



Combining SATI and SPSS analysis to study the status of the cultivation of critical thinking in English teaching in China

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Abstract

With the liberalization of information release and the accelerated speed of dissemination, information overload and its inauthenticity have become a problem that plagues people's effective use of information. Critical thinking can support the development of information literacy. By using critical thinking, we can judge the clarity, correctness, relevance, and importance of information through interpretation, analysis, evaluation, inference and self-regulation. According to some experts and scholars, critical thinking ability could be cultivate in different discipline. English Language Learning is no exception. In order to understand the research trends and status of the cultivation of critical thinking in China, this paper tried to use SATI3.2 software and SPSS to analyze the data collected from China Knowledge Network Infrastructure (CNKI). The related papers published from 2002 to 2021 are taken as samples.

Keywords: *information age; SATI; SPSS; cultivation of critical thinking; trends*

1 INTRODUCTION

1.1 Research Background

Since the second half of the twenty century, with the liberalization of information release and the accelerated speed of dissemination, information overload and its inauthenticity have become a problem that plagues people's effective use of information. Although citizens of the new era have a keen insight into emerging technologies and a strong ability to accept emerging technologies through the edification of the environment and the study of information technology courses. However, in the face of massive sources of information, how to quickly and accurately find the best relevant and authority information and how to use this information to make decisions and then to create knowledge, are still important issues to be solved (Wang, 2013) [6].

Critical thinking is a cognitive thinking ability that has been highly valued in the western educational circles

represented by the United States since the 1980s. Critical thinking can support the development of information literacy. In the information age, if a person cannot use critical thinking on knowledge and information, it will be difficult for him or her to be objective and fair toward the information. By using critical thinking, we can judge the clarity, correctness, relevance, and importance of information through interpretation, analysis, evaluation, inference and self-regulation, and make decisions and actions based on this. It can be said that critical thinking runs through that whole process of information acquisition, processing and evaluation. It can help people to determine what kind of information is useful, and eliminate personal prejudice (Wang, 2013) [6].

Therefore, cultivation of critical thinking should be paid attention to. According to some experts and scholars, critical thinking skills could be cultivate in different discipline. English Language Learning is no exception. The early research on critical thinking in China was mainly in medical nursing and natural science. However, a void exists in the cultivation of students' critical

thinking in English teaching for traditional EFL teaching merely attaches emphasis to training students' linguistic knowledge and language skills. This paper takes related thesis from 2002 to 2021 included in CNKI as samples, summarizing and analyzing the research status on the cultivation of critical thinking and hoping to provide some help for the follow-up related research.

1.2 A Historical Perspective of Critical Thinking

The bud of critical thinking emerged 2400 ago, which can be traced back to the time of Socrates (Paul, 1992). [5] Socrates introduced his critical thinking method, later to be known as the Socratic Method, or Socratic questioning. Socratic Method, perform three processes: systematic questioning, inductive reasoning, and universal definitions (Overholser, 1993) [4]. In the 20th century, people's understanding of the nature of critical thinking has gradually become clearer. In *How We Think*, Dewey (1933) described critical thinking as reflective thinking. He emphasized the necessity of thinking training and actively advocates reflective thinking education in schools. [1] The most well-known model of critical thinking is the Delphi Research, which was led by Peter Facione in 1987 with 45 experts from America and Canada. In the Delphi Report, Facione (1990) pointed out that critical thinking skills are comprised of interpretation, analysis, inference, evaluation, explanation, and self-regulation. [2]

2 RESEARCH METHOD

The research method used in this paper is the combination of Literature research method, word frequency analysis, co-occurrence matrix analysis, and literary bibliometric analysis. Taking the data collected from China Knowledge Network Infrastructure (CNKI) as samples, SATI3.2 software and SPSS were used to analyze the research status of the cultivation of critical

thinking in China. The data collected was doctoral and master's dissertations on critical thinking research in China, which were published from 2002 to 2021. The visual analysis data provided by CNKI is also analyzed. By using the visualized data quantitatively, it could clearly present the main research context of critical thinking in China.

3 ANALYSIS OF THE RESEARCH STATUS IN CHINA

3.1 Visualized data analysis of CNKI

Compared with the research and development of critical thinking abroad, China started late. According to the CNKI visualized data analysis of doctoral and master's dissertation on critical thinking in China (see Figure 1), number one is the total number of doctoral and master's dissertations, and number two is the number in the discipline of foreign language. In terms of time, the dissertation on critical thinking appeared in 2002, and in terms of quantity, it basically shows an increasing trend year by year, especially from 2012 to 2021. According to the CNKI result, it shows that there are 1124 doctoral and master's dissertations from 2002 to 2021, including 48 doctoral dissertations and 1076 master's dissertations (see the figure 1). Among them, there are 408 dissertations in the discipline of foreign language. There are two reasons for the increasing trend. Firstly, in July 2010, the Ministry of Education of China promulgated the Outline of National Medium and Long-term Education Reform and Development Plan (2010-2020), which clearly pointed out China needs to cultivate innovative talents who should possess critical thinking. Secondly, critical thinking is regarded as 21 century skill. According to the Figure1, the research on critical thinking in the field of language appears in 2008 and shows an increasing trend year by year too. In December 2021, there are 84 dissertations researching on critical thinking in the discipline of foreign language.

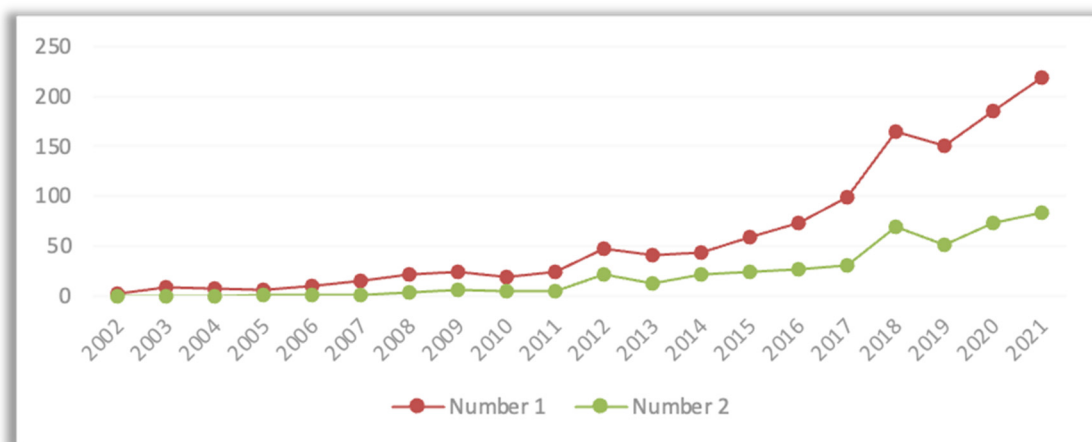


Figure 1 The research number and trend of doctoral and master's dissertation on critical thinking in China

According to the CNKI visualized data analysis of the topic on the critical thinking in China (see Figure 2), the research topics of doctoral and master’s dissertations include: critical thinking, critical thinking disposition, critical thinking training, critical thinking skills, middle school students, subject teaching method, innovative

thinking, empirical study, English reading teaching in high school, English writing, higher order thinking, etc. According to Figure 2, the research on critical thinking in English is mainly about English reading and English writing.

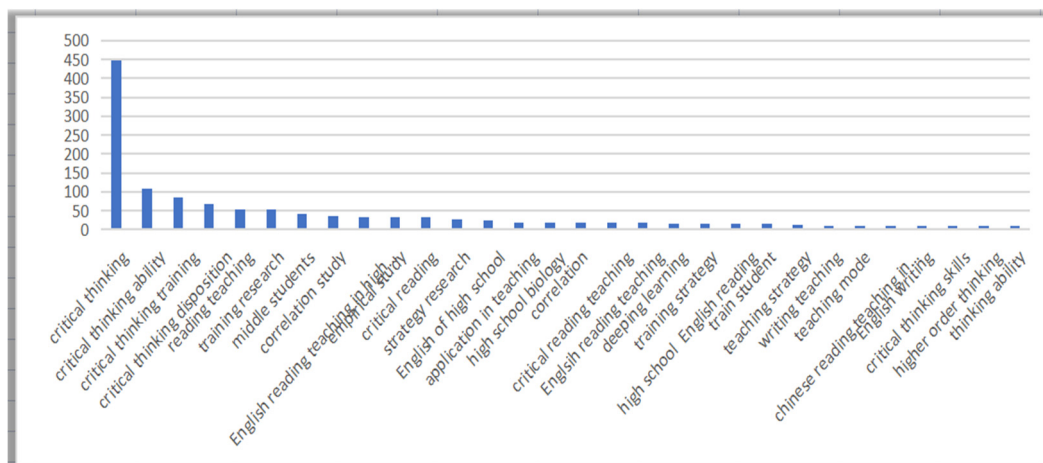


Figure 2 Main topic of doctoral and master’s dissertation on critical thinking in China

3.2 Keyword Extraction and Frequency Statistics

Word frequency analysis is a bibliometric method that can reveal or express the frequency of occurrence in the literature to determine the hot issues and discovery trends in this field. This paper uses keywords as the focus of the word frequency analysis. The data of 499 papers of doctoral and master’s dissertations about the cultivation of critical thinking were imported into SATI 3.2 for keyword frequency analysis, and a total of 258 high-frequency keywords were obtained. Then the keywords with a frequency greater than 2 were manually selected, and the keywords with the same or similar meanings (such as critical thinking, and critical thinking training, innovative thinking and innovation) were merged and finally 27 high-frequency keywords were screened, as shown in Table 1.

The highest-frequency keyword is ‘critical thinking’ which appears 73 times. The second most frequent keyword is ‘critical thinking ability’, which appears 11 times. In the keywords, ‘cultivation’, ‘Education’, ‘teaching reform’, ‘reading instruction’, ‘key competence’, ‘innovative thinking’, ‘training strategy’, ‘English writing’, ‘English teaching’, are all frequency words. According to the frequency keywords, we can conclude that current education attaches great importance to critical thinking ability. Experts and scholars tried to cultivate critical thinking in different strategies. And they focus on the reading and writing instruction. In the English teaching, the hotspot of the research is English writing and English reading.

Table 1 High-frequency keywords

No	Keywords	Frequency
1	Critical thinking	73
2	Critical thinking ability	11
3	Cultivation	6
4	Quality of thinking	5
5	Reading instruction	5
6	Middle school students	4
7	Criticism	4
8	Key competence	4
9	Reflection	3
10	Reading	3
11	Education	3
12	English writing	3
13	Chinese for junior high school students	3

4 CONCLUSION

In the information age, critical thinking is an important skill. From the literature statistics, in recent years, domestic scholars have conducted some research on the development of critical thinking skills, but compared to foreign research, China's research is not mature enough. In addition, the research on critical thinking in English is mainly about English reading and English writing. In the field of oral English, Chinese scholars have done little research on it. It is hoped that more practitioners and researchers will carry out further empirical research in this area and contribute to the reform of English teaching

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