

Reasoning Critical Thinking: Is It Born or Made?

Xiaoli Wang

Shantou University, Shantou City, Guangdong Province, China

Huibin Zheng

Shantou University, Shantou City, Guangdong Province, China

Abstract—There is a heated debate over whether critical thinking can be taught in the educational field for the reasons that its definition is seldom comprehensively given and universally accepted by the academia, as well as its value and impacts on the development of learners' critical thinking skills. Focusing on the practical use of critical thinking, the main concern in this paper is whether critical thinking can be taught, particularly in an EFL classroom. The reflection on several conceptions and characteristics of critical thinking will be firstly introduced. When discussing these accounts, the reasons that why it is challenging to teach critical thinking as well as why it can be taught in previous relevant literature will be presented. Then the current situations of critical thinking skills taught in the classroom, taking a Chinese EFL classroom for an example, will be illustrated and finally the reasons why it is popular as a tool in teaching and learning will be discussed.

Index Terms—critical thinking skills, EFL classrooms, teaching and learning

I. INTRODUCTION

As a re-born conception in the 20th century, “critical thinking” was rooted in the vision of Socrates, a prophet who discovered that powerful and highly-positioned persons may not be able to rationally justify their claims to knowledge, and established the significance of asking series of questions to verify assumptions and support reasoning (Paul, Elder, & Bartell 1997). This innovative conception as a basic guidance to the educators in various fields has been developed and split in sophisticated ways to equip learners with high-order thinking to make logically judgements. Critical thinking amongst all ways of thinking has been promoted vigorously in schools, international institutions and universities these days. The content of critical thinking admitted by the majority of researchers, evolving from “Socratic Questions”, consists of three major elements – understanding topics, explaining reasoning and solving problems - by which increases the probability of making wise choices when analysing available alternatives. Although its positive impacts on solving a wide range of social or political problems have been addressed to the public in the forms of academic research papers or relevant online resources, practitioners have still found it difficult to turn theories into practice.

Advocates of educating critical thinking skills in the classroom have claimed its necessity to cultivate critical thinkers' excellence in thought, whereas opponents have proven little outcome produced after the theory has been introduced. Contemporary education policies worldwide have emphasized on instructions of critical thinking skills for integrating to other major knowledge, however, it might be concluded as effortless if cost and benefit are in inverse proportion. It is essential for scholars and policymakers to understand if critical thinking is born naturally as an analytical cognition or acquired after training to determine its value in education.

Focusing on the practical use of critical thinking, the main concern in this paper is whether critical thinking can be taught, particularly in an EFL classroom. The reflection on several conceptions and characteristics of critical thinking will be firstly introduced. When discussing these accounts, the reasons that why it is challenging to teach critical thinking as well as why it can be taught in previous relevant literature will be presented. Then the current situations of critical thinking skills taught in the classroom, taking a Chinese EFL classroom for an example, will be illustrated and finally the reasons why it is popular as a tool in teaching and learning will be discussed.

II. BACKGROUND

A. *The Application of Critical Thinking*

How scholars and researchers define “critical thinking” has long been discussing in academia. Also, the advantages and importance of incorporating critical thinking into other knowledge instruction and skill development for evolving the thinking itself as well as enhancing others have been not only presented in academic papers but also demonstrated in public open lectures. Critical thinking, a generally accepted tool that entails elements of thought implicit in all reasoning, encourages important dialogues with oneself, allowing one to reason well and to adopt reasonable positions (Cederblom & Paulsen, 2006). It ultimately ties to the learner's autonomy development, or strengthen the ability to decide on what learners believe. (Mulnix, 2012). The needs of teaching critical thinking in higher education have been perceived by educators. As Vaughn (2005) posit, “Critical thinking has extremely broad application. Principles and procedures used

to evaluate beliefs in one discipline or issue can be used to assess beliefs in many other arenas.”, and also Connor-Greene and Greene (2002) said, “critical thinking is an essential skill for living in the information age”. Under this circumstance, government and organizations or institutions followed the trends to design policies or curriculums for education reform to foster effective graduates in the global workforce.

Stated in the national curriculum of the United Kingdom released in 2013¹, “critically” reading, understanding and thinking have been required in subjects ranging from English Language to Mathematics for all students in Year 1-11 aging from 5-16. Critical thinking courses on different focuses are offered by universities for local and international students.

In the United States, the calls of teaching critical thinking began in 1983 generating by a report *A Nation At Risk* by the National Commission on Excellence in Education, then lasting for a decade till 1990, most states had initiatives to teach and test students’ critical thinking. While there is no national curriculum in the United States, certain standards recommended by states, school or national association levels are used to guide school instruction. The frameworks of the National Centre on Education and the American Diploma Projects have pointed out the need for students to reason and think critically (Willingham, 2007). Learning outcomes and assessments of critical thinking are written into educational standards to capture multiple themes. SAT is urged by the College Board to better assess students’ critical thinking, and ACT, another key American collegiate examination, directly offers a test of critical thinking for college students. Other popular tests of critical thinking, including Collegiate Learning Assessment+ (CLA+), California Critical Thinking Skills Test (CCTST), and Cornell Critical Thinking Test (CCTT), are operated to offer various dimensions to evaluate the learners’ abilities in critically analysing, reasoning, arguing and evaluating problems.

Learning from the Chinese educational sphere, the report of 10-year national education reform and development released by Ministry of Education in 2010² explicitly emphasizes the combination of learning and thinking, especially inspiring and encouraging students to think independently, creatively and freely, for contributing to the social and science development. Though it is admitted that cultivation of critical thinking underpins different educational interventions that have related to the development of cognitive skills and curriculum, whether its practical value reflected in assessing outcomes could verify the validity of teaching it as a course remains contested, leading to the in-depth thinking in clarifying the ideas of teaching “critical thinking” or “critical thinking skills”.

B. “Critical Thinking” versus “Critical Thinking Skills”

The ambiguous connection between “critical thinking” and “critical thinking skills” is considered another barrier of effective implementation. Thinking itself is a process of cognitive construction to understand matters, make judgements and solve problems, according to the definition given by Cambridge Academic Content Dictionary (2008). Categorized as a type of thinking, critical thinking in Cambridge Advanced Learners Dictionary (2013) is defined as “the process of thinking carefully about a subject or idea, without allowing feelings or opinions to affect you”. Both of the definitions seem alike in a way for concerning about its natural and universal characteristics. On the other hand, a skill refers to “a special ability to do something”, and is teachable as riding a bicycle or swimming. However, it is questioned by theorists and educators that the content to teach learners is “thinking like a scientist” or critical skills to guide them think.

The contested research results have been showed by two groups of researchers – cognitive theorists and educational theorists. Cognitive research argues that the results showed by educational theorists who conducted critical thinking teaching are based on the assumption of equalling “thinking” to “skill”, but, the processes of critical thinking is not a set of skills that can be deployed at any time, in any context (Willingham, 2007). Meanwhile, abundant cognitive research results have further proved that it is not that positive to conclude that critical thinking skills instructions have value in learning outcomes as the evaluation of critical thinking ability relies on unsystematic and subjective criteria to prove its validity by which an unsatisfactory result can be easily generated. Most enthusiast educational theorists see critical thinking as possibly teachable through teaching certain skills to improve thinking. Skills that critical thinkers should possess have been discussed as mainly the abilities to question assumptions, identify false inferences and logical fallacies, and discern bias and opinions from facts and evidence (Brookfield, 2005). Courses integrating domain knowledge to the skills of critical thinking are experimented to both explicitly and implicitly suggest that teaching critical thinking skills improved adult learners’ abilities to critically analyse course content and arguments (Emerson, 2013). Therefore, it is of great significance to discuss further on the fundamental question that whether critical thinking is born or made to give insightful explanations to its educational value.

III. LITERATURE REVIEW

A. *The Development of Critical Thinking Defined*

¹ The national curriculum in England (July, 2013). Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210969/NC_framework_document_-_FINAL.pdf

² The 2010-2020 national education reform and development report in China (July, 2010). Available at: http://www.moe.gov.cn/srcsite/A01/s7048/201007/t20100729_171904.html

Critical thinking is not a new concept as its being presented from 2,500 years ago by the Greek philosopher Socrates who philosophized on a method of probing questioning underlined the importance of analysing and evaluating ideas by providing sufficient evidence (Emerson, 2013), followed by the critical thinker Aristotle who developed the rules of reasoning for thinking critically upon things by drawing inferences. Later till 20th century, William Graham Sumner (1911) published a land-breaking study named *Folkways: A Study of the Sociological Importance of Usages, Manners, Customs, Mores, and Morals*, in which he stressed the importance of critical thinking in life and education:

[Critical thinking is] ... the examination and test of propositions of any kind which are offered for acceptance, in order to find out whether they correspond to reality or not. The critical faculty is a product of education and training...Education is good just so far as it produces well-developed critical faculty...A teacher of any subject, who insists on accuracy and a rational control of all processes and methods, and who holds everything open to unlimited verification and revision, is cultivating that method as a habit in the pupils...Education in the critical faculty is the only education of which it can be truly said that it makes good citizens. (pp. 632-634)

John Dewey (1933), one of the extraordinary educators in the early twentieth century, agreed the idea given by Sumner and established the new idea of reflective thinking to examine human's actual purposes, goals and beliefs. In addition to the previous research, scholars as Ludwig Wittgenstein (1921) and Piaget (1951) sought the deep understanding of critical thinking from divergent perspectives, contributing the development of critical thinking in its pragmatic value.

Later, a substantial attempts to define "*critical thinking*" in the academics have generated a highly-contentious debate about the authority of these definitions. The history of scholarly-defined "critical thinking" was traced back to the mid-late 20th century, by which the term "critical thinking" was introduced by B. Othanel Smith as a process to evaluate the accuracy of information (Emerson, 2013). While in the summer of 1987, Scriven & Paul presented at the 8th Annual International Conference on Critical Thinking and Education Reform³ that:

Critical thinking is the intellectually disciplined process of actively and skilfully conceptualizing, applying, analysing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action...Critical thinking can be seen as having two components: 1) a set of information and belief generating and processing skills, and 2) the habit, based on intellectual commitment, of using those skills to guide behaviour.

Ennis (1991) defined critical thinking roughly means "reasonable, reflective thinking that is focused on deciding what to believe and do", emphasizing reflection, reasonableness, and decision-making. Paul and Elder (2007) followed up by introducing ideas of creative thinking, problem solving and metacognition:

Critical thinking is that mode of thinking - about any subject, content, or problem - in which the thinker improves the quality of his or her thinking by skilfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them...Critical thinking is, in short, self-directed, self-disciplined, self-monitored, and self-corrective thinking...It entails effective communication and problem solving abilities and a commitment to overcome our native egocentrism and sociocentrism. (p. 4)

The later studies on defining critical thinking followed the steps of former research results, then expanded the concept by analysing or examining beliefs and assumptions in the light of the existing perspectives (Emerson, 2013). Halpern (1999) provided a new definition of critical thinking to include the cognitive skills and dispositions as the two components of critical thinking, broadening its conception:

Critical thinking refers to the use of cognitive skills or strategies that increase the probability of a desirable outcome. Critical thinking is purposeful, reasoned, and goal-directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions. Critical thinkers use these skills appropriately, without prompting, and usually with conscious intent, in a variety of settings. That is, they are predisposed to think critically. When we think critically, we are evaluating the outcomes of our thought processes – how good a decision is or how well a problem is solved. (p. 69)

Amongst all defined conceptions, thinking *skills* are embedded into the cognitive thinking concepts, revolving around analysing, evaluating, reasoning and solving problems. The concept of *skills* here refers to concrete instructions that can be used to guide the way of logical thinking. Generally speaking, skills as tools are widely accepted by the academia. Using skills to achieve the ultimate goal of making sound decisions or solving complex problems is inevitably part of the definitions given. These skills should be taught to the learners by the educators for its beneficial to minimize the difficulty associated with critical thinking (Emerson, 2013). The newly-introduced definitions open a window for explaining these skills, in addition to the function of tooling, even though most definitions acknowledge that critical thinking are a set of intellectual virtues possessed by good thinkers, just as Brookfield (2005) suggests that critical thinkers can analyse and examine their own arguments and Dunn et al.(2009) claim that critical thinkers should be able to evaluate issues from different points of view, whereas others consider it as a set of skills following certain criteria to achieve (Vaughn, 2005):

³ Michael Scriven and Richard Paul. (2003). *Defining Critical Thinking*. Available at: <http://www.criticalthinking.org/University/univclass/Defining.html>

Critical thinking [is] the systematic evaluation or formulation of beliefs, or statements, by **rational standards**. Critical thinking is systematic because it involves distinct procedures and methods...And it operates according to rational standards in that beliefs are judged by how well they are supported by reasons.

Seemingly, the argument existed for a more inclusive concept of critical thinking is on whether to foster intellectual virtues of a good thinker or merely reasoning skills (Mulnix, 2012).

Except for concerning *skills* as the basis and focus of achieving critical thinking consisted, others from different perspectives, such as Daniel Willingham (2007), who claims that the processes of critical thinking are intertwined with the content of thought, emphasizing the significance of *prior background knowledge*:

There are specific types of critical thinking that are characteristic of different **subject matters** (Willingham, 2007).

Generally agreed by the academia that establishing a universally-accepted definition of critical thinking is difficult, it indeed gains popularity in education but known as “is in a mystified state because no single definition is widely accepted” (Halonen, 1995) and “lacks clear consensus” (Sukie, 2004). Later on, for better support the instruction and assessment of critical thinking, a consensus definition was given by an expert Delphi Panel of the ‘American Philosophical Association’ (APA; Facione, 1990), trying to incorporating both thinking dispositions characterized as “habits of mind”, and cognitive skills and its sub-skills:

TABLE 1:
CRITICAL THINKING COGNITIVE SKILLS AND SUB-SKILLS (FACIONE, 1990, P. 6)

Skills	Sub-skills
1. Interpretation	categorization, decoding significance, clarifying meaning
2. Analysis	examining ideas, identifying arguments, analysing arguments
3. Evaluation	assessing claims, assessing arguments
4. Inference	querying evidence, conjecturing alternatives, drawing conclusions
5. Explanation	stating results, justifying procedures, presenting arguments
6. Self-regulation	self-examination, self-correction

When defining critical thinking the scholars and researchers centre on its various processes of formulation and skilled-based activities as well as its end goals to achieve, meanwhile, stressing its influential foundations, such as skills and relevant knowledge. There is no denying that understanding *what we think* and *how we think* can result in a more explicit outcome in critically thinking, however, whether the functions and characteristics of critical thinking can enhance a good thinker in reasoning and logic after classroom instructions remains contentious.

B. Debates over Whether Critical Thinking Is Teachable

Critical thinking in a past long period has been considered as applicable only in the subjects of western contexts as its nature of Western thinking (Atkinson, 1997). Regardless its social features, the contested debate over whether it is born or made to assist deeper thinking from divergent perspectives increases educators’ awareness of its value in practice. This question can direct the educators to analyse the possibility of teaching critical thinking in different contexts.

In the research aiming at proving critical thinking processes conducted by Deanna Kuhn, she reported in her book *The Skills of Argument* (1991) that a certain number of people are not capable of critically reasoning, though they can easily follow or produce elementary inferences. Dunn, Halonen and Smith (2009) claim that even students who have skills to think critically do not always use those skills because they are “cognitive misers (Fiske and Taylor, 1984)” who have neither the ability nor motivation to think critically about every issue. John D. Bransford (2000) finds that fifth graders and college students came up with similar results when they are required to create a recovery plan to protect bald eagles from extinction. Tim van Gelder (2005) argues that humans are not naturally critical, and even humans are, it would be still difficult to master ‘it is what cognitive scientists call a ‘higher-order skill’”.

Additionally, many who contend critical thinking is intrinsic in mind claim that it is so hard to teach critical thinking as a set of skills without ‘domain knowledge’ (Willingham, 2008). Mason (2008) admits that critical thinking includes a deep knowledge of oneself, in which intellectual courage and humility are needed. Worse, Weissberg (2013) helps prove that teaching critical thinking is redundant for talented students who already possess a high level of critical mind. Evers (2008) believes that critical thinking does have universal features but its notion of ‘critical skills’ have to come from somewhere, like cultural inputs. Therefore, Josipa Roksa (2012) concludes that the educators cannot improve learners’ criticality on the mental models, a matter of mental maturation processes that appear to have a genetic basis.

Compared to the limited literature contributed to the opposite standpoint, abundant theoretical and empirical work shows positive attitudes towards teaching critical thinking as a set of skill activities. In academia, there is general agreement among critical theorists as to the importance of teaching students’ critical thinking skills in preparation for effective decision-makers. Paul and Elder (2002) directly points out that daily practice like forming the habit of asking oneself is crucial to further intellectual growth and even develop rational capacity. Brookfield (2005) in his book *The power of critical theory for adult learning and teaching* supports the instruction of critical thinking is attempting to introduce adult learners to a critical theory perspective, and education plays a role in teaching adults dispositions needed in necessary situations. Also, teaching criticality could be successful depending on the context involved, among which the learning tasks designed - challenging ideology, contesting hegemony, unmasking power, and so on – are the key

influential elements. Halpern (2009) agrees that “surely something” can be done to enhance critical thinking skills for everyone and every class.

However, the best way to justify the validity of teaching criticality is to put it in practice. As Emerson (2013) points that it is “more convincing” to provide relevant evidence to support that critical thinking can be done, and can be done successfully. Substantial experimental research exists indicating that, overall, teaching critical thinking skills, whether it is explicitly or implicitly, has possibility of improving learners’ thinking. The explicit teaching methodology refers to infusion-teaching, while the implicit one can be the meta-cognitive teaching approach. Willis (1992) concludes that the literature presented appears to favour infusion-teaching approach of combining thinking skills to subject matter equally, in this case learners’ thinking skills are reinforced and retained later. Also, if skills and subject matter are taught concurrently, learners can grab both things at the same time (Beyer 1988). The metacognitive approach proposed is an alternative way to base on the infusion-teaching approach, however, it should be done one part related to self-awareness before instructions, then, following teachers’ guidance, students are capable of understanding their thinking processes for self-awareness and improvement (Wilén and Phillips, 1995).

Experimental research started to incorporate critical thinking components into certain subject related to cognition and thoughtfulness, like psychology. Bensley, Crowe, Bernhardt, Buchker, & Allman (2010) compare the acquisition of critical thinking skills for analysing psychological arguments in different groups which received or not received instructions of critical thinking skills, and summarize that the infused instruction of critical thinking skills has effectively improved the learners’ thinking skills. Similar cases are conducted by Bensley & Haynes (1995), Penningroth, Despain, & Gray (2007), Dunn, Halonen, & Smith (2009), Emerson (2013) and Heijltjes, Gog, & Paas (2014) to prove that teaching critical thinking can explicitly promote learners’ ability in analysing subject matters and arguments which are based on contextualization, while implicitly improving learners’ thinking skills is demonstrated by other researchers (i.e., Gray, 1993; Greenlaw, 2003; Yang, 2008; Heijltjes, Gog, & Paas, 2014). Recently one of the hot content to integrate critical thinking is to the EFL/ESL context. Substantial experiential studies find that an improvement in critical thinking can be achieved via an instruction designed to assess EFL/ESL learners’ abilities in analysing and evaluating arguments (Saiz, Rivas, & Olivares, 2015).

Additionally, a newly-welcomed approach of evaluating critical thinking improvement is based on various assessments. Based on the existing assessments of critical thinking, Liu, Frankel and Roohr (2014) proposed an operational definition for a next-generation critical thinking assessment approach to enhance the measurement of a wide range of critical thinking tests that help learners to reflect on their own thinking and get improved.

It is apparent that the literature related on both sides of teaching criticality strongly takes a firm stance on their claims. Based on the brief literature review, the use of critical thinking in the classrooms of school and university levels is widely acknowledged as an educational outcome, no matter it has positive, negative or even no effects on the learners. Further discussions presented in academic reports or journals now are more likely to link to the context-based and multi-dimensional subject spheres. Overall, the results are inclined to be positive in most theoretical and empirical tests to support the ideas of integrating critical thinking components to a variety of contexts.

IV. DISCUSSION

A. *Critical Thinking in EFL Context*

In the late 1970s, when the communicative approach was introduced to the field of English language teaching (ELT), along with which the term *critical thinking* began to appear in ESL/EFL literature in the 1990s (Day, 2003). Students who study English as their foreign language need a high-level of language proficiency to manage content-based tasks and achieve culture-merging views on diverse problems of politics or society. It is necessary to apply critical thinking in many different ways for students to not only develop their L2 competency but also adjust their discourse style to suit the new situations (Day, 2003). However, requiring students to express their ideas and feeling in L2 four macro-skills needs their abilities to think critically as well as their linguistic skills. Barriers for students to develop their L2 competency as well as critical thinking abilities also include the current education system, the learning environment and their own genetic disorders, let alone their lack in redefining their social identities (Lantolf, 1993; Kramsch & Lam, 1999). For the purpose of cultivating critical thinking, EFL teachers have to motivate students towards *how to think* instead of *what to think* in the language that they are learning to use. If they could be taught to think critically in L2, it will enhance their abilities to read, write and think with clarity in that language (Ponniiah, 2007).

As Davidson and Dunham (1996) mentioned, recent trends in EFL/ESL instructions have stressed the importance of promoting thinking as an integral part of English language teaching, and based on the empirical research conducted, the results implied that critical thinking skills can indeed be taught as part of academic EFL/ESL instruction. Testifying the validity of teaching critical thinking in ESL/EFL context requires both the students’ cognitive skills and linguistic competency which consists of lexico-grammatical competence and socio-cultural competence, in particular, in the level of universities. Since the advent of research into critical thinking development, universities tend to recognize the close connection between language teaching and thinking processes by integrating criticality to ESL/EFL courses that are taught via effective methodologies like content-based approach and metacognitive learning strategies (Davidson and Dunham, 1996; Zare, 2015).

B. *An Integrated Curriculum*

For the main purpose of assessing students' thinking changes before and after the instructions of critical thinking skills, an integrated curriculum that incorporates language teaching, social studies and critical thinking skills has been designed in the Chinese college that I have been working for more than eight years. As Malik and Malik (2011) point out, twelve steps are needed to develop an integrated curriculum. They are as follows:

- (1) Train the staff member
- (2) Decide on scope of integration
- (3) Choose the level of integration
- (4) Plan for both vertical and horizontal integration
- (5) Establish working groups and elucidate their responsibilities
- (6) Determine learning outcomes
- (7) Identify the contents
- (8) Create themes
- (9) Prepare a comprehensive timeline
- (10) Select assessment methods
- (11) Communicate with students and staff
- (12) Commit to re-evaluation and revision

The integrated curriculum is designed for the students with high-intermediate language proficiency. There are three goal settings, including language goal, critical thinking skill goal and breakthrough goal, among which argumentation penetrates the whole course in any types of practices and instructions. Theme-based content is incorporated into the language teaching approach. Six themes related to sociology (i.e. economics, drugs, marriages, recycling, global English and power) require discussion and verbal and written performance and production of the students, especially emphasizing its presence in argumentative formats. Critical thinking skills of identifying logical fallacies and biases as well as weak supporting evidence, understanding whether it is relevant or reliable, are introduced and practised in the format of all four macro-skills, for example, listening to a lecture with logic gaps and write a critique on the problem found. Tests are also designed revolving around the critical thinking skills and language competency via integrating the two subjects rather than separately evaluate each skill. Take the reading section in the examination paper for example. The students are offered an argumentative essay to read for identifying logical fallacies and biases, then provide definitions and explain logic failure in the reading, finally, support the arguments with convincing evidence. The assessments reflect that after one semester's learning, students are better at finding logical problems and avoiding the use of these mistakes through self-reflection. In terms of the positive results of the assessments, well-designed critical thinking exercises indeed improve critical thinking of certain students who receive trainings to some extent.

C. *Advantages of Critical Thinking Skills Instruction in EFL Context*

Based on the course design, before instruction of critical thinking skills, the course requires students to write an essay on a topic, then after the course closes, the same essay on the same topic is re-written as request. Regardless of the structure, the content and language mechanics are improved as investigation through the comparison and contrast between the before-and-after essays, along with the other four in-class essays enforced. From the category of content and clarity, students better comprehend the structure of argumentation for strengthening the positions and arguments. Clear, appropriate, and ample explanation, as well as convincing examples and evidence, are better used to support the points. The number of generalizations and logical fallacies virtually reduces, whereas the number of appropriate transitions used increases. Language abilities are strengthened in the ways of the reduction of grammatical mistakes (fragments, run-ons, plural nouns, subject-verb agreement, etc.), vocabulary misuses and misspellings, and awkward or inappropriate language usages (i.e. Chinglish).

One of the reasons leading to the positive educational outcomes in this case is the content-based instruction incorporating critical thinking skills. Content-based instruction (CBI) has proven to have many merits and possibilities (Snow & Brinton, 1988). In Chinese colleges, recently CBI is regarded as one of the most effective teaching approach to improve learners' language proficiency (Chang, 2007), enhance the subject knowledge (Chang, 2007; Chang et al. 2009), and also develop their cognitive skills and critical thinking skills (Yang et al. 2011). The two obvious advantages I observed from my classes consist of the reality that students become logical when analysing different topics regarding social sensitive issues and much more alerted and cautious when they construct their own ways of communication or delivery.

D. *Limitations on Critical Thinking Skills Instruction in EFL Context*

As in this specific case I conducted in a Chinese college, since most of the productions like writing and speaking happen in the classroom in which limits the possibilities of students to seek for the relevant academic materials in order to support their arguments. On the plus side, this situation enables students to use their real language competency on the basis of their intellectual virtues and existing content knowledge to analyse and even create new answers to solve the problems because sometimes off-class projects are found plagiarized. Take writing essays for example. In-class writings require students to finish their essays within 50 minutes by constructing five paragraphs which consists of one introduction, one conclusion and three body paragraphs. Because of the rush limit, the time leaving for students to think

is not sufficient for them to think in depth or divergently. Also, students who possess different innate skills should be taken into consideration due to their different production in outcomes.

Therefore, the evaluating results based on this essay should be questioned for its validity and effectiveness. Whether students within this time limit could really follow what they learn in the classroom to analyse and establish the sound arguments or just spring out their intelligence innately to create points with certain development supported remains uncertain.

E. Results of Practicing Critical Thinking Skills Instruction in an EFL Classroom

There is no denying that critical thinking is hard to teach as discrete parts of a course because it is not easy to foster them in the typical classroom pedagogy as meta-cognition is hard to be trained; they must be tightly integrated into the reading, writing portions of every course. Learning to think more deeply, to analyse and then synthesize often apparently contradictory materials and views, applying the familiar to the unfamiliar, and evaluating texts are skills that require plenty of practice to learn, much less to master. However, is critical thinking and critical thinking skills equal to be treated in most cases? The confusion between these two concepts have to be cleared up for better understanding the impacts of teaching criticality on foster learners' critical thinking in analysing, inferencing and evaluating arguments.

Based on the classroom I manage, the instruction of critical thinking in the course of EFL context has positive effects on students who master relatively higher level of linguistics when they tend to produce speaking and writing outcomes. However, the assessments designed have limitations on evaluating whether students get improved because of the instructions or just their intellectual merits.

V. CONCLUSION

There can be no conclusive evidence to support whether critical thinking can or cannot be taught since the foregoing sections introduce the tradition critique in critical thinking theory emphasizing this is "an open and unending project" (Brookfield, 2007). However, discussions over this topic in the past decades remain vigorous because of its indicating implications for the educators who show strong positivity on stressing the significance of teaching criticality. Classroom lessons integrated critical thinking skills into other major subjects can be effective alternatives to traditional curriculum, and motivate teachers and students to create a fun and engaging environment to teach and learn together. All are benefits that school and university administrators desire for the students.

This study compares the contradicted point of views on whether critical thinking is teachable, then comes to a conclusion that takes a neutral stance to offer some insights into critical thinking instruction in the classroom and hopefully improve the curriculum design when incorporating critical thinking skills into EFL courses, eventually stimulate the process of EFL educational reform that focuses language acquisition only in China.

REFERENCES

- [1] Atkinson, D. (1997). A Critical Approach to Critical Thinking in TESOL. *TESOL Quarterly*, 31: 71-94.
- [2] Bensley, D. A., Crowe, D. S., Bernhardt, P., Buckner, C., & Allman, A. L. (2010). Teaching and assessing critical thinking skills for argument analysis in psychology. *Teaching of Psychology*, 37(2), 91-96.
- [3] Bensley, D. A., & Haynes, C. (1995). The acquisition of general purpose strategic knowledge for argumentation. *Teaching of Psychology*, 22(1), 41-45.
- [4] Beyer, B. K. (1988). *Developing a Thinking Skills Program*. Boston: Allyn & Bacon.
- [5] Beyer, B. (1991). Practical strategies for the direct teaching of thinking skills. In A. Costa (Ed.), *Developing minds: A resource book for teaching thinking*: Vol. 1 (2nd ed., pp. 274-279). Alexandria: Association for Supervision and Curriculum Development.
- [6] Bransford, J. D. (2000). *How People Learn*. Washington, D. C.: National Academy Press.
- [7] Brookfield, S. D. (2005). *The power of critical theory for adult learning and teaching*. Berkshire, Great Britain: McGraw-Hill.
- [8] Brookfield, S.D. (2007). *The Skillful Teacher: On Technique, Trust and Responsiveness in the Classroom*. San Francisco: Jossey-Bass
- [9] Chang, J.Y. (2007). 《 Gaodengxuexiao yingyuzhuanye yingyujiiaoxuedagang 》 shishixiaoguodedingxingyanjiu---yongyingyukaishe xiangguanzhuanye zhishikeychengdeyingxiangfenxi [A qualitative study on the implementing effect of <English Teaching Syllabus for English Majors >] *Waiyu Yu Waiyu Jiaoxue [Foreign Languages and Their Teaching]*, 9, 36-40.
- [10] Chang, J. Y., & Gao, L. L. (2009). Yingyuzhuanye chushijieduan xitongkaisu "zhutishi"neirongyituokeycheng duixuesheng yingyuyuanfazhandeyingxiang [A study of the impacts that content-based instructions that focuses on topics at the early stage of teaching English majors on learners' English language development]. *Jiangsu Waiyu Jiaoxue Yanjiu [Jiangsu Foreign Language Teaching and Research]*, 1, 19-28.
- [11] Cederblom, J. & Paulsen, D. W. (2006). *Critical reasoning*. 6th Ed. Belmont, CA. Wadsworth Publishing.
- [12] Davidson, B. W., & Dunham, R. L. (1995). Assessing EFL Student Progress in Critical Thinking with the Ennis-Weir Critical Thinking Essay Test. Paper presented at the Annual International Conference of the Japan Association for Language Teaching (21st, Nagoya, Japan, November 5, 1995) and at the International Conference on Critical Thinking and Educational Reform (16th, Rohnert Park, CA, July 18-31, 1996).
- [13] Dawson, R. E. (2000). Critical Thinking, Scientific Thinking, and Everyday Thinking: Metacognition about cognition, *Academic Exchange*, Fall, pp. 76-83.

- [14] Day, R. (2003). Teaching Critical Thinking and Discussion. Paper presented at, The 23rd Annual Thailand TESOL Conference, Bangkok, Thailand.
- [15] Dewey, J. (1933). *How We Think*. Chicago: Henry Regnery.
- [16] Dunn, D. S., Halonen, J.S., & Smith, R. A. (2009). Engaging minds: Introducing best practices in teaching critical thinking in psychology. In D.S. Dunn, J.S. Halonen, & R.A. Smith (Eds.), *Teaching critical thinking in psychology: A handbook of best practices* (pp. 1-8). Hoboken, NJ: Wiley-Blackwell.
- [17] Emerson, M. K. (2013). A Model for Teaching Critical Thinking. Online Submission. Available at: <http://eric.ed.gov/?id=ED540588> (Retrieved on Dec 23, 2015).
- [18] Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. *Educational Leadership*, 43(2), 44-48.
- [19] Ennis, R. H. (1987). A Taxonomy of Critical Thinking Dispositions and Abilities. In J. Baron & R. Sternberg (Eds.), *Teaching Thinking Skills: Theory and Practice* (pp. 9-26). New York: W. H. Freeman & Company.
- [20] Ennis, R. (1994). Critical thinking dispositions: theoretical and practical considerations in their delineation, endorsement, and assessment. Unpublished manuscript, University of Illinois -- Champaign.
- [21] Esterle, J. & Clurman, D. (1993). *Conversations with Critical Thinkers*. San Francisco: The Whitman Institute.
- [22] Facione, P. (1990). *Critical Thinking: A Statement of Expert Consensus -- The Delphi Report*. California: California Academic Press.
- [23] Fiske, S. T., & Taylor, S. E. (1984). *Social Cognition* (1st edn). Reading, MA: Addison-Wesley.
- [24] Guo, H. X., & Tang, X. M. (2009). Weisiweierjiao – jiantan siweijiaoxuede jiazhihefangshi [Teaching for Thinking – Discussions on Value and Methods of Teaching Thinking]. *Jiaoyu Tansuo [Education Exploration]*, 3, 26-28.
- [25] Gray, P. (1993). Immersion approach to critical thinking in psychology. *Teaching of Psychology*, 20(2), 68-74.
- [26] Greenlaw, D. (2003). Teaching critical thinking with electronic discussion. *Journal of Economic Education*, 34(1), 36-52.
- [27] Halpern, D. (1993). Assessing the effectiveness of critical-thinking instruction. *JGE: The Journal of General Education*, 42 (4), 238-254.
- [28] Heijltjes, A., Gog, T. V., & Paas, F. (2014). Improving Students' Critical Thinking: Empirical Support for Explicit Instructions Combined with Practice. *Applied Cognitive Psychology*. Available at: www.wileyonlinelibrary.com (Retrieved on Dec 24, 2015)
- [29] Roksa, J. (2012). *An Analysis of Learning Outcomes of Underrepresented Students at Urban Institutions*. Washington DC: The Council of Independent Colleges.
- [30] Kramsch, C., & Lam, W. S. E. (1999). Textual identities: The importance of being non-native. In G. Braine (Ed.), *Non-native educators in English Language Teaching* (pp. 57-72). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- [31] Kuhn, D. (1991). *The Skills of Argument*. Cambridge: Cambridge University Press.
- [32] Lantolf, J. P. (1993). Sociocultural Theory and the Second Language Classroom: The Lesson of Strategic Interaction. In J. A. Alatis (Ed.), *Strategic Interaction and Language Acquisition: Theory, Practice, and Research* (pp. 220-233). Washington, D.C: Georgetown University Press.
- [33] Liu, O. L., Frankel, L., & Roohr, K. C. (2014). Assessing Critical Thinking in Higher Education: Current State and Directions for Next-Generation Assessment. *ETS Research Report Series*. Vol. 2014, Issue 1, 1-23
- [34] Malik, A., & Malik, R. (2011). Twelve tips for developing an integrated curriculum. *Medical Teacher*, 33(2), 99-104.
- [35] Mason, M. (Ed). (2008). *Critical thinking and learning*. Oxford: Blackwell Publishing.
- [36] Mulnix, J. W. (2012). Thinking Critically about Critical Thinking. *Educational Philosophy and Theory*, 44(5), 464-479.
- [37] Paul, R., Elder, L., & Bartell, T. (1997). A Brief History of the Idea of Critical Thinking, The Critical Thinking Community. Available at: <http://www.criticalthinking.org/pages/critical-thinking-where-to-begin/796> (Retrieved on Dec 23, 2015).
- [38] Paul, R., & Scriven, M. (1987). Critical thinking as defined by the national council for excellence in critical thinking. The 8th Annual International Conference on Critical Thinking and Education Reform.
- [39] Penningroth, S. L., Despain, L. H., & Gray, M. J. (2007). A course designed to improve psychological critical thinking. *Teaching of Psychology*, 34(3), 153-157.
- [40] Piaget, J. (1951). *The Psychology of Intelligence*. London: Routledge and Kegan Paul Ltd.
- [41] Ponniah, R. J. (2007). A Constraint for Integrating Critical Thinking Skills Into Indian ESL Classrooms. *Language in India*. Vol. 7 Issue 7, p2-2. 1p.
- [42] Roksa, J. (2012). *An Analysis of Learning Outcomes of Underrepresented Students at Urban Institutions*. Washington DC: The Council of Independent Colleges.
- [43] Willingham, D. T. (2008). Critical Thinking: Why Is It So Hard to Teach?. *Arts Education Policy Review*, Vol. 109, p21-32.
- [44] Saiz, C., Rivas, S. F., & Olivares, S. (2015). Collaborative learning supported by rubrics improves critical thinking. *Journal of the Scholarship of Teaching and Learning*, Vol. 15, pp. 10 - 19.
- [45] Suskie, L. (2004). *Assessing student learning: A common sense guide*. Bolton, MA: Anker Publishing.
- [46] Snow, M. & Brinton, D. (1988). Content-based language instruction: Investigating the effectiveness of the adjunct model. *TESOL Quarterly*, 22 (4), 533-574.
- [47] Tan, H. P., & Li, Q. W. (1998). Luelun siweide kexunlianxing [A brief discussion on thinking can be taught]. *Huadong shifan daxue xuebao [Journal of East China Normal University]*, 4, 46-57.
- [48] Van Gelder, T. (2005). Teaching Critical Thinking: Some lessons from cognitive science. *College Teaching*, 53, pp. 41-46.
- [49] Vaughn, L. (2005). *The Power of Critical Thinking: Effective reasoning about ordinary and extraordinary claims*. Oxford: Oxford University Press
- [50] Weissberg, R. (2013). Critically Thinking about Critical Thinking. *Academic Questions*, 26, pp.317-328.
- [51] Wilen, W.W. & Phillips, J.A.. (1995). Teaching critical thinking: a metacognitive approach. *Social Education*, 59 (3), 135-138.
- [52] Willingham, D. T. (2007). Can Critical Thinking Be Taught?. *American Educator*, Summer, pp. 8-19.
- [53] Willis, S. (1992). *Teaching Thinking: Curriculum Update*. Alexandria, Virginia: Association of Supervision and Curriculum Development.
- [54] Wittgenstein, L. (1921). *Tractatus Logico-Philosophicus*. New York: Harcourt, Brace & Company, Inc.

- [55] Yang, D. X., & Zhao, Y. P. (2011). Neirongyitushijiaoxue duiyingyuzhuanxuesheng sibiannenglidayingxiang [The Impacts of Content-Based Instructions on Critical Thinking Skills of English Majors] *Waiyu Jiaoxue [Foreign Language Education]*, 5, 61-64.
- [56] Yang, Y. T. C. (2008). A catalyst for teaching critical thinking in a large university class in Taiwan: Asynchronous online discussions with the facilitation of teaching assistants. *Education Technology, Research and Development*, 56(3), 241-264. Doi:10-1007/s11423-007-9054-5.
- [57] Zare, P. (2015). Critical Thinking Skills among EFL/ESL Learners: A Review of Literature, *Language in India*, 15:11,241-257. Available at: <http://www.languageinindia.com/nov2015/zarecriticalthinking.pdf> (Retrieved on Dec 23, 2015).
- [58] Zhi, T. J. (2007) *Weisiwei Erjiao [Teaching For Thinking]*. Beijing: Jiaoyu kexue chubanshe [Educational Science Publishing House].

Xiaoli Wang, Lecturer of Shantou University, has been teaching Chinese EFL learners for more than 8 years. Her research interests include EFL and ESP course curriculum design, teaching evaluation and assessment (in relation to students' learning outcomes) and intercultural communication (mostly China and English-speaking countries).

Huibin Zheng, Lecturer of Shantou University, has been teaching Chinese EFL learners for more than 8 years. Her research interests are in the area of curriculum and instruction, and developing intercultural competence in English language learners.