

The Investigation on Critical Thinking Ability in EFL Reading Class

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Abstract

The present mixed-method study aims to find out the status quo of critical thinking ability of university non-English majors by investigating 224 non-English majors from a university in China (105 male and 119 female students, 114 art and 110 science majors, 109 freshmen and 115 sophomores were included respectively) through questionnaires and interviews. Specifically, it compares critical thinking ability in English reading between students of different genders, majors as well as grades. The result shows that the critical thinking ability of university non-English majors in English reading is weak, namely, most students lack critical thinking ability in English as a Foreign Language reading class, which requires relevant training urgently. Also, differences of English critical thinking ability lie in gender, major, and grade. Teachers are well-advised to improve their teaching method and put more emphasis on arousing students' awareness of critical thinking. Also, they need to teach students according to their characteristics so as to promote students' critical thinking ability in English reading fully and harmoniously.

Keywords: university non-English majors, English reading, critical thinking ability

1. Introduction

Critical thinking (henceforth CT), a kind of essential thinking skills, aims to promote people's ability to criticize, question, evaluate and reflect. The 21st century is regarded as a knowledge-based era as well as an "information explosion" one. Generally speaking, it is of great importance for one to think critically due to the skyrocketing development in such an information age. People have reached a widespread consensus that CT is among the list of five important skills for future citizens to develop (LIU, 2000). Therefore, how to improve students' CT has always been the hot spot of western higher education reform since the early 20th century, which is represented by America (WEN, WANG, ZHAO, LIU, & WANG, 2009). Higher education in China also highlights the cultivation of CT competence in recent years (LUO, 2002). However, there exists a void in the cultivation of students' CT in traditional college English teaching, which mainly focuses on imparting basic linguistic knowledge and skills. CT is rarely involved in English teaching, let alone English as a foreign language (henceforth EFL) reading class, which has been regarded as an effective way to enhance CT (LIU & GUO, 2006). In EFL reading class, most teachers put more emphasis on the explanation of new words, analysis of grammatical structures and difficult sentences, which leads to the very superficial understanding of reading materials.

It seems to go against the current context of global trend in which students are required to think critically in the learning process. Luckily enough, this phenomenon has already drawn some scholars' attention and thus measures are worth taking (LIU, 2005). Some researchers analyze the meaning and connotation of CT, and focus on the importance of cultivating CT (WEN, 2008). The empirical studies on how to cultivate one's CT, especially college students' are still waiting to be explored.

2. Literature Review

CT was originated from western countries a century ago. Dewey first mentioned CT as reflective thinking (Dewey, 1933). The recent decades have witnessed the devoted contributions made by western researchers (Paul, 1993; Dower, 2003; Fung, 2014), who emphasize the overriding importance of cultivating one's CT and have begun to develop a wide variety of programs to train students' CT. CT should be regarded as one of most essential and crucial factors of success in the 21st century. Also, CT is an indispensable tool to equip with in such

a rapidly-changing society (Dower, 2003). Fung (2014) did an empirical research to promote CT through effective group work. To summarize, the research achievements in western countries during the recent decades can be divided into three categories, one of which is to define the sub-skills of CT (Paul & Elder, 2002). Second, researchers abroad have begun to explore the assessment of evaluating one's CT since 1980s (Facione, 1991), including The California Critical Thinking Skills Test (henceforth CCTST), The California Critical Thinking Dispositions Inventory (henceforth CCTDI), etc., both of which were designed respectively by A. Facione and C. Facione (1998) and A. Facione (2000), and were published by California Academy Press. The former one is suitable for college students as well as senior high school students while the latter is frequently used in self-evaluation and research (cited from LUO, 2002). Third, western scholars are devoted to exploring the cultivation of CT in higher education through various effective ways and their validity (Chamberlain & Burrough, 1985; Belet & Dal, 2010). According to the content of teaching or training students' CT, there are generally four teaching approaches of cultivating CT skills, general approach, immersion approach, infusion approach and mixed approach included (cited from HUANG, 2013).

Domestically, fruitful results have also been achieved as Chinese educators highlight Quality Education. They mainly focus on theoretical level, ranging from the meaning and connotation of CT (LIU, 2000; LUO, 2002), the cultivation of CT (LUO, 2000; LI, 2002; WEN, 2008; PAN, 2009; RUAN, 2012), to the assessment of CT (WEN et al., 2009). For example, LIU (2000) notes the significance and connotation of CT, emphasizing the overriding importance of cultivating CT in the modern world. LUO (2000) puts forward a synthetic theory of CT and develops a new assessment method of CT based on the fussy synthetic judgment. However, researchers have pointed out the ignorance of training Chinese students' CT skills through specific teaching methods or effective ways. Investigation research was the very first step of empirical studies, both of which were insufficient at home. Fortunately enough, some scholars (WEN & ZHOU, 2006; LI & SUN, 2011; RUAN, 2012) began to make efforts to explore the teaching approaches after specific and systematic investigation during the past years. For example, RUAN (2012) proposes a theoretical framework to cultivate English majors' CT. In addition, most participants in the studies are university English majors instead of non-English majors (WEN & ZHOU, 2006; WEN & WANG, 2010).

Therefore, compared with the research abroad, it is still not a satisfactory result and much improvement is needed in China. The investigation on, as well as the teaching methods of the cultivation of English learners' CT, especially when combined with specific class type like EFL reading class, are still an unknown field waiting to be explored.

3. Research Design

3.1 Research Questions

First of all, the overarching research question for our study is: what is the overall command of university non-English majors' CT ability in EFL reading class? In order to investigate this question, the study focuses on four distinct, yet related, sub-questions: first, do they have differences between the male and female students regarding CT ability? If so, what are the differences? Second, do they have differences between the art and science majors? If so, what are the differences? Third, do they have differences between the freshmen and sophomores? If so, what are the differences? Forth, what are the key factors to influence university non-English majors' CT ability?

3.2 Research Participants

This study randomly selects 224 non-English majors in a university in China, i.e. S University, as research participants, part of which are 105 male students (46.9%) while the others are 119 female ones (53.1%). Also, all the participants include 114 art majors (50.9%), who are respectively from School of History and Culture, School of Political Science and Public Administration and Institute of Marxism, as well as 110 science majors (49.1%) from School of Physical Science and Technology, College of Engineering and Technology, School of Life Science. Among all the participants, there are 109 freshmen (48.9%) and 115 sophomores (51.3%). The reason why our study only investigates the freshmen and sophomores is that "College English" course are only taken for the freshmen and sophomores in China's universities.

3.3 Research Instruments

Both quantitative and qualitative research methods were employed in this research in the form of questionnaires and students' interviews. According to the review of CT at home and abroad, the authors designed the questionnaire on the basis of Facione's List of Core Six CT Skills (1991). The questionnaire on *CT Ability in English Reading* (See appendix I) is composed of the following two main parts, concerning the participants'

personal background information (gender, major, grade, performance on College English Test Band 4 or Band 6 (henceforth CET 4/CET 6) and their CT abilities, including Interpretation, Analysis, Evaluation, Inference, Explanation and Self-regulation. The second part has adopted a Likert-type scale (5=agree; 4=basically agree; 3=hard to say; 2=not quite agree; 1=disagree) and allows students to describe their routine reading behavior. A preliminary survey was conducted in School of Mathematics and Statistics to pilot the questionnaire in order to refine the content, wording and dispel ambiguity which might cause comprehension difficulty. All the descriptions in the questionnaire are written in Chinese rather than English so that non-English majors have easier access to understanding.

Table 1. Rubric number and alpha of questionnaire

CT Ability	Interpretation	Analysis	Evaluation	Inference	Explanation	Self-regulation
Rubric Number	5	4	3	5	3	2
Alpha	0.624	0.649	0.516	0.701	0.558	0.629

Eight questions in the semi-structured interviews were carried out with 16 students in total, which include participants' 1) interest in English reading; 2) understanding of the importance of English reading; 3) evaluation of how difficult the reading comprehension is in English examinations; 4) evaluation of the status quo of English reading teaching; 5) understanding of CT ability in English reading; 6) understanding of the importance of CT ability; 7) self-evaluation of his own CT ability; 8) suggestions towards cultivation of CT ability for EFL teachers.

3.4 Research Procedures

The questionnaire was administrated and distributed to 224 non-English majors in S University and took ten minutes to complete, among which 219 questionnaires (97.8%) were valid, including 103 male students (47%) and 116 female students (53%); 112 art majors (51.1%) and 107 science majors (48.9%); 107 freshmen (48.9%) and 112 sophomores (51.1%). All computations in the analysis procedure of the data collected from the questionnaires were performed by SPSS 16.0 for Windows. The data were analyzed statistically, employing Descriptive Statistics, Independent-Samples T Test. Qualitative data analysis was a reiterative process because transcripts were carefully read and reread, interpreted and reinterpreted, organized and analyzed throughout the study.

4. Research Results

4.1 The Overall Command of University Students' CT Ability in English Reading

This paper analyzes the general ability and the abilities of each dimension respectively by employing Descriptive Statistics. The mean scores of the CT ability are presented in Table 2.

Table 2. University students' CT ability of each dimension in English reading

CT Ability	Specific Descriptions	Mean
Interpretation	recognize the text type; pay attention to the figure of speech;	2.780
	pay attention to the text structure; know the writing purpose; summarize the main idea;	
Analysis	pay attention to the implied meaning of author's mood or attitude; distinguish facts from opinions; refine different views;	2.833
	find arguments to support view;	
Evaluation	judge the rationality of the text; judge the authenticity of information; compare author's and one's own opinion;	2.789
	predict the meaning of proverb; predict from the title or subtitles;	
Inference	predict from clues (e.g. context); make reasonable inference;	2.840
	understand the implicit conclusion;	
Explanation	express one's own opinion; find reasonable arguments to support;	2.495
	write comments according to the text;	

Self-regulation	correct unreasonable inference; verify one's own view by searching relevant material	2.265
General ability	Interpretation; analysis; evaluation; inference; explanation; self-regulation	2.719

The data shown in Table 3 indicates that the mean score of students' general CT ability in English reading is 2.719 < 3 (3 represents partial match, i.e. coincidence rate is of 50 percent), and the mean scores of each dimension are in sequence of Inference (M=2.840) > Analysis (M=2.833) > Evaluation (M=2.789) > Interpretation (M=2.780) > Explanation (M=2.495) > Self-regulation (M=2.265), namely, the students possess strong Inference and Analysis, while are weak on the aspects of Explanation and Self-regulation.

4.2 The Comparison of CT Ability in English Reading between Students of Different Genders

Employing Independent-Samples T Test, this paper compares the abilities of each dimension and the general ability between the male and female students. The results are presented in Table 3:

Table 3. The comparison of CT ability in English reading between the male and female students

CT Ability	Male students		Female students		T	P
	Mean	SD	Mean	SD		
Interpretation	2.718	1.120	2.835	1.020	-1.795	0.073
Analysis	2.704	1.030	2.948	1.015	-3.533	0.000**
Evaluation	2.725	1.012	2.845	0.992	-1.531	0.126
Inference	2.713	1.110	2.953	0.973	-3.826	0.000**
Explanation	2.414	1.071	2.566	0.957	-1.920	0.055
Self-regulation	2.165	1.056	2.353	1.009	-1.909	0.057
General ability	2.624	1.088	2.803	1.012	-5.939	0.000**

It can be seen from Table 3 that the mean score of the general CT ability of the male students is 2.624, while that of the female students is 2.803, and the result of Independent-Samples T Test shows the extremely significant difference between two groups ($P < 0.01$). The mean scores of each dimension of the female students are higher than those of the male students, of which Analysis and Inference reaches the level of extremely significant difference ($P < 0.01$). In other words, the female students' CT in English reading is significantly higher than that of the male students, especially on the aspects of Analysis and Inference.

4.3 The Comparison of CT Ability in English Reading between Students of Different Majors

In order to identify the difference in the abilities of each dimension and the general ability between the art and science majors, Independent-Samples T Test was used. The results are presented in Table 4.

Table 4. The comparison of CT ability in English reading between the art and science majors

CT Ability	Art majors		Science majors		T	P
	Mean	SD	Mean	SD		
Interpretation	2.821	1.075	2.736	1.062	1.315	0.189
Analysis	2.875	0.998	2.790	1.059	1.227	0.220
Evaluation	2.854	1.034	2.720	0.966	1.722	0.086
Inference	2.938	1.037	2.738	1.047	3.163	0.002**
Explanation	2.583	1.042	2.402	0.977	2.301	0.022*
Self-regulation	2.357	1.036	2.168	1.025	1.917	0.056
General Ability	2.787	1.052	2.647	1.048	4.639	0.000**

It can be seen from Table 4 that the mean score of the general CT ability of the art majors is 2.787, while that of the science majors is 2.647, and the result of Independent-Samples T Test shows the extremely significant difference between the art majors and the science majors ($p < 0.01$). The mean scores of each dimension of the art majors are higher than those of the science majors, of which Inference reaches the level of extremely difference ($P < 0.01$). The difference in Explanation is significant ($p < 0.05$). In other words, the art majors' CT in English reading is significantly higher than that of the science majors, especially on the aspects of Inference and Explanation.

4.4 The Comparison of CT Ability in English Reading between Students of Different Grades

In order to identify the difference in the abilities of each dimension and the general ability between the sophomores and the freshmen, Independent-Samples T Test was used. The results are presented in Table 5.

Table 5. The comparison of CT ability in English reading between the sophomores and freshmen

CT Ability	Sophomores		Freshmen		T	P
	Mean	SD	Mean	SD		
Interpretation	2.877	1.049	2.680	1.083	3.049	0.002**
Analysis	2.873	1.001	2.792	1.056	1.161	0.246
Evaluation	2.929	0.999	2.641	0.985	3.709	0.000**
Inference	2.895	1.062	2.783	1.027	1.764	0.078
Explanation	2.655	1.051	2.327	0.947	4.193	0.000**
Self-regulation	2.393	1.058	2.131	0.994	2.669	0.008**
General Ability	2.813	1.048	2.628	1.048	6.107	0.000**

The data shown in Table 5 indicates that the mean score of the general CT ability of the sophomores in English reading is 2.813, while that of the freshmen is 2.628, and the result of Independent-Samples T Test shows the extremely significant difference between two groups ($P < 0.01$). The mean scores of each dimension of the sophomores are higher than those of the freshmen, of which Analysis and Inference reach the level of extremely significant difference ($P < 0.01$). In other words, the sophomores' CT in English reading is significantly higher than that of the freshmen, especially on the aspects of Interpretation, Evaluation, Explanation and Self-regulation.

5. Findings and Discussions

5.1 The Overall Command of CT Ability in English Reading Is Weak

It was observed that the CT ability of the non-English-major freshmen and sophomores was relatively weak, especially on the aspects of the Argument and Self-regulation. In other words, students seldom expressed their opinions on English articles, found reasonable arguments to support their points of view and wrote comments on the reading text. In addition, students passively accepted the writer's opinion, rarely questioned or corrected the unreasonable inference of the article and seldom verified their points of view by searching literature and internet.

From the interview with 16 students, the authors have learned that teachers mainly focused on the language knowledge and skills, adopting the traditional English teaching methods of "memorizing the words" "reading the text" "imparting the grammar" "doing the exercises", neglecting the cultivation of students' CT ability. Students took the text merely literally and could not develop their CT based on the reading text, especially for the high-level explanation and self regulation. In addition, teacher-centered teaching method also contributes to the weak Explanation and Self-regulation (cited from YUAN & XIAO, 2003). Students accepted teachers' views passively, being afraid of challenging authority and expressing their own views. Owing to their laziness, some students were content with the literal understanding of the reading materials and ignored evaluating, questioning and reflecting the writer's opinions so that they could not put forward their own views. On the other hand, more than half of students said that they were not aware of developing CT ability because they were so busy dealing with various English test, such as English final exam, CET 4 and CET 6. Although 16 interviewees said that it was important to fully understand the articles, cultivate good reading habits and think from different perspectives, they all admitted that English test score was their top priority.

Therefore, teachers are well-advised to change their teaching beliefs, consciously choose critical reading materials, and design various critical reading activities to raise students' critical awareness. For instance, teachers guide students to use critical reading strategies, such as preview, annotating, summarizing, analyzing, questioning and predicting, etc. (Flynn, 1989). Before reading, teachers selectively explain the background information of the reading text and new words, phrases, sentence patterns to arouse the students' interest in English reading. While reading, teachers need to guide students to analyze and infer the reading materials with various critical reading strategies. After reading, students are suggested to comment on the reading materials, find out the related supporting arguments, and even question or correct unreasonable inferences of the article under teachers' guidance so as to strengthen CT ability. Second, teachers should cultivate students' CT with the combination of English final exam, CET 4, CET 6 and other tests. In addition, students should develop their CT by consciously focusing on the structure of the article, the writer's writing purpose, the writer's point of view, and putting forward their own views. Consequently, students are able to fundamentally change their belief and habit in reading, saying "appreciating the test score, neglecting critical thinking" through long-term perseverance.

5.2 Differences Lie in CT Ability in English Reading between Students of Different Genders

The investigation showed that the female students were better at CT than the male students and had better abilities of Analysis and Inference. In other words, girls were better at refining the views, finding the relevant evidence, distinguishing fact from opinion and focusing on the implied meaning of the writer's attitude. In addition, the female students were even better at speculating and understanding the implicit conclusion from titles and contexts.

This result was different from the research conclusions drawn by GAO (2013) on CT disposition, whose study did not demonstrate any statistically significant difference of CT between the male and female students. The reason can be found in the following two aspects: first, the participants were non-English majors from S University, not from W University. Second, this study mainly focused on students' CT ability in English reading rather than their CT disposition. The authors have learned in the interviews that the male students were more confident in their CT ability. For instance, they were capable of making critical comments and opinions on current affairs, hot topics when reading newspaper and magazines. However, when it came to reading the text in English language, they could not use their CT due to their limited English competency. On the other hand, the female students showed better ability at understanding details and theme questions than that of their counterparts. One of the reasons for the female students' better abilities of Analysis and Inference was their more accurate comprehension of the reading materials. It can be inferred that CT ability in English reading is characterized by English itself, i.e. a certain kind of correlation exists between one's CT ability and English competence. However, further verification is needed to examine the specific kind of correlation.

Therefore, teachers should teach according to students' aptitude and respect their gender differences in daily EFL reading class. First of all, according to JIANG and CHEN (2013), the females have more advantages in English learning than the males and still remain this priority when they are in college. Teachers are suggested to spend more time helping boys expand their vocabulary and deepen the literal understanding of English reading text. Second, WEI (2011) points out that in English reading the female students are more motivated and are willing to take pains in learning English than their counterparts. Therefore, teachers should especially stimulate the male students' interests and encourage them to read critically based on the literal understanding of the reading materials so as to strengthen CT ability.

5.3 Differences Lie in CT Ability in English Reading between Students of Different Majors

The investigation showed that the art majors were superior to the science majors concerning the general as well as each dimension of CT ability in English reading, especially when it came to the aspects of Inference and Explanation. In other words, the art majors were doing better regarding predicting from the title and context compared with the science majors. Moreover, the former ones were better at finding out reasonable arguments to support his idea, making and writing comments according to the content of the reading materials.

The existed differences indicated that the characteristics, teaching content and method of each major undeniably have exerted an influence on students' CT ability to some extent. Due to the openness and extensiveness of learning content, the art majors tended to take various aspects into account comprehensively, such as to infer every possibility and find out reasonable arguments for supporting ideas. As for the science majors, they found that most answers or results were unique. That was why the art majors had better ability of Inference and Explanation. In addition, over half of the art majors interviewed "are fond of reading masterpieces abroad" "frequently refer to English literature or information" "expand information by learning from ways of thinking in

other countries". It can be inferred that the distinctive differences lie in reading interests and habits. In this case, the art majors learned from and made full use of others' thinking abroad based on the understanding of English reading materials, and finally developed their own idea and judgment.

Therefore, teachers are well-advised to adjust the teaching content, as well as teaching methods of EFL reading class feasibly according to the characteristics of each major. Compared with the art majors, the majority of the science majors are inclined to think in a more reasonable and logical way. In real classroom settings, teachers need to combine CT cultivation with the English reading text, for example, they may ask students to find out details in reading to support their own ideas.

5.4 Differences Lie in CT Ability in English Reading between Students of Different Grades

The investigation showed that the sophomores were superior to the freshmen regarding the general as well as each dimension of CT ability in English reading, especially when it came to Interpretation, Evaluation, Explanation and Self-regulation. The distinctive differences showed that CT ability of the sophomores had been improved to a certain degree after one-and-a-half-year learning in "College English" reading class. One of the reasons is that the better command of English and larger number of vocabulary were the premise for the sophomores to gain a deeper understanding of the literal meaning of reading text, and then read and understand critically. The other reason is owing to the inadaptability of the freshmen from senior high school to university, who were at a loss for a relatively long time. The lack of related background information has caused the limitation of learning basic English knowledge instead of cultivating more high-level thinking skills.

Freshmen as we are, we lost our time during the past one year. We have little knowledge, not to mention our own ideas. So we can not even ask a question. (Student 3: interview, 4 Apr. 2014)

It was noteworthy that there was no significant difference lying in Analysis and Inference of the freshmen and sophomores, which maybe affected by various English examinations. Analysis and Inference frequently appear in the reading comprehension of English examinations, accounting for higher proportion in CET 4 and CET 6, which obviously arouses students' attention. Accordingly, the freshmen and sophomores spared no efforts to strengthen the abilities of Analysis and Inference in reading comprehension for the sake of their ideal scores, which corroborated the result of *The Overall Command of University Students' CT Ability in English Reading*, i.e. the abilities of both Inference and Analysis were relatively strong.

Therefore, special attention should be paid to the cultivation of the freshmen's abilities of Evaluation, Explanation and Self-regulation in daily EFL reading teaching. After grasping the general idea of the reading passage, students need to be offered more opportunities to communicate, evaluate and explain. Meanwhile, under conscious and suitable guidance of teachers, students are able to put forward their own idea, demonstrate arguments or even question the idea of the passage, and finally raise questions from three aspects, himself, the writer and the reading text included (ZHANG, 2009).

5.5 Key Factors to Influence CT Ability in English Reading

LI (2002) points out that various factors would exert an influence on CT ability. This study has listed four key factors based on the data collected and analyzed from questionnaires and interviews.

First, students' overall command of English, including the number of vocabulary and the literal understanding of the reading text, influences CT ability directly. Understanding the reading materials is prior to reading critically and logically. In other words, students are capable of analyzing, inferring, evaluating and reflecting the reading text only when they can fully and truly understand the literal meaning.

Well, as for English reading, I usually only go for understanding the meaning of it. When I read bilingually, I'll check the Chinese meaning of English words after reading English so that I can learn some new words. Only in this way can I comprehend the whole passage. However, the time for reading comprehension in examination is too short, and there are lots of news words in the passages. So how can I express my own idea if I cannot understand them? (Student 3: interview, 4 Apr. 2014)

When I read an English article, I always follow the writer's points of view. It is almost impossible for me to have my own opinions, because it's even difficult for me to understand the article itself. I should know what its main idea is at first. (Student 12: interview, 8 Apr. 2014)

Second, students' awareness of CT ability should be treated as an important premise. Reading critically is an active process, in which students will never receive information passively. On the contrary, students interact with the reading text so as to have a deep understanding of the whole reading material. However, the majority of students lack the awareness of critical reading, with the very superficial understanding of literal reading of the

text, receiving the information passively, which consequently leads to the inadequate development of CT ability.

I always want to use some reading skills. But in order to understand the reading passage, I often forget to use them when I read for the first time. I only use reading skills when finishing the reading comprehension tasks, which provides specialized -skill training. (Student 3: interview, 4 Apr. 2014)

I like to read English books, newspapers or browse English websites. When you read them, you only need to catch the key words and get the information you want. You'll never think more about it. (Student 4: interview, 4 Apr. 2014)

Third, teachers' suitable guidance and the cultivation of CT ability in daily EFL reading class matter a great deal. In English class, students' learning outcome is determined by teachers' guidance to a certain degree. Therefore, teachers are well-advised to cultivate and enhance students' CT ability by creating a favorable teaching and learning atmosphere, adopting different teaching methods and designing abundant activities according to the students' command of English. Discussion teaching (HAN, 2009), literature reading and evaluation teaching model (YU, 2007; WEN, 2008), as well as English debate (LIU & JIN, 2012) are among good examples.

I think it's a good way to discuss a question that the teacher gave in groups after reading. Then we exchange ideas in the whole class. (Student 2: interview, 4 Apr. 2014)

There are few chances for our non-English majors to use English. It will be better if teachers teach us some skills to train critical thinking or something more practical. (Student 6: interview, 4 Apr. 2014)

Firstly, we students need to be interested in the topic. Several groups can be divided in one class, and the groups that hold different ideas of the topics can have a debate. Teachers are only the facilitators, they'd better not judge whose idea is right, but only summarize in the end. (Student 15: interview, 10 Apr. 2014)

Fourth, English examination is regarded as another key factor to influence the development of CT ability. As for students, it is a common phenomenon that the only purpose of reading English is to cope with various English tests, ranging from final examination, CET 4 to CET 6. However, English examination score is not the only crucial standard to judge whether the course is successful or not. Much attention should be paid to the comprehensive improvement of students' CT ability. It is significant for teachers to combine the cultivation of CT ability and English examination.

I don't care about whether you (teachers) train our critical thinking, or we exchange our ideas with surrounding people. I will thank god if I just work out all the questions in exams. (Student 14: interview, 10 Apr. 2014)

We only read English for tests. We do not think too much about the articles. After finishing the questions, we will not read the articles anymore. (Student 15: interview, 10 Apr. 2014)

6. Conclusions and Implications

According to the analysis of the investigation findings, there are five conclusions as follow. Firstly, generally speaking, the CT ability of university non-English majors in English reading is weak, especially on the aspects of Explanation and Self-regulation. Secondly, there are some differences in CT ability between two genders. To be specific, CT ability of the female students is generally superior to that of the male students. Likewise, other abilities in English reading are the same situation, especially on the aspects of Analysis and Inference. Furthermore, the differences of CT ability in English reading exist in different majors as well. Obviously, according to the present findings, the general ability of the art majors are better than those of the science majors, particularly on the aspects of Inference and Explanation. Moreover, students in different grades have different levels in CT ability. The result shows that the ability of the sophomores has higher level than that of the freshmen, especially on the aspects of Interpretation, Evaluation and Self-regulation. Last but not least, several important factors influence CT ability of university students while English reading, such as the basic English competence of students, the students' awareness of CT, teachers' cultivation of CT ability in EFL reading class and English test.

Based on the previous conclusions, the authors obtain implication in the following three aspects. To begin with, as to university students, cultivating interest in English reading and developing a good reading habit are the very first step. Meanwhile, it is of paramount significance to enhance basic English skills, enlarge vocabulary, widen the quantities of the English reading texts, and enrich background knowledge. Apart from that, students should be more positive in expressing their views from various aspects and giving their explanations. The more they question, discuss and share, the better CT ability they may get. Secondly, from teachers' perspective, they need to improve the teaching method. Also, more emphasis should be put on arousing students' awareness of CT. In EFL reading class, students are not only required to understand the reading material, but also should be inspired

to think critically. Moreover, in the teaching process, teacher should pay attention to the differences that lie in different genders and students' English reading skills so as to narrow the gap between the female and male students in CT ability, and develop the students' English CT ability comprehensively and harmoniously. In addition, it is better for teachers to make suitable adjustment on the teaching material and the teaching method for non-English majors on the basis of the particular characteristics of their own majors. Also, it is of great importance for teachers to encourage students to read English masterworks and take the way of thinking in English as an example so as to fully promote CT ability of different majors. Furthermore, the differences in English reading skills and the reading level of students in different grades should be taken into consideration. When teachers enhance the basic English skills, CT ability should also be emphasized, especially for the freshmen. Thirdly, the education department and university administrative unit concerned should make corresponding policies about teacher's CT ability training. Only when teachers are equipped with relevant knowledge and infiltrate it in daily English teaching, especially in EFL reading class, can the status quo of university students' CT ability be developed to a certain degree. In addition, the status of CT in English teaching and learning should be promoted by offering relevant courses to improve students' ability. For example, using foreign CT materials for reference, popularizing CT by optional courses, and even compiling school-based textbooks of CT in EFL reading class according to the reality and levels of students are highly promoted.

Due to the limited scale of this research, which only investigates the situation of non-English majors in grade one and grade two of S University, the present result cannot reflect the overall status quo of other Chinese university students. In the future research, in order to provide authentic and reliable gist for boosting university students' CT ability in English reading, the research should be expanded in depth and breath. Therefore, more variables should be considered. The functions and conditions of data should be analyzed more meticulously and thoroughly, and the research methods and data analysis need to be designed more scientifically and comprehensively.

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Appendix A

The Questionnaire on Critical Thinking Ability in English Reading

Dear Students,

The Questionnaire on Critical Thinking Ability in English Reading is designed to find out the status quo of university non-English majors' critical thinking in EFL reading class. Please respond to the following items based on your personal practical situation and actual thinking. Please note that there is no right or wrong answers to the questions. The information you provide will lay an essential foundation to our research. I hereby solemnly pledge to keep all your personal data confidential and to use them only for the purpose of academic research. I am very grateful for your kind support and cooperation.

I. Personal Background Information

Write down your responses on the line or in the bracket.

Name _____

Gender _____

Grade _____

Years for Learning English _____

English Test Performance ()

A. NEVER Pass CET 4 or CET 6

B. Pass CET 4

C. Pass CET 6

II. The Performance on Critical Thinking Skills

To what extent do you think the following statements apply to you? Circle the number after each statement below according to the degree of your agreement/acceptance of the statement. Each number stands for a different degree in measurement.

5=agree; 4=basically agree; 3=hard to say; 2=not quite agree; 1=disagree

- | | | | | | |
|---|---|---|---|---|---|
| 1. In daily reading training, I can recognize the type of the reading text. | 1 | 2 | 3 | 4 | 5 |
| 2. I can infer the meaning of the proverb from the reading text. | 1 | 2 | 3 | 4 | 5 |
| 3. I will pay attention to the figure of speech when reading. | 1 | 2 | 3 | 4 | 5 |
| 4. I can predict the main idea of reading text from title or subtitles. | 1 | 2 | 3 | 4 | 5 |
| 5. I will pay attention to implied meaning of author's mood or attitude. | 1 | 2 | 3 | 4 | 5 |
| 6. I can distinguish facts from opinion. | 1 | 2 | 3 | 4 | 5 |
| 7. I will judge the rationality of the view from the previous knowledge. | 1 | 2 | 3 | 4 | 5 |
| 8. I will pay attention to the structure of the reading text. | 1 | 2 | 3 | 4 | 5 |
| 9. I know the writing purpose of the author. | 1 | 2 | 3 | 4 | 5 |
| 10. I can refine different views from the text when reading. | 1 | 2 | 3 | 4 | 5 |
| 11. I can find relevant arguments to support the view of the text. | 1 | 2 | 3 | 4 | 5 |
| 12. I can speculate from various clues (e.g. context) when I can't understand the text. | 1 | 2 | 3 | 4 | 5 |
| 13. I have my own choice and judgment of the authenticity of information. | 1 | 2 | 3 | 4 | 5 |
| 14. I can express my own opinion according to the text. | 1 | 2 | 3 | 4 | 5 |
| 15. I can compare my opinion with that of the author in the text. | 1 | 2 | 3 | 4 | 5 |
| 16. I can make reasonable inference without reading the rest of the text. | 1 | 2 | 3 | 4 | 5 |
| 17. I can find reasonable arguments in the text to support my own view. | 1 | 2 | 3 | 4 | 5 |
| 18. I can understand the implicit conclusion. | 1 | 2 | 3 | 4 | 5 |
| 19. I can summarize the main idea of the text after reading. | 1 | 2 | 3 | 4 | 5 |
| 20. After reading, I can correct my unreasonable inference made in reading. | 1 | 2 | 3 | 4 | 5 |
| 21. I can write comments on the information in the text. | 1 | 2 | 3 | 4 | 5 |
| 22. I can verify my own view by searching relevant material. | 1 | 2 | 3 | 4 | 5 |

Thank you for your support!

Appendix B**Interview Protocol with Students**

1. Do you like reading English articles?
2. What do you think of the importance of English? Why?
3. In English test, what kind of questions do you think is difficult? How about the easy ones?
4. How does your English teacher teach in your EFL reading class?
5. Do you know critical thinking in English reading or high-level reading? How do you understand it?
6. Do you think critical thinking is important? Why or why not?
7. How do you evaluate your own critical thinking?
8. As far as you are concerned, how to cultivate critical thinking? What are your suggestions for English teachers?

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