

A Case Study of Critical Thinking Cultivation Based on Social Cognitive Theory

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Abstract- *How to cultivate critical thinking (CT) is considered as one of the most important goals of Chinese higher education over the years. However, many Chinese scholars have shown their concern on "CT Deficiency" after assessing CT skills of English majors in many universities. Thus, the affecting factors of CT development has been investigated from the perspective of the social cognitive theory by a detailed analysis of an English major with comparatively strong CT ability, attempting to find approaches to CT cultivation. After the qualitative analysis of reflection diaries and several interviews, the findings indicate that CT is shaped by the interaction of the environmental, individual and behavioural factors. Learners can employ the strategies as interpretation, planning and implementation, self-regulation and adjustment, and reflection to facilitate the interaction*

General Terms- *Critical Thinking, Social Cognitive Theory, Qualitative Analysis*

Keywords- *English Major; Reflection Diary; Interview*

1. INTRODUCTION

Critical Thinking (shortened as CT) has drawn the attention internationally and domestically in decades. At abroad, the International Education Committee submitted a report which is called as "Education- Treasure Within" to the UNESCO, which clearly notes that education is supposed to be popularized to enable everyone, especially during their youth through the education, to train an independent and critical ideology and competence (Delors, 1996)[2]. In China, the government has made CT skills one of the main targets of higher education. In Nation Medium and Long-term Plan for Education Reform and Development (2010-2020), it is stated explicitly that one of the core purposes of educational reform and development is to make students to possess the creative spirit of exploration and practical problem-solving competence. However, many Chinese scholars have shown their concern on "CT Deficiency" after assessing CT skills of English majors in many Chinese universities. Huang (1998, 2010) found that English majors are poor in thinking creatively though they might have commanded English communication skills. Now it is known that CT skills are not only teachable but also "learnable" as well (Halpern, 2002)[7]. Therefore, how to improve CT skills of English majors has become a hot issue in recent decades.

Despite of the fruitful researches on CT abilities of English major students, there are still some relatively blank fields, that is, the lack of qualitative research on the influencing

factors of CT development from learners' perspective. Taking the result of WGCTA as an entry point, the exploratory study in this paper has made an effort to offer a new perspective on this issue.

Different from the previous research ideas, which regarded teaching strategies and professional curriculum as the research subject, this study focuses on one English major student, and explores the various factors that have been conducive to or hindered their development of critical thinking by analyzing reflection diaries and interviews from the perspective of Social Cognitive Theory.

2. LITERATURE REVIEW

2.1 Definition of Critical Thinking

The concept of critical thinking has undergone long centuries of development from Socrates to modern-day theorists. Therefore, there are plentiful definitions of critical thinking that there has been no consensus on its definition.

It is John Dewey that proposed the first comprehensive definition in *How We Think* (Dewey, 1933)[2], calling critical thinking as an "active, persistent, and careful consideration of a belief or supposed form of knowledge in light of the grounds which support it and the further conclusions to which it tends (Dewey, 1933)[2].

As it works the way on, in the 1980s Richard W. Paul (1987)[10] refined and expanded the definition by considering meta-cognition as a crucial element. Paul's definition of critical thinking is: disciplined, self-directed thinking which exemplifies the perfection of thinking

appropriate to a specific mode or domain of thinking about any subject, content or problem in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them (Paul, Fisher & Nosich, 1993)[13].

In view of numerous disputes about its definition in the current academic field, the Delphi Project, which is composed of 45 outstanding American or Canadian Philosophers, scientists and educators, submitted a research report (APA, 1990) after a two-year, several-round and systematic research. This report is a consented combination of core CT skills listed by experts from different fields, defining CT as a "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based (Facione, 1990)[5]. This definition, learned widely from so many prestigious scholars' strong points, is widely accepted as a present point.

Table 1. Delphi Panel's Model of Critical Thinking Skills (Facione, 1990a)[5]

CT Skills	Cognitive Skills	Interpretation	Classification; Understanding; Clarification
		Analysis	Analyzing opinions & Supports
		Evaluation	Evaluating opinions & Supports
		Inference	Questioning; Hypothesis proposing
		Explanation	Fact stating; Procedure Explanation
		Self-regulation	Self-evaluation; Self-correction
	Affective Dispositions	Inquisitiveness; Keeness of Mind; Zealous dedication to reason; Hunger or Eagerness for reliable information	

Delphi Panel's Model, which originated from Delphi Project features the classification of CT skills, that is, cognitive skills and affective dispositions. The former can be divided into 6 sub-skills: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Each of these covers several subscales while analysis, evaluation, and inference are core skills. Facione (1990; 2011)[5][4] explained this model with a detailed description (see Table 1). The theory believes that when people are in a reflective, inferential critical thinking process, these skills are supposed to use in turn to make a rational judgment about evidence, background, theory, method which produce knowledge and the standards which

measure knowledge. It puts more emphasis on the point that metacognition and the evaluation someone makes to his own thinking process are essential parts in defining critical thinking.

2.2 CT Development in Self-regulated Learning

While studies in west countries put more emphasis on the CT definitions and assessment tools, studies in China focus more on the efficient ways to develop CT skills. Plenty of researches have been conducted in CT cultivating techniques in EFL (English as a Foreign Language) context, suggesting that CT skills training should be integrated into the writing, speaking and reading classes in Chinese educational practice. However, these studies mainly address this issue theoretically and empirically from the teachers' or trainers' perspective to explore the curriculum design and teaching strategies, few studies have been conducted from the learners' perspective to explore the influence of individual factors on the CT development.



Fig. 1 Social-self Interaction in Achievement Settings

The social cognitive theory, which originated from social learning theory, was proposed by American psychologist Bandura in the 1950s. Bandura (1986) holds the belief that instead of a one-way product of external stimuli, the human behavior is the result of environment, individual characteristics and behavior interacting with each other. Under the perspective of social cognitive theory, individual learning is seen as a process of self-regulation. Zimmerman (2002) defined self-regulation as "a system of conscious personal management that involves the process of guiding one's own thoughts, behaviors, and feelings to reach goals." As is shown in Figure 1, social influences include environmental models, instruction and feedback, while self-influences internalize social influences via goals, self-efficacy, outcome expectations, attributions, progress self-evaluations and self-regulatory progress to

make achievement outcomes presented in goal progress, motivation and learning come into being.

This study presupposes that in the process of CT development, individual influences can be embodied in daily life as individual learning habits, thinking habits while social influences can be presented in-class and out-of-class experiences. Therefore, self-regulation plays a role in the achievement outcomes, since continuous learning and contact with social positive influences can stimulate individuals to develop CT skills.

2.3 Research Questions

Specifically, the following questions are addressed in this study:

- What are the factors affecting the CT development?
- How these factors play a role in the development?
- What are the implications suggested in the findings?

3. METHODOLOGY

3.1 Participants

In order to explore the factors influencing the critical thinking ability of learners, one male junior majored in English in NCEPU was selected as the subject among three participants (labelled as A, B and C) who presented a generally high level of CT ability based on the scores of WGCTA (Watson-Glaser critical thinking appraisal).

Table 2 shows WGCTA scores of these three students, covering 5 sub-abilities. Compared with B and C, A presents a high CT level and keeps a balanced score distribution of each sub-ability. Combined with the evaluation on English language competence, personalities, learning motivation, communication skills, student A has been identified as the subject and the consent form has been signed.

Table 2. The Results of WGCTA

Stu. No.	Skill 1	Skill 2	Skill 3	Skill 4	Skill 5	Total Pts
A	9	15	13	12	9	58
B	7	17	9	9	17	59
C	6	17	16	10	9	58

Note

Skill 1: Inference

Skill 2: Recognition of Assumptions

Skill 3: Deduction

Skill 4: Interpretation

Skill 5: Evaluation of Arguments

3.2 Data Collection

Various methods of data collection have been adopted in this study, involving WGCTA, the reflective diary, interviews to student A and his classmates and friends.

Diverse ways complement each other, making a scientific and all-sided portrayal of his CT development.

WGCTA, developed in 1937 by Goodwin Watson and Edward M. Glaser and modified repeatedly, is an authoritative measurement to test the CT skills of learners. It contains 80 reading passages presenting problems, statements, arguments, and interpretations, each requiring the application of analytic reasoning skills. As illustrated in Table 3.1 above, this assessment tool was employed in this study to screen out the student A as the subject.

15 reflective diaries are gathered under instruction in the duration of 20 days, in which various items are noted down, including everyday experience, students' peer assessment, teacher assessment, the strengths and weaknesses, goals, self-efficacy, attributes and so on.

The interviews were carried out in two stages: a semi-structured interview to the student himself and several structured interviews to his roommates, classmates and friends. The former lasts for 1.5 hours, attempting to obtain the detailed and in-depth information. The interview outline concerns about growth background, campus life, extra-curricular activities, etc. The latter lasts for 20 minutes each to make a complete profile of the learner. teacher assessment, the strengths and weaknesses, goals, self-efficacy, attributes and so on.

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4. DISCUSSION

In the light of the established analytical framework, taking background information, Curriculum Provision, cooperative learning and out-of-class experience as environmental influences, the cognitive competence, affective characters (critical thinking disposition), goal orientation, attribute, and self-efficacy as individual influences, learning strategy and learning achievement as behavior influences, the paper tends to explain way to develop CT.

4.1 The Interpretation Strategy to Process Information

During learning experiences, interpretation strategies are embodied in the way that learners preprocess the data collected. Learners who demonstrate a weak awareness of interpretation strategy tend to refer directly to the original text. By simply copying and pasting, they can "tailor" an online article to an "original". Among college students, this "misappropriation" method has become a common tactic among learners. Although this approach can save them more effort to complete the task, it hinders learners

on the depth of information processing, correspondingly limits the development of their critical thinking ability. By the reflective diaries and interviews, it can be seen that student A consciously avoids the opportunistic strategy mentioned above, but employs the interpretation strategy. He not only collects a variety of information resources but also asks for his own interpretation in "his own language". When collecting data, he purposely uses everyday language to introduce topics, and he also added specially on "the vulgarization explanation" to put the data into understandable information for the main body of refractory terms. He admits that "I adopted plenty of materials in my work, but I seldom copied them completely. I like reading some materials. Although my English writing is not good I still try to write something according to what I read."

4.2 Planning and Implementation

Compared with other students, his ability to plan is outstanding, which is closely relevant with his rich social experiences. As a leader of the Young Volunteers Association and a monitor, he is required to plan and organize many activities and deal with trivial things. Students describe him as a busy person and wonder how he can balance lessons and extracurricular activities within a limited time. Student A's answer was very simple, "Time Management. As long as you plan ahead, it won't be that difficult. I'm not used to procrastination, which makes me very upset, and I used to get things out first." A lot of practice not only gives him the ability to plan effectively, but also produces admirable planning execution skill. Even in the emergency of a debate, he managed to complete the entire process of reviewing, sifting, and preparing the information in a timely manner.

4.3 Self-regulation and Adjustment

To be effective in monitoring the process of thought, it is a prerequisite to master certain standards of evaluation and be aware of these standards. And the most basic work of CT ability is to guide the learner to establish the standard consciousness and to use the standard to make self-assessment and adjustment. A person who has grasped CT skills is likely to describe himself like this, "My specialty is that kind of work requiring independent thinking"; "instead of referring to other notes, I prefer to reading the text myself." and so on (Facione 2011: 11)[4]. Partly, learners' application of the meta-critical thinking strategy comes from textbooks, instructions in the course, and mission requirements after class. The other part depends on the kind of thought monitoring habits they already have. In the author's opinion, it is more important for learners to be able to monitor and adjust themselves in the course of learning, except for the use of meta-critical thinking strategy, which is dominated by teachers.

In the process of data analysis, Student A's ability to regulate and adjust himself is very impressive. Before the meeting, he will carefully read the prepared outline of the material and refer to the examples in details. His

classmates said, "his conference record is always well-organized and the emphasis is clear. He often asks us to make a conclusion together about the last meeting." He reminded obviously in the diary that he was not a rational person but longs for doing his best in a rational way just out of responsibility and integrity, which is also in line with his roommates' description "playing it safe". This typical kind of disposition pushes him to constantly examine, monitor, and reflect himself on subject standards in academic and social life.

4.4 Reflection

Upon the completion of a specific learning task, learners with self-regulation consciousness often review task completion, make an evaluation for their own performance, and summarize successful experiences or failure lessons to provide a reference for the next task. Zimmerman (2002; 68) points out, reflection comprises of self-judgment and self-reaction. The former refers to self-evaluation to one's performances and make casual attributes; the latter refers to reactions to performance outcomes, whether they preserve self-satisfaction and have adaptive or defensive responses to new learning missions. According to Bandura's theory, people with high self-efficacy—that is, those who believe they can perform well—are more likely to view difficult tasks as something to be mastered rather than something to be avoided. This part is devoted to the analysis of the influences of reflection and self-efficacy on the CT ability development.

In all previous reflection diaries of student A, he not only summarized successful experience, but also found the problems hindering the process in a reasonable way with the attempt to put forward the feasible solution. For example, he assessed his composition as "overlapping and disorganized.", and explored the reason as "insufficient in-depth thinking... A lot of ideas are based on the perceptual knowledge, and need to learn how to use the facts to develop my own understanding of certain issues and views." Referring to the "enlightenment" of reflection, he said, since the childhood, parents asked him to be well-behaved all the time, hence he formed the habit of constantly reflecting on his behaviors and speeches, and looked before every leap. The development of CT ability is promoted definitely by the comprehensiveness of reflection and the accuracy of attribution. For another, indecision is not one of the required critical thinking dispositions of a good thinker.

The self-regulation learning views self-efficacy as one of the most important factors in a "personal variable". Students with a strong sense of efficacy will generate a high degree of effort in order to fulfill their promises and blame failure on things which are in command of themselves rather than attribute to external factors. Self-efficacious students also bounce back quickly from defeats, and at last are likely to achieve their personal goals. The fact that student A can make a complete reflection and an appropriate causal attribution represents a high degree of

effort. What predictions people make to the results play a key role in learning because these predictions exercise a great influence on goal setting, the level of effort, and strategy use (Tschannen-Moran & Woolfolk, 2001). This view reflects the importance the social cognitive theory attaches to learners' subjectivity. There are four sources of self-efficacy. (1) Mastery experience. Students' successful experiences boost self-efficacy, while failures erode it. (2) Vicarious experience. Observing a peer succeed at a task can strengthen beliefs in one's own abilities. (3) Verbal persuasion. It means credible communication and feedback. (4) Arousal-Emotional state. Mastery experiences are the most robust source of self-efficacy.

5. CONCLUSION

The affecting factors of CT development has been investigated from the perspective of the social cognitive theory by a detailed analysis of an English major with comparatively strong CT ability, attempting to pump new thoughts into finding approaches to cultivating CT skills. After the qualitative studies of reflection diaries and several interviews were completed, the findings indicate that CT ability is shaped independently by what happens to the students both in and out of the classroom, involving the environmental, individual, and behavioral factors. Learners can employ such strategies as interpretation, planning and implementation, self-regulation and adjustment, and reflection to facilitate the interaction of these factors.

Based on the findings above, implications and suggestions are given to facilitate the CT skill training.

Create an environment where facilitates virtuous Interaction of "Environment - Individual - Behavior". CT development requires an environment conducive to CT training to structure the learning experiences of learners. Institutional and academic program planning processes are more likely to be successful and effective on student learning when the in-class and out-of-class experiences are taken into consideration. Gains in CT appear to be a consequence of a variety of student experiences. Ways must be found to overcome the artificial, organizational bifurcation of our educational delivery systems, since students are more likely to benefit educationally if these units work together, rather than separately, in pursuit of those common goals. The teacher may set respective tasks suitable to the level of learning, observe and adjust the teaching process constantly to cater the needs of learners, who are significantly different in background, traits of character, cognitive ability, learning style, etc. These differences more or less exert some influences on their learning strategies and learning results. Therefore, making a comprehensive and objective judgment on the individual characteristics is the premise of creating conducive environment and providing effective teaching instruction. At the same time, learners must take an active attitude to regulate themselves by setting challenging but feasible achievement goals, playing fully the value of

environmental resources, conducting cooperative learning, making a positive and objective reflection on task completion, etc.

Promote the "Reflective Thinking" habit. In this study the self-regulation tasks and the reflective diary were appreciated by the learner, providing a convenient chance to make self-assessment. By this "forced" chance can he take his scattered thoughts down. In the process of recording, the learners are able to adjust emphasis from the most superficial trivial things (e.g. reasons, results, odd thoughts) to a deeper -level thoughts(e.g. expectations, reflections, attributes, and goals setting) to figure out the existing problems and some adjustments, which guide the learning strategies in the future. The reflective diary is just an externalized means or an impetus for the learners to get rid of their hectic and fragmented thinking patterns. In other words, it is a rigid constraint to get to the first step to being a good thinker who ought to install a few simple daily reflective habits, internalize the critical thinking standards and evaluate himself against the standards.

Since one subject and one-month duration may not be sufficient to evacuate all the factors affecting CT development, future researchers can put more emphasis on case studies with a larger sample size and multiple methods to explore effective ways to enhance CT ability and academic achievement of English majors.

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