTED***	Mengandungi maklumat terhad yang telah ditentukan oleh organisasi/badan di mana penyelidikan ini dijalankan. / *Contains restircted information as specified by the organization where research was done.*
☐	**TIDAK TERHAD / *OPEN ACCESS***	

_____ _____

(Tandatangan Pelajar/ Signature) (Tandatangan Penyelia / *Signature of Supervisor*) & (Nama & Cop Rasmi / *Name & Official Stamp*)

Tarikh: _____

Catatan: Jika Tesis/Disertasi ini **SULIT @ TERHAD**, sila lampirkan surat daripada pihak berkuasa/organisasi berkenaan dengan menyatakan sekali sebab dan tempoh laporan ini perlu dikelaskan sebagai **SULIT** dan **TERHAD**.

Notes: If the thesis is CONFIDENTAL or RESTRICTED, please attach with the letter from the organization with period and reasons for confidentiality or restriction.

ACKNOWLEDGMENTS

Foremost, I would like to offer my sincerest gratitude to my supervisor, Dr. Intan Safinas Binti Mohd Ariff Albakri. It was she who encouraged me to never forget the original intention of learning and help me overcome difficulties whenever I encountered problems in writing the thesis. Without her giving me tireless guidance and help, I could never complete it. I would also like to thank Dr. Ainon Binti Omar, who helped me to revise and improve my writing at the beginning stage of my thesis. Here, I would like to express my sincere appreciation to the Dr. Goh Hock Seng teachers who taught me research method, from which I benefited a lot. I also offer my gratitude to Dr. Suo Yan Mei, who helped me and my family to settle down in Malaysia and gave me valuable suggestions for my study. I would also like to thank my friend Husni, who helped me to contact professors for my instrument's validity. And thank other friends accompany and encouragement in this process. At last, I would like to thank my parents, my husband, and my children. They are my eternal motivator.

ABSTRACT

Promoting students' critical thinking (CT) is an increasing concern in China. This study investigated the effects of graphic organizers (GOs) on 60 Chinese senior high school students' CT skills (analyzing and generalizing) in EFL reading classes. This study adopted mixed-methods research design. It collected data using a quasi-experimental approach and an interview. The findings of this study showed positive impacts of GOs on students' CT skills. After the intervention, the experimental group's results improved significantly. There was also a significant difference in the reading performance test scores between the control and experimental group in the post-test. The findings showed that GOs can effectively improve the analytical and generalization skills of Chinese high school English reading class students. The students in the experimental group reported that the instructions received made them more aware of CT skills and they also learned how to apply GOs in the real reading contexts. The implication of this study is teachers may consider GOs as alternative teaching tools to improve CT skills in English Language reading classes.

KAJIAN KES KESAN PENGANJUR GRAFIK TERHADAP PEMIKIRAN KRITIKAL PELAJAR SEKOLAH MENENGAH CINA DALAM

BAHASA INGGERIS SEBAGAI BAHASA ASING KELAS MEMBACA

ABSTRAK

Meningkatkan pemikiran kritis pelajar adalah satu isu yang semakin meningkat di China. Kajian ini menyiasat kesan pengatur grafik terhadap kemahiran berfikir kritis 60 pelajar sekolah menengah di China (menganalisis dan membuat generalisasi) dalam kelas membaca Bahasa Inggeris sebagai bahasa asing. Kajian ini menggunakan reka bentuk kajian kaedah campuran. Ia mengumpul data menggunakan pendekatan kuasi eksperimen dan temu bual. Dapatan kajian ini menunjukkan impak positif pengatur grafik terhadap kemahiran berfikir kritis pelajar. Selepas intervensi, keputusan kumpulan eksperimen meningkat dengan ketara. Terdapat juga perbezaan yang signifikan dalam skor ujian prestasi bacaan antara kumpulan kawalan dan eksperimen dalam ujian pasca. Kajian ini menunjukkan pengatur grafik dapat meningkatkan kemahiran analisis dan generalisasi pelajar kelas membaca Bahasa Inggeris sekolah menengah di China dengan berkesan. Pelajar dalam kumpulan eksperimen melaporkan bahawa arahan yang diterima menjadikan mereka lebih sedar tentang kemahiran berfikir kritis dan mereka juga belajar cara mengaplikasikan pengatur grafik dalam konteks bacaan sebenar. Implikasi kajian ini adalah guru boleh menggunakan pengatur grafik sebagai alat mengajar alternatif dalam meningkatkan kemahiran pemikiran kritis pelajar dalam kelas pembacaan Bahasa Inggeris.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

LIST OF ABBREVIATIONS

CCTDI	California CT Tendency Test
CT	Critical Thinking
CTDI- CV	California CT Disposition Inventory-Chinese Version
CTS	Critical Thinking Skills
EFL	English as a foreign language
GOs	Graphic Organizers
HOTS	High Order Thinking Skills

APPENDIXES LIST

CHAPTER 1

INTRODUCTION

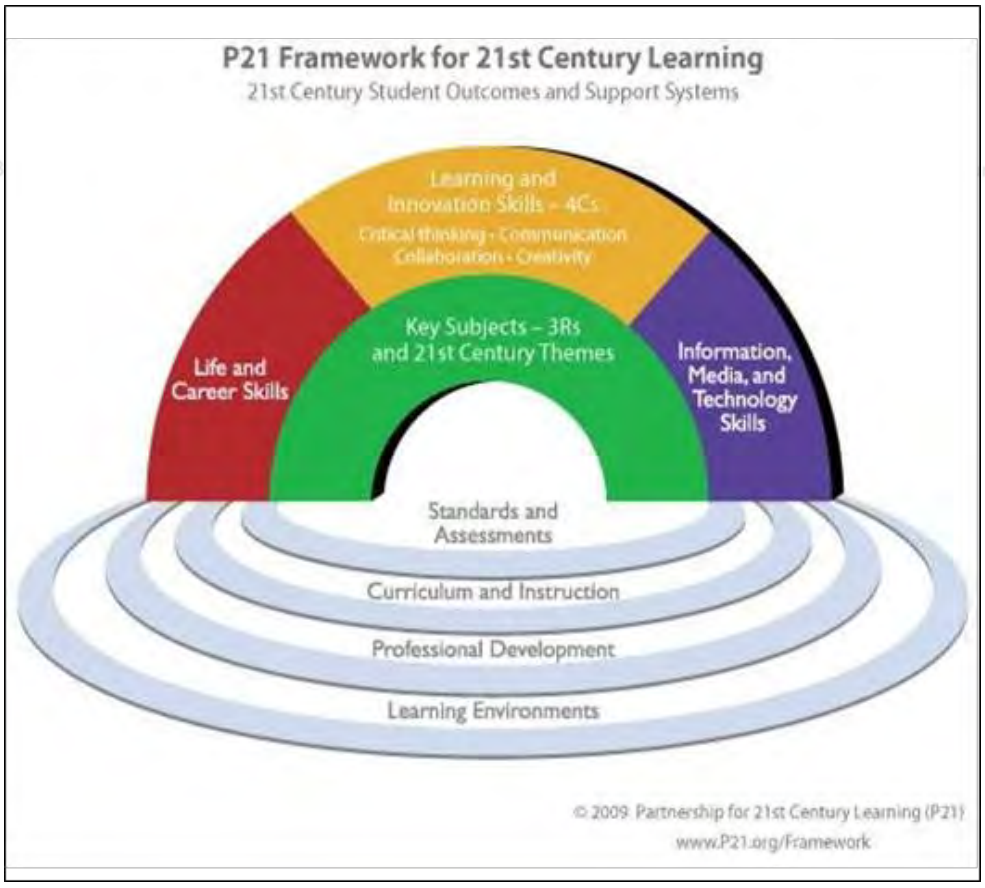
1.1 Introduction

Globalization has brought world-shaking changes to the modern world and has put higher-level requirements forward to cultivate competitive talents. The acute need to equip students with 21st-century skills is one of the greatest concerns in the education area (Saleh, 2019). Critical thinking skills (CTS) are one of the most important components of 21st-century skills (Geisinger, 2016). Educators, experts, and institutions has done much efforts to enable students to achieve success and survive in this new century. Under this circumstance, researchers from all over the world have created a “Framework for 21st Century Learning”.

According to Geisinger (2016), the domain of 21st-century skills includes following four aspects: core subjects and skills, learning and innovation skills, life and career skills, and digital literacy skills (see Figure 1.1). CTS stand out among the skills about learning and innovation. He believed that CTS are significantly important because they help people to think logically and independently for them to work efficiently in problem-solving.

Figure 1.1

The Framework For 21st Century Learning Components



One definition of Critical thinking (CT) given by Eniss (1985) is a reflective and reasonable thinking. Decide what to do and believe is what it focuses on. CT not only looks at information that is available for applying to new situations but also analyzes causes or motivations and evaluates opinions on subjects, which has been proven plays a crucial role in an individual's daily life, learning, and career.

Educators and researchers have explored the approaches to foster students' CTS. They reached a consensus that the best way to teach CTS is to infuse them to school subjects (Arase, Kamarudin, & Hassan, 2016). Based on the global highlight on CTS, the Chinese government is gradually aware of the value of CT and pays more attention to the cultivation of it in school.

Chinese' National Medium and Long-term Education Reform and Development Plan (2010-2020) is China's first educational plan in the 21st century. It is a programmatic document guiding the reform and development of national education in the future. The plan stated the curriculum objectives of senior high school English teaching should be changed from cultivating comprehensive language ability to training the core competence of English language learning, which are language literacy, cultural character, CTS and autonomous learning ability (Songhua, and Wang, 2012).

Therefore, the teaching of CT needed to be integrated to subjects purposefully in a well-planned way. Only in this way can students be equipped with abilities of CTS. Zhang and Kim (2018) believed to achieve these educational aims, teachers need to

move forward and shift their old teaching modes and practices from the traditional exam-oriented teaching to instructional practices that promote students' CTS.

However, it is common in China that teachers merely focus on factual knowledge and language skills but and ignore the cultivation of CT of students in high school EFL classes (Guo, 2013). Taking measures to improve students' CT skills is one of the major concerns in the educational field in China at present.

To promote CT, Graphic organizers (GOs) use visual symbols to convey meaning (Kurniaman and Charlina, 2019). GOs can project material into visual symbols like lines, arrows, and circles for learners to express their ideas and concepts easily. Vacek (2009) considers GOs as a fundamental tool in developing CTS in education. Researches show GOs enhance problem-solving and other CTS, Santiago (2011; Omar & Albakri, 2016; Salleh and Halim, 2019).

In another study, Butchart et al. (2009) used computer-assisted mapping software in a 12-week undergraduate course. Students took part in a California CT Skills Test (CCTS) at the beginning and end of the course. The test has 34 items to test student's CTS, including analyzing, evaluating, drawing inferences, deducting, and using inductive arguments. Results showed that students showed improvement in these skills.

Since researches have shown that GOs can enhance students' CTS, this research aims to explore the effects of GOs on senior high school students' CTS, mainly focusing on analyzing and generalizing skills in English reading class in Ningxia, China.

1.2 Background of This Study

There have been many definitions used to define CT. Facione (2010) stated that CT is an aim-oriented activity and judgment that focus on the process of analyzing, evaluating, explaining, self-regulating and conferencing abilities. Minakova (2014) thinks CT is a special intellectual activity that allows people to evaluate the points of views suggested to them.

Developing students' CT is becoming more and more popular and it attracts many people's attention. Elfatihi (2017) thinks that CT has become a highly concerned matter almost in every institution and educational system around the world, particularly since the second half of the 20th century. She also believes that CTS are given great attention mainly because CT is significantly important not only for problem-solving but also for the evaluation of different perspectives.

CT is closely connected to people's cognition, which determines the quality of their lives thoroughly. Specifically, it strengthens people's perceptions of the world and helps people to make correct decisions in their working and daily lives.

In schools, CT is considered a significant concept as it helps students to connect knowledge from various sources and experiences together to gain wider and deeper understanding and perspectives (Kanik, 2010). Evidently, CT is vital for students' decision-making, problem-solving, innovation, reasoning, and effective practice (Marin & Halpern, 2011).

CT also gained wide attention from educational institutions. A survey conducted by the Association of American College and University (AAC&U) showed that 95% of academic leaders in 433 educational institutions put CT as one of the most significant skills that their students are expected to achieve (Nold, 2017).

CTS are essential for graduates' career development. AAC&U also found that 81% of the employers hoped CTS could be emphasized in schools (Stassen, Herrington, and Henderson, 2011). Similar result was highlighted by previous research carried out by Casner-Lotto and Barrington (2006), which showed that 92.1% of 400 employers identified CT and problem-solving to be very important skills in the success of today's workforce (Sola, 2016).

This result was further confirmed by another research conducted by Educational Testing Service in 2013 (Liu, Frankel, and Roohr, 2014). Over 200 chief officers in academics were interviewed about the most used measurements for successful academic and career achievement. CTS were the most frequently mentioned competencies (Markle, Brenneman, Jackson, Burrus, & Robbins, 2013).

CT now is a concept of intense interest around the world. Chinese researchers are inspired to study its application in school teaching. Luo (2003) wrote the first thesis on CT and was honored as the pioneer in it. Since then, many researchers have recognized the importance of cultivating CT in senior high schools.

In China, senior high school students refer to students who have finished three years of middle school study after graduating from primary school. After the senior high school entrance examination, they may go into another three years of learning to prepare for the college entrance examination. Senior high school is a critical transition period for Chinese students. They need to learn 6 to 9 subjects and experienced a substantial burden during their study. In Chinese senior high school, score is the only focus. This exam-oriented condition makes the fostering of CTS shaded. Huang (2019) addressed senior high school students as “intimating robots”, which is not beneficial to university education and higher education of China. He believes the lack of CT capabilities of senior high school education will influence the genius-fostering in higher education.

In China, scholars and educators have had a profound and long discussion on cultivating CTS among senior high school students. Zhu (2015) pointed out that Chinese educational strategy emphasizes the reality and objectivity of the knowledge but cannot guide students on how to think critically. He thinks senior high school students' thinking is trapped in an invisible frame, which will harm their creativity greatly.

Huang (2019) demonstrates the relevant factors of CTS for global students, identifying real-world situations and practices in actual teaching. In his review, he found CT is highly focused on pedagogy for its essential importance in shaping students' characteristics and learning competence. He believed as a hugely influential part of the entire structure of society, students with high consciousness of CT could be potentially powerful participants in the development of one country. In the findings, he stated Chinese students are lack of CT capabilities. As a transition period for students' most important ability, senior high school should cultivate students' CT.

Realizing the importance of CT in senior high school education, many researchers made significant efforts to develop suitable ways to foster senior high school students' CT. Liu, He, and Li (2015) investigated 8 mathematics classrooms, and 381 students were involved. They concluded that there were possibilities for Chinese students to think critically in traditional instructed classes. Chen and Shi (2016) investigated students' CTS in a high school in Hang Zhou, China by using the California CT Disposition Inventory-Chinese Version (CTDI-CV). The finding suggested the overall CT of these students was weak. They analyzed the reasons from

social, cultural background, family education, and school system. They further conducted a two months' parallel practical study, in which one control group and one experimental group were chosen. In the experimental group, they assigned several topic writings related to class knowledge, while in the control group, students were given traditional teaching. The result showed that topic writing could help them to improve the CT ability.

Fung and Howe (2014) did a study to investigate the impacts of group work on the development of students' CT in Hong Kong secondary schools. They explored whether a group-based teaching intervention facilitated students' use of critical arguments in Liberal Studies lessons. The result showed group work is more effective than whole-class instruction in developing students' CTS.

Lin (2018) examined the relationship between CT and writing and presented an introduction to substantive writing and high school English writing in China. In the conclusion, she stated writing has an interactive relationship with the CT of students in senior high school. Students exposed to more writing practice are more critical in thinking than those who did not. She argued that substantive writing has its strengths in fostering students' CTS in Chinese high school.

In English as a foreign language (EFL) teaching field, CT also has been long regarded as a higher-order thinking skill (HOTS) and continuously receives wide academic attention (Liu, 2020). Reading is the core of senior high school English

teaching in China. With the revision of new curriculum standards in China, the fostering of CTS in China becomes a difficulty in English teaching, which from another aspect, is also a chance for the reform of English teaching in this new age. CT in the teaching of reading in English Language classes at present gains stockholders' continuous concern in China. For the strategies to facilitate teachers to improve students' CT in the English reading classroom, researchers in China identified theories or conducted experimental research to contribute to the integrating of CT to the English reading classroom context.

Xu (2011) reviewed the application of CT in teaching English reading. In his study, he reviewed the concept, definitions, and related theories of CT, including Benjamin Bloom's Taxonomy and Paul & Elder's framework. He discussed the application of CT in the teaching of English reading and reviewed a model for teaching English reading critically. He suggested more practice of critical reading should be done to throw more efficient light upon the teaching of English reading.

Song (2019) studied whether teachers' question affects the CT of high school students in English reading class. He used literature review, classroom observation, questionnaire, and test and interview method. The samples are eight classes of high school students in one of Shanxi high schools. The author used two months to observe the English reading courses of eight classes and to do a recording. After getting the reading test scores, the researcher used California CT Tendency Test (CCTDI) to study the CT score of students. In the results of analysis, the author found that only 25.2% of students had a CT ability at 280-350, which showed their CT is strong. This result

showed the CT ability of these high school students was not very mature. In the result, this research concluded there was a significant correlation between different teachers' questions and students' CT.

Jia and Guo (2020) designed a reading lesson as an example to explore how to cultivate students' CT in high school reading classes. There were five steps in this design: lead-in, pre-reading, while-reading, post-reading, and assignment. Many critical questions were included in each part, which could stimulate students' CT awareness. The reading part comprised of four parts: reading for the main idea, structure, details, and further reading.

In the process of guiding students to grasp the main idea and structure of the article, students were trained with the ability to interpret, analyze, reason, and explain. Teachers also allow students to refine, summarize and compare the viewpoints in the text, analyze the logic rationality, and coherence of the argument. Teachers also gave students opportunities to fully express themselves in oral and written tasks. They suggested when designing questions, teachers should consider their students' current cognitive level and their potential development level, and different questions should be distributed properly.

Just as the examples listed above, to meet the demands of cultivating talents who can employ CTS to solve various problems, more and more educators and researchers realized earners should get their chances in school to develop their CT abilities. Various

strategies and approaches have been found helpful in students' CT development in schools. Among the strategies to improve students' CT is GOs. As the visual symbols to illustrate the relationship among knowledge, concepts, thoughts, or ideas, GOs was proven by researchers as effective visual aids in improving students' CT abilities in reading (Wang, 2017).

Wang (2017) conducted research, in which thinking maps were used in English classes in a middle school. He found that students' CT abilities, such as comparing, contrast, and interpreting in reading, were strengthened. He also pointed out the students in his research had greater satisfaction with their lessons. The materials, methods, and the role that the teacher played inspired them to acquire knowledge actively and independently.

Wang and Wu (2012) conducted another research to investigate the relationship between the goal of developing CT using GOs and reading achievement in Chinese senior high schools. The result suggested there was a significant connection. With clear aims of CT cultivation, students' CT ability was improved.

Researchers in the social and humanities education section of Hong Kong Curriculum Development institute made a very detailed instruction on the use of GOs to promote students' CTS in 2001. They believed by using GOs, pieces of information could be connected and the relationship in them was easier to be understood and recalled. They also stated that GOs provided a structure or framework to display the

internal process of thinking in an external visual form. According to these researchers, there were four major ways that GOs enhanced students' thinking: compiling information, generating ideas, analyzing, or evaluating ideas, and reflecting on learners' thinking processes.

Santiago (2011) proved that concept maps promoted the recall and comprehension of knowledge and general CTS in his research. Atay and Karabacak (2012) conducted researched to investigate the effects of a concept map on the CT dispositions of nursing students and the result showed that concept map strategy improved their CT.

Omar and Albakri (2016) conducted qualitative research to determine the effect of thinking maps in promoting CT of literature in ESL classrooms in one of the pioneer schools in Malaysia. The finding of this case study revealed teachers in this school could engage students in thinking critically using thinking maps in literature lessons. The results indicated thinking maps had a positive impact on students' understanding of literary texts.

Thinking maps have also been introduced to both primary and secondary schools in 2013 in Malaysia to promote students' CT. Salleh and Halim (2019) explored ESL teachers' experiences in teaching students to use thinking maps to strengthen their CT in reading. This research highlighted the teaching and learning processes in which the promotion of CT was integrated. It stressed that thinking maps helped students to build

schemas and create an inner conversation so that they were able to comprehend the general meaning of the text. In another previous survey conducted by Sidek and Yunus (2012) on the perception of the students in the i-THINK program, a similarly positive result was revealed. Nearly 95% of students in the program believed that thinking maps were helpful in their CT development in EFL reading.

1.3 Problem Statement

Critical thinking is one of the most significant skills in the 21st century (Saleh, 2019). It is quite essential for students as it enables them to solve problems in tough situations or occasions and also makes them communicate effectively and accurately. Learning to think critically is one of the most desirable goals of the education system.

The CT abilities of senior high school students in China, however, is drawing more attention of stockholders as its status of quo is worrying more and more researchers. Yang and Wu (2020) mentioned that Chinese high school students are lack of CTS like reasoning, judging, generalizing, and analyzing and they thought the traditional teacher-centered, examination-oriented teaching is to be blamed (Yang and Wu, 2020). Zhao (et. al. 2019) investigated the cultivation of CTS of Chinese high school students in English reading classes. She concluded overall the CT level of them was weak. Only eight percent of the students showed higher CT levels. Researchers analyzed many possible reasons for this circumstance.

Dong (2021) defined the traditional English teaching in China as a teaching mode that teachers focus on basic knowledge like the words, phrases, sentence structures that students can learn by themselves through countless resources. This kind of teaching solidifies students' thinking and blocks the development of students' CT. Nan (2021) pointed out traditional English reading class mainly imparted text knowledge (words, phrases, sentence structure) and the nature of reading was lost, even if the pre-reading while-reading and the post-reading process were adopted. This teaching is a shallow understanding of the text's structure, therefore cannot foster students' CT.

Thereupon, Dong (2020) thought teachers' role should be changed from a dominant role in knowledge delivering to a guide to arouse students' subjective initiative and the cultivation of teachers' critical awareness and creation awareness should be strengthened. She further explained high school students needed to be given more chances to train their CTS rather than rote memorization of fact knowledge. Teachers should have the opportunities to reach for the skills and knowledge about how to foster students' CT in their daily teaching.

Bao (2019) explored the ways to infuse CT into English reading class through the targeted teaching objective setting in a well-arranged English reading classroom. She found in her research only several classes of teaching were not sufficient to improve students' CT. She believed that only if CT was involved in teaching objectives, teaching activities, and students' practical activities, can students' abilities of analysis, synthesis, and evaluation be improved.

Based on the revision of promoting CTS among high school learners in China, teachers need to use specific strategies to cultivate them. Studies about the specific strategies to improve students' CTS in English classes in China are also quite limited, especially the experimental research to test the efficiency of concrete strategies (Guo, 2020). Since GOs have been proven successful in promoting CT by many researchers, this research investigates the effectiveness of GOs n English reading class in Chinese senior high schools.

1.4 Aims of the Study

This research aims to investigate the effect of GOs on students' CTS in English reading class. To achieve these results, the following research objectives were developed:

RO1. To investigate the effects of GOs on students' CTS in English reading class

RO2. To identify how GOs affect students' CTS in English reading classes

RO3. To explore students' perceptions of GOs in promoting CTS

1.5 Research Questions

Based on the research objectives stated above, three research questions were raised to guide this study as follows:

RQ1. What are the effects of GOs on students' CTS in English reading class?

1a) Is there any significant difference in the scores of the reading comprehension test between the control and the experimental group in the pre-test?

1b) Is there any significant difference in the scores of the reading comprehension test between the pre-test and the post-test of the experimental group?

1c) Is there any significant difference in the scores of the reading comprehension test between the pre-test and the post-test of the control group?

1d) Is there any significant difference in the scores of the reading comprehension test between the control and experimental group in the post-test?

RQ2. How do GOs affect students' CTS in English reading classes?

2a) Is there any significant difference in the scores of analyzing skills in the experimental group between the pre-test and the post- test?

2b) Is there any significant difference in the scores of generalization skills in the experimental group between the pre-test and the post-test?

RQ3. What are the students' perceptions of GOs in promoting CTS?

1.6 Research Hypotheses

The null hypotheses for this research are as follows. Ho_1, Ho_2, Ho_3 and Ho_4 are generated from research question 1.

Ho_1: There is no significant difference in the scores of the reading comprehension test between the control and the experimental group in the pre-test.

Ho_2: There is no significant difference in the scores of the reading comprehension test between the pre-test and the post-test of the experimental group.

Ho_3: There is no significant difference in the scores of the reading comprehension test between the pre-test and the post-test of the control group.

Ho_4: There is no significant difference in the scores of the reading comprehension test between the control and experimental group in the post-test.

Ho_5, and Ho_6 are generated from research question 2.

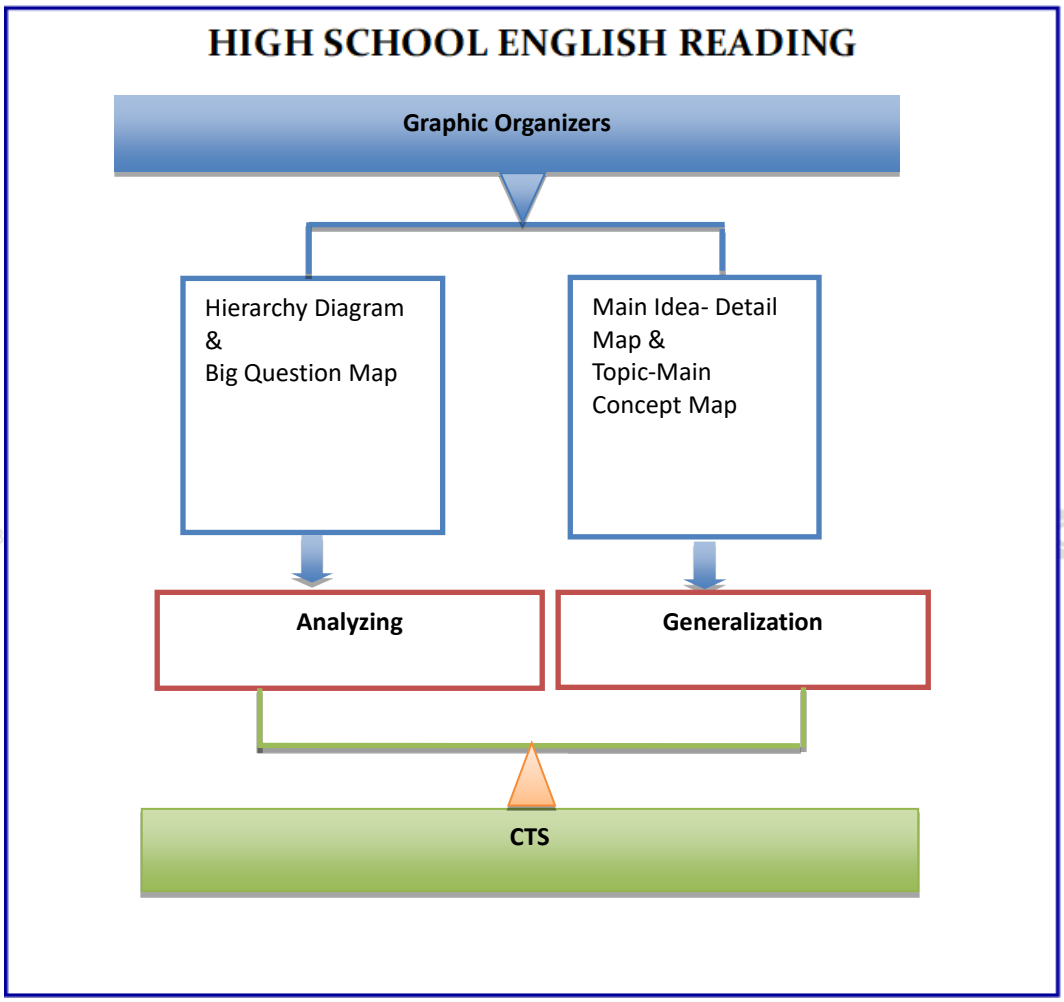
Ho_5: There is no significant difference in the scores of analyzing skills in the experimental group between the pre-test and the post- test.

Ho_6: There is no significant difference in the scores of generalization skills in the experimental group between the pre-test and the post- test.

1.7 Conceptual Framework

Figure 1.2

Conceptual Framework



This study is an attempt to investigate the effect of GOs on senior high school students' CTS in EFL reading classes. The two CTS are analyzing, and generalization. The meaning of these four CTS in this study is shown in the Table 1.1.

The GOs being used in this research are two groups of organizers: Hierarchy Table 1.1

Meaning of CT

CT Skills	Meaning
Analyzing	able to examine the details by breaking it down
Generalization	able to make generalization based on information

Adaptation from Santiago (2011)

Diagram - Big Question Map; Main Idea and Detail Map - Topic-Main Concept Map. These GOs are chosen because they have their characteristics respectively in assisting specific CTS development in this study. These two groups of GOs are structured in ways that enable students to be aware of their thinking processes in doing English reading so that their CT skills can be strengthened.

1.8 Significance of the Study

This research aims to investigate the effect of GOs on senior high students' CT in the EFL context. The effort made in this research is expected to contribute to the present studies in this area for educators and researchers and students.

First, this study enriched the existing literature on the strategies to promote students' CT in an EFL context. Although many researchers have stressed the need of cultivating CTS in English reading of senior high schools, empirical studies are very limited especially about evaluating the efficiency of a specific reading strategy to develop students' CTS in China. This is where this research comes in. GOs research will be added to relevant existing literature to promote CT in EFL settings.

Second, this research provides a handy material for teachers who are interested in integrating thinking skills into English teaching. Nowadays, more and more teachers realize the disadvantages of traditional teaching methods and are in pursuit of new ways to develop students' independent thinking. This research provides them with an alternative to use GOs to develop students' CTS. They can learn new ways to cultivate students' thinking, which enriches their teaching methods. They would understand the benefits of using GOs and try to employ more of them in the teaching of reading. By using GOs, students will have more chances to analyze various materials logically, reflect on their thinking process, organize their ideas, and express their opinions critically. In the process of exploration, teachers would help their students to develop CTS while teachers themselves also will strengthen their teaching skills, extend their teaching experience, and add their knowledge.

Third, this research holds on to the hope that it can be encourage those researchers who have been interested in conducting research on developing students' CTS. In China, the empirical studies about students' CT are quite limited. Many researchers have discussed the low level of Chinese students' CT and some of them raised some

principles and guidelines of different strategies to promote students' CT. However, there is little experimental research that supports the implementation CT strategies. This research is an informative reference about the concrete steps and methods to do this kind of research. Hopefully this will have more research enthusiasm and enthusiasm from researchers to conduct more relevant experimental studies.

It is also hoped that research by personnel in this field will provide useful material for potential research in this area to conduct similar research. If any educators or teachers develop interest in the problems discussed in this research, they would try to explore this issue in practice and even start their studies. In this case, more evidence of the feasibility of infusing CT into English class could be found.

Fourth, this research will be a stepping stone for students to know more about CTS. Students in the experimental group will benefit from this research after the training of using GOs. They will also benefit from 12 sessions of integrated teaching of reading using GOs to promote CT. They will learn how to think critically with the use of GOs. They will be familiar with the specific CTS empathized in the study which are analyzing and generalizing. They will also understand the functions of these skills in reading comprehension. Besides, their interest in using existing graphics and drawing graphics for better understanding of their thinking processes will be triggered. Their awareness to develop their thinking independently will be stimulated.

At last, this study is expected to draw educational designers' attention to the necessity to improve students' CTS in schools. Hopefully more projects and research about thinking skills can be built and done under the leadership and organization of the government. However, this study only investigated the effects of two groups of GOs on two CTS in English reading. Researchers and prospective researchers who are interested in this topic are suggested to dig into this topic from other aspects like more GOs and CTS in the aspect of English teaching.

1.9 Limitations of Study

There are inevitably some limitations in this study. First is the duration of the study. Due to the school regulation, the study will be carried out only for two months, which might influence the result of the experiment.

Another limitation of this research is sampling. Ningxia is not a very big province in the northwest of China. It has a population of 681.79 million and the number of high school students registered for college entrance examination in 2019 is 71702 according to Ningxia Education Department. The sample in this research is chosen from the researcher's hometown Ling Wu based on convenience of data collection. This is experimental research. It needs to be conducted in the process of normal teaching. Therefore, it is very difficult to gain access to classes and students due to the modifications that the research may bring to teaching schedule. Due to the design of

this research, it can only be conducted in one high school in Ningxia, therefore the sample size is very small.

1.10 Definitions of Terms

Graphics organizers

GOs (also called thinking map or concept map) are purposely designed visual structures for assisting learning and instruction by using lines, arrows, and circles which show the important conceptual relationships among the components of a specific context (Darch & Eaves, 1986). GOs show the relationship by combining linguistic forms such as words and phrases with non-linguistic forms like symbols and arrows (Marzano, Pickering, & Pollock, 2001).

As for the types of GOs, there are so many types such as concept map, story map, semantic map, timetable, cause and effect map, fish-bone diagram, flow chart, bubble map, story pyramid, Venn diagram, problem-solution diagram, mind map, listing map, topic network, conceptual network, hierarchy, matrix, linear system, dominoes, diagnostic tree, knowledge map and so on.

In this study, GOs refer to four thinking maps that are used in the English reading class to promote CT among the senior high school learners. The maps are Hierarchy Diagram, Big Question Map, Main Idea and Detail Map and Topic-Main Concept Map.

Thinking skills

Thinking skill is a cognitive process that is highly structured, organized, and coherent (Smith, 2002). Perkins (1992), a professor of psychology at Harvard University, believed that like our ordinary walking ability, thinking is everyone's innate. But good thinking is like a 100-meter race. A professional runner is a technical training's result. Runners need training and practice to master the 100-meter sprint skills. Similarly, good thinking skills require appropriate teaching support, including a series of targeted exercises. Therefore, thinking skills can be taught. According to Ramadhan, Mardapi, Prasetyo, and Utomo (2019), thinking skills can be categorized as the process of using the mind to come up with ideas, make a decision and solve a problem. They define thinking skills as a person's ability to continuously acquire knowledge and put the different pieces of knowledge together to create new knowledge.

Critical Thinking

Ennis (1985) defined CT as: "reasonable, reflective thinking that is focused on deciding what to believe or do". Facione (1984) defined CT as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference as well as explanation of the evidential, conceptual, methodological, soteriological, or contextual considerations upon which judgment is based". CT is the capability to evaluate

argumentation and make an objective assessment on a specific point of view with sufficient supportive proofs rather than emotional judgments. CT skills are often connected with the skills of identifying the source of information and analyzing the credibility of the source objectively by comparing the information with one's prior knowledge (Miri, David, & Uri, 2007).

In this study, CT skills refers to analyzing skills and generalization skills in high school English reading context. The reason to choose these two thinking skills are firstly, these two thinking skills are greatly addressed in high school English reading. Secondly, Chinese high school students are found not competitive in these two CTS (Liu, 2020; Bao, 2019; Nan, 2018).

1.11 Summary

At the beginning of chapter one, the key components were highlighted: the introduction, study background, statement of the problem, research aims, research questions, and conceptual framework. Besides, the significance and limitations of research as well as the definition of terms were raised to guide the present study. Having identified chapter one, the literature review in chapter two will continue to elucidate more on the findings related to the topic of this study.