

Analytical Reading as an Effective Model for Enhancing Critical Thinking

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Abstract—This paper studies the analytical reading model aimed at enhancing critical thinking in English Reading class. The study introduces an approach that teachers can take, and uses a text from Extensive Reading 4 as an example to illustrate how to read the text analytically by employing Richard Paul's template "Analyzing the logic of an Article, Essay, or Chapter". And the teaching strategy is evaluated for quality by using Professor Wen Qiufang's "conceptual framework for assessing critical thinking skills". The results indicate that analytical reading has a significant influence on improving the learners' critical thinking.

Keywords—critical thinking; analytical reading; knowledge acquisition

I. INTRODUCTION

Cultivating students' critical thinking is an important goal of higher education. The ability to understand and critically analyze complex and informative texts is an essential requirement of academic excellence as well as a lifelong skill of students. Reading is the foundation of learning in all the universities. To learn well, one must read well. Many foreign practitioners in higher education emphasize the importance of cultivating critical reading. For example, Mohammad RezaHashemi and Afsaneh Ghanizadeh point out that critical discourse analysis has a positive and significant impact on learners' critical thinking ability [1]. Michelle Commeyras believes that critical thinking can be integrated into everyday teaching with ordinary classroom materials [2]. Kate Wilson has found that critical reading pedagogy can be presented in different ways, but developing students' critical tendencies requires, in particular, a sophisticated framework to support their development [3]. The research on the cultivation of critical thinking ability has received due attention and development in the past 20 years in China. Relevant scholars such as Li Ruifang, Wen Qiufang, Huang Yuanshen, Qin Xiubai, Sun Youzhong, Li Liwen, Liu Wei, etc. have all written articles to discuss the significance of cultivating critical thinking ability of English majors, the existing problems and paths of training. Even so, foreign language education and critical thinking ability training in China are still "widely separated". "Foreign language education often separates language acquisition and knowledge acquisition" [4], so that many students often find it difficult to complete basic reading tasks, such as identifying information, making inferences, evaluating arguments, etc., and feel difficult to

effectively internalize and master important textual views and link new ideas with ideas already in mind. At this point, the need to develop critical thinking is urgent. Students need the guidance for developing critical thinking in practice, but the strategy of cultivating students' critical thinking in the curriculum is not clear, and there are few standardized tools that can be used at will. Therefore, this paper focuses on the critical reading strategies of English Reading class and discusses the impact of analytical reading mode on students' critical thinking.

II. DEFINITIONS OF CRITICAL THINKING

The concept of critical thinking has many definitions in modern science. American educator Dewey first interpreted critical thinking as "reflective thinking." Richard Paul defines critical thinking as an art of thinking about thinking, including the stages of analyzing thought, assessing thought, and transforming thought for the better [5]. Brook Noel Moore argues that "critical thinking refers to the careful use of reasoning to determine whether an assertion is true." [6] Vincent Ruggiero believes that the essence of critical thinking is evaluation, which is an inquiry, to search for answers. Critical thinking is the process where we test various opinions and arguments and judge which have advantages and which do not have advantages [7]. According to Stella Cottrell, critical thinking is a complex process of thinking that involves the following techniques and attitudes: identifying other people's positions, arguments and conclusions; evaluating evidence of other points; fairly weighing the opposite arguments and evidence; being able to read implication, seeing through superficial phenomena, identifying false or unfair assumptions; identifying techniques that increase persuasiveness; thinking in a structured, logical, and insightful way; judging whether the argument is valid and fair according to effective evidence and reasonable hypothesis; integrating information to form one's own new position; introducing a viewpoint in a structured, reasoning and persuasive way [8]. As can be seen from these definitions, critical thinking is a skill to discover problems, analyze situations, and select appropriate actions to solve problems and evaluate results. Numerous studies have shown that critical thinking can be taught. Therefore, it is extremely important to choose viable educational technology to achieve the transformation from simple access

to materials to critical understanding, assessment and new practice.

III. ANALYTICAL READING MODE

Based on the above discussion, this study decides to use the analytical reading model aimed at improving critical thinking in English Reading class — Richard Paul's template "Analyzing the Logic of an Article, Essay or Chapter" [9]. The template includes eight basic structures of reasoning, which are the basic elements of thinking. To master the content of knowledge requires understanding the content as a mode of thinking. The deeper the understanding of the thinking mode is, the better the mastery of the knowledge content will be. Being able to skillfully identify the elements of reasoning, one can better understand the problem from the basic component level, and can better identify the defects of thinking. Being able to identify thinking components is the manifestation of an important ability in critical thinking.

A. Analyzing Author's Reasoning

The process of any reasoning consists of eight elements or eight basic structures of thinking. In short, when the author thinks, he starts from a certain standpoint, tries to achieve a certain purpose, and uses some relevant concepts in the process; he focuses on specific problems or arguments, uses information, and draws conclusion based on assumptions. These conclusions have specific significance and consequences. The logical analysis framework is as follows:

- 1) The main PURPOSE of this article is _____.
- 2) The key QUESTION that the author is addressing is _____.
- 3) The most important INFORMATION in this article is _____.
- 4) The main INFERENCES in this article are _____.
- 5) The key CONCEPT(s) we need to understand in this article is (are) _____.
- 6) The main ASSUMPTION(s) underlying the author's thinking is (are) _____.
- 7a) If we accept this line of reasoning (completely or partially), the IMPLICATIONS are _____.
- 7b) If we fail to accept this line of reasoning, the IMPLICATIONS are _____.
- 8) The main POINT(S) OF VIEW presented in this article is (are) _____.

The first step in reading an article is to make clear the author's purpose of writing this article and the goal he is to achieve in this article, then find out the key question that he wants to address, and the important information used or presupposed by the author to support his main argument, that is, the facts, experiences and data he uses to support his conclusion, and determine the most important conclusion

drawn and proposed by the author. It is also important to understand the author's reasoning by identifying the most important concepts and briefly explaining what the author means by using them. At the same time, it is necessary to effectively distinguish hypotheses and conclusions and explore the logical meaning of the author's position and the possible consequences of ignoring the author's reasoning. Finally, it is important to understand what the author focuses on in this article and how the author views it.

B. Evaluating Author's Reasoning

After analyzing the logical structure of an article, each element of the author's reasoning can be assessed from the point of view of intellectual standards: clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness to evaluate the quality of his reasoning. Evaluation includes whether the purpose is clearly and reasonably listed; whether the expression of the question is sufficient, clear and fair; whether the question and purpose are interrelated; whether the author has applied evidence which are relevant to the question and information; whether the information is accurate, directly related to the question; whether the author has mentioned the complexity of the question; whether the author has appropriately elaborated important concepts when necessary; whether the concepts are used rationally; whether the author has raised questions related to the premise and hypothesis; whether the inferences and conclusions made by the author are closely related to the question discussed; whether the author jumps to an unreasonable conclusion or not; whether the author has considered other conclusions on complex issues; whether the author treats relevant ideas or reasoning with prudence; whether the author is prudent and sensitive to the significance and consequences of his or her views and conclusions. The ability to evaluate thinking is one of the basic functions of critical thinking.

In short, in order to master knowledge and construct a deeper knowledge structure, it is necessary to make a clear reflection on the content of learning, inject new vitality into the original thinking, and complete the learning of the content through thinking mode or systematic thinking. Only such learning can help to master the content of knowledge for a long time.

In order to test the effectiveness of analytical reading in English Reading class by using Paul's article logic analysis framework on improving the critical thinking of learners, the author of this paper has designed an experiment to compare two groups of students participating in the experiment. The subjects of the study are two natural classes of sophomore English majors. A total of 56 students are identified as the experimental class receiving training and the control class not receiving training. The number of students, class hours and average scores in the two classes are similar. Among them, 30 are in the experimental class and 26 are in the control class. In the first semester of sophomore year, the average scores of English Reading III in the final exam are 78.1 and 77.8 respectively. The experiment began in early March, 2015 and ended in early May, lasting for a total of 8 weeks. During the experiment, lecturers, teaching materials, teaching content, teaching procedures, teaching schedule

and teaching hours of the two classes are the same, and both classes are received the training of critical writing methods. The only difference is that the experimental class receives training of analytical reading strategies, but the control class is taught in the traditional way. The students in the experimental class and the control class are divided into five groups according to the cooperative learning principle. All the groups are tested twice: before the experiment (pretest) and at the end of the experiment (posttest). Although the difference in the articles selected in the two tests might affect students' reading comprehension to some extent, this effect exists in both the experimental class and the control class. In addition, in order to control variables, the experiment tries to keep the themes and difficulty of the selected articles in the pre-test and post-test equivalent.

C. Conducting Strategy Training

In order to help students to master analytical reading skills and develop their critical thinking ability, we conduct analytical reading strategy training for the experimental class. The training consists of strategy introduction and strategy practice.

1) *Strategy introduction*: The teacher in the classroom should ensure that each student has the printed template of Richard Paul's Analyzing the Logic of an Article, Essay or Chapter. Firstly, the teacher uses PPT to make students clear about the definition of critical thinking, the composition of thinking, the definition of critical thinking in academic field, the characteristics of critical thinking and the standards of evaluating critical thinking. At the same time, students should be clear about the obstacles to the use of critical thinking, and understand more clearly the significance of developing critical thinking skills. Then the teacher introduces the contents of the logical analysis framework one by one, so that students are constantly aware of the purpose and significance of using the framework.

2) *Strategy practice*: Through group activities, the teacher guides students to practice the analytical reading strategies introduced. Take "Genius and the Craftsman", the first unit of *English Extensive Reading4* edited by Liu Naiyin as an example.

- The main purpose of this article is to show that: bringing a good story to the world requires craftsmanship in addition to genius, which is more important.
- The main question addressed by the author is: how a good story comes into being.
- The most important information in the article is that: "a good story is not written but rewritten".
- The main inference of the article is: once working with the intension of excellence becomes a habit, the masterpiece is not a mystery and not an accident, but the byproduct of a way of life.
- The key concepts we need to understand in the article are: genius and craftsman. The author's understanding

of these concepts is that everybody has genius, and it is the creative function of the human mind, which is responsible for creating a story. But what brings the story into the world is craftsmanship, which is not owned by everyone. It must be learned and mastered through practice.

- The main assumption of the author's thinking is: behind every outstanding story, there are painstaking efforts.
- If this reasoning is reasonable, the significance is: no matter what you want to achieve, you need to aim for excellence. Develop your skills to the fullest, constantly improving and perfecting your skills.
- The main point of view presented in this article is that: writing is not taught, but is learned, which should be mastered through continuous hard work.

There is a dedicated team of students responsible for implementing each time. They need to clarify the purpose of text reading in order to extract and internalize the meaning hidden in the text. They need to work together and prepare for the lesson. In the classroom, they perform what they have earnestly prepared through multimedia and guide classmates to participate in discussing the questions. Classroom teaching is student-centered, but teachers play a leading role. In the case of misunderstanding, biased understanding or totally wrong understanding, the teacher should correct it in time and guide the students to understand accurately and logically.

IV. STRATEGY EVALUATION

In order to test the effectiveness of the reading strategy, we use Professor Wen Qiufang's "Critical Thinking Hierarchy Model" [10] as the measurement tool to evaluate. The model judges the criteria for cognitive skills from five dimensions: relevance, clarity, logic, profundity, and flexibility. The relevance here refers to whether readers accurately understand the author's point of view. The clarity refers to whether readers can extract clear ideas from their own opinions. The logic refers to whether readers can demonstrate their arguments logically and well-groundedly. Profundity refers to whether the points of view proposed by readers have a certain height in conception. And flexibility refers to the originality of readers' arguments. Our tests are also divided into five dimensions, each of which accounts for 20% of the total score.

Before the experiment, we conduct the first test (pretest) on the two classes. We select an article from *The Guardian*, and let students read and write an article analysis of this article, which is designed to summarize, analyze, and comment on this article. Procedures are as follows:

- The first part of the article analysis is to summarize the article and its most important points. Use this paragraph to represent the author's argument on his or her terms and quote his or her words where appropriate. The first part of the article analysis does not need any comment.

- The second part is the most important portion of the writing. Students are required to state their own opinions on the author’s argument and cite evidence to support their thoughts. This section needs analysis and comments on the article in connection with the actual situation.
- The final part is just to summarize the conclusion of the article, including students’ views on this conclusion and their final view of the validity of the author’s reasoning.

Test papers are reviewed by two teachers. Each test paper is independently scored by the two teachers. To ensure unified grading standards, group assessment has been carried out before grading. When scoring, according to the above criteria, five scores are given (that is, one score is given for each dimension). The score of each student is the average score given by the two teachers, which is finally converted into a percentage system, thus the first data is obtained.

After an 8-week analysis reading mode training for the experimental class, the second test (posttest) is performed for the two classes. This time we select an article from U.S.A Today, asking students to analyze and comment on this article after reading. The teachers and the criteria are exactly the same, and the second grade data is obtained.

Data statistics of the experimental class and the control class are shown in "Table I" and "Table II":

TABLE I. DESCRIPTION STATISTICS TABLE USED FOR PRE-TEST AND POST-TEST STRATEGY IN EXPERIMENTAL CLASS

Cognitive criteria	pretest	posttest	Mean growth (%)
Relevance	15.84	16.87	1.03
Clarity	15.83	16.76	0.93
Logic	15.84	16.63	0.79
Profoundity	15.52	16.42	0.90
Flexibility	15.45	16.87	1.42
Total	78.48	83.55	5.07

TABLE II. DESCRIPTION STATISTICS TABLE USED FOR PRE-TEST AND POST-TEST STRATEGY IN CONTROL CLASS

Cognitive criteria	pretest	posttest	Mean growth (%)
Relevance	15.81	16.02	0.21
Clarity	15.79	16.03	0.24
Logic	15.80	16.12	0.32
Profoundity	15.46	15.72	0.26
Flexibility	15.41	15.68	0.27
Total	78.27	79.57	1.30

The above data shows that the posttest scores of the experimental class are 5.07% higher than the pretest scores, while that of the control class has only increased by 1.30%. The experimental class has a significant increase, indicating that the analytical reading mode training is conducive to improving the learners' critical thinking ability. In general, students trained in analytical reading mode in the experimental class can quickly enter the author's thinking, accurately grasp the core points, and effectively acquire knowledge. Professor Wen Qiufang has divided the five criteria of speculative ability into two levels. The first level includes relevance, clarity, and logic, while profundity and

flexibility belong to the second level. The second level is the higher standard proposed based on the first level. Because the subjects can correctly grasp the author's intention and accurately understand the author's discussion and the author's conclusions, so in the first part of the analysis article, their overview of the main idea of the article is not only accurate, but also can be clearly expressed in concise language. In the second part, the analysis and the comments on the author's point of view also show a strong logic, and their ideas could be elaborated in an innovative way. The five dimensions of the experimental class show an obvious upward trend, revealing the potential advantages in critical thinking ability.

Although the results of the five dimensions of the control class have been improved, the change range of the results is small, compared with the experimental class. This shows that only the understanding of the text is emphasized but without analytical reading strategy training, it is difficult for students to logically analyze the author's reasoning, grasp the core points of the article, and inevitably there will be serious problems in terms of relevance, clarity and logic. If the author's point of view is not accurately understood or misunderstood, the key question that the author is trying to address cannot be found, the evaluation process can hardly show clarity and logic, and profoundness and flexibility cannot be discussed accordingly. Only when the first level of analysis and evaluation is accurate will there be a sublimation of the second level of innovation. This further proves the importance and effectiveness of analytical reading in English Reading class.

Certainly, mastering a skill requires a process, especially for the mastery of critical reading skill. Our experimental period is relatively short, and students need to practice for a long time from learning analytical reading and related writing knowledge to skillfully applying the skill. This is also the limitation of this study. However, the above experiments have proved to some extent that it is effective to improve students' critical thinking ability by using analytical reading mode in English Reading class

V. CONCLUSION

This paper has studied the analytical reading model aimed at improving students' critical thinking in English Reading class. The study has found that using Richard Paul's Analyzing the Logic of an Article, Essay or Chapter to analyze texts can effectively improve learners' critical thinking ability. This research is a substantial step in exploring the effective ways of teaching English Reading lessons to cultivate students' critical thinking. Undoubtedly, there is no absolute best way to teach critical reading. We can develop different paths to improve critical thinking according to different needs of curriculum and students. Future classroom teaching requires more diverse teaching models. Future research can also explore broader strategies to improve critical thinking based on this research.

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