

The Critical Thinking and Chinese Creative Education

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Abstract

Critical thinking is an important basis for college students' creative ability. In order to develop college students' creative ability and expand creative education, we must pay attention to the cultivation of college students' critical thinking. This paper starts from "Asking of Qian Xuesen", which reveals the present situation why Chinese college students' creativity is blocked. Learning from the universities' education experience of developed European countries, we know that critical thinking is the basis of university's creative education. Then this paper elaborates the philosophical basis and the meaning of critical thinking, the relationship of critical thinking and creativity. And furthermore, it discusses ways and methods of how to cultivate critical thinking in Chinese universities in depth.

Key words: Asking of Qian Xuesen; Critical thinking; Creative education

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1. ASKING OF QIAN XUESEN

On October 30, 2009, Mr. Qian Xuesen passed away all of a sudden. His leaving gave us a great regret, but his leaving also gave us an astonishing question, "why can't our universities always cultivate outstanding talents?" As early as on 30 July, 2005, Mr. Qian Xuesen had advised Premier Wen Jiabao that nowadays' China hasn't developed fully. An important reason for this is that

none of the universities run schools with the purpose of cultivating talents with scientific and creative abilities. Without unique innovative goals, universities won't have outstanding talents. And this is a serious problem.¹ The advices are not only words from the bottom of Mr. Qian, but also the fatal weakness of Chinese higher education. Asking of Qian Xuesen is actually questioning the problems existed in cultivating innovative talents in Chinese higher education, namely the "creative" education problems in higher education. Mr. Qian aimed at pointing out the missing creation of Chinese higher education. Mr. Qian is away, but the serious problem he pointed out has already lifted billows in our society and has become the problem with which our higher education universities have to confront.

Higher education should set "creative" education and the cultivation of creative talents as its goal and responsibility. Taking a broad view of the development of higher education, we can see that the biggest change in modern higher education is it takes knowledge impartment as the center, develops and cultivates students' creative thinking and ability. This move makes creativity as one the natural properties of higher education and therefore creativity has become the vitality of the continuation and development of higher education.

People have the potential to create. Creativity is the original and unique ability to make potentials into reality, whose development is subject to many factors. Taiwan scholars think that there are four systems which affect the development of creativity. They are small system, middle system, external system and big system. (Ye, 2006) Among them, small system refers to personal traits, including personal emotional experience, interests, originality, ethics, and etc. And middle system refers to the environment of family and school. External system refers to the organizational environment during work, including

¹*People's Daily*, 2009, September 5.

education management system, examination system, personnel selection system, assessment system and so on, while big system refers to the social culture and value orientation, whose core is educational concept. Among these four systems, personal traits and the environment of family and school are the main factors that influence the development of creativity.

Therefore, we can learn that in China's higher education, college students' inadequate or missing in creativity is the comprehensive result of the four systems. Educationally speaking, educational concept has occupied the dominant position in Chinese higher education. Under this concept's domination, higher education has become an instrumental behavior in which the subject (educators) transforms the object (educated). College students are no longer students with their own consciousnesses, but the objects who are waited to be "processed" and "shaped" and waited to be instilled by discipline knowledge and ideology by educators. This instrumental educational value ignores students' rationality, ignores the development of creativity of sentient students, which views students as white paper that can be coated casually and strengthens students' personality of attachment, inhibiting them from creating independently and actively. Thus, students are used to passive studying attitudes, memorizing knowledge instead of learning it, and even more replacing the ability of observation, thinking, imagination and creativity. What the instrumental education value pursues is not to provoke creativity level and creative potential of the educated, but to acquire the quantity of knowledge and to promote studying results, which are at the cost of students' learning interests. Loss of interest will lead students' passion for study weak. Moreover, they are more reluctant to pay mental labor in studying and the thinking impulses of creativity therefore losses its power source and carrier. The less the students conduct creativity, the less happy they will be. If students' thoughts of exploring new knowledge can't be supported continuously, their desire for creativity will reduce under their instinctual needs, in which state students can't exceed the original existence and become a more rational belief. In this sense, instrumental educational value damages the power source of students' creativity, which is their desire and belief to create. As for the examination system and evaluation system of the external system, they have already made our students "computers". The students just remember what are imputed without personal opinions and individual thinking. They totally become test machines. What is more, schools judge superior students and inferior students only by their academic results, whose behavior leaves the creative students and problem-solving students away. Being rational, students have to disobey their own wills and use the methods of what the teachers have told them or standard answers to write in the answer sheets because of fearing falling into "inferior students". This is a natural selection that a rational person will do between real

thoughts and high benefits. This problem-solving attitude is to meet the needs of teachers and other authorities, which loses connection of inner creativity. At the same time, under the influence of this appealing psychological attitude, creativity becomes redundant because what matters is no longer to put forward a question but to solve a question during examinations. Even if a student is to put forward a question, he does it in order to "meet the teacher's assigned specific requirement". His question lies on to find out what the teacher likes or how he can meet his teacher's satisfaction both during and after class. (Dewey, 2001) When this behavior based on utility and giving-up becomes a habit, the inner impulses, such as imagination, unconventionality needed by creativity, will gradually lose its necessity and possibility to perform. And the independent and truth-seeking quality which creativity needs to grow can't grow naturally. As for the environment of family and school of the middle system, we are aware enough of the fact that our higher education is in a situation of generally focusing on imparting knowledge other than personality education, skills other than common sense. Both in studying and livelihood, the choice of teachers and parents has substituted that of students'. The management of teachers and parents has substituted that of students'. And the will of teachers and parents have substituted that of students'. Students grow into a situation of no-thoughts and no-ideas. This longstanding common requirements and personality inhibition make students neglect independent thinking and lack the spirit of initiative learning. And they will gradually lose the interest of learning and the unique understanding, questioning and judging abilities. Under such system and mechanism, the integrity and abundance of college students disappear and personal imagination and creation are killed mercilessly. China's current higher education, to some extent, becomes a "making machine", which confines people's thoughts, stifles creation and suppresses individual development.

2. CRITICAL THINKING IS THE BASIS OF CREATIVE EDUCATION OF UNIVERSITY

Aiming at the absence of creativity in China's higher education, the Minister of Education Yuan Guiren also said that "We do have two aspects to intensify, which are the spirit of innovation and the ability of operation. We hope to promote the innovation of education idea, cultivation mode and way of management in order to improve students' innovative consciousnesses and innovative abilities."² How can we solve the problem of deficiency of "creation" in China's higher education and the outcomes brought by students' low creation? On this issue, experts and scholars have different opinions. An

²*Guang Ming Daily*, 2010, September 11.

old Chinese wisdom says that “the stones from other hills may serve to polish the jade of this one.” The accumulated experience from USA and other countries may help us to cope with this problem as to response to “Asking of Qian Xuesen” and how to cultivate or promote college students’ creativity.

In the 1970s, a “critical thinking movement” called the “New Wave” aroused in the USA. This movement is caused by American educators who felt alert to the deficiency of the higher education mode which took knowledge education as its center. At that time, American educators have done a lot of investigations and researches on its higher education, which showed that compared with the past, American students have acquired the latest knowledge and gained enormous information. But on the other hand, American students were obviously incompetent at solving practical problems and this trend continued. It is exactly the default of American higher education that valued knowledge education and lightened the cultivation of thinking ability that caused America lose a large number of social leaders. Under such circumstance, a critical thinking with reflections gradually drew the attention of American educators and evolved into a critical thinking movement which influenced the revolution of American higher education.

Critical thinking gradually became the core education idea of American universities. Then what exactly is critical thinking? What are the relationships between critical thinking and the reform of higher education and the cultivation of college students? Actually, “critical thinking” is a rich and constantly-changing concept, which is based on the absorption of some important philosophers and educators. “Critical” originates from the Greek “kritikos” (Critic), meaning questioning, understanding the meaning of something and the ability to analyze, namely “the ability of identification or judgment”. Philosophers who provided philosophical foundation for critical thinking includes Socrates, Aristotle, Dewey, Pope and so on, among whom Socrates, Dewey and Pope have produced the most direct influence on the critical thinking movement.

Socrates is a famous philosopher and educator in ancient Greece, known as top of the “three ancient Greek wise men”. His “midwifery” education thought has been established for more than two thousand years, having an important status and role in the teaching practice. Socrates’ “spiritual midwifery” starts from analogy and inspiration, using forms of questions and answers to discuss a specific example, step by step, layer upon layer to demolish wrong views and finally find a certain definite way of knowledge. In Socrates’ idea, the most effective method of education is not to tell people the answer, but to ask them questions. Education is not inculcation, but lighting a fire. What matters is the midwife that can help born new ideas. Used in education practice, Socrates’ “spiritual midwifery” has the initiative to mobilize teachers and students.

“Midwifery” not only requires students actively and positively to study, but also demands teachers to guide, encourage and assist students. Just like a delivery process, a baby can’t be given birth if a midwife unilaterally guides the delivery woman or the delivery woman unilaterally produces. Similarly, in the process of education, the lack of any party, no matter the teacher or the student, can’t give birth to “truth”, because in Socrates’ opinion, truth is just like the baby in mother’s womb, hiding in the hearts of everyone. The process of obtaining truth is the process of producing truth. As the representative of pragmatic philosopher, Dewey claims that when education enriches people’s knowledge structure, it should at the same time challenge authority consciousness. Dewey emphasized very much on training students’ ability of “inquiring” and “reflective thinking” to promote studying. From Dewey’s point of view, “reflective thinking” is “to dynamically, continuously and carefully consider any faith or assumed form of knowledge and to support its reason and point to a further conclusion.” Dewey claimed that “education is growth”, which concludes the intelligent growth, social development and moral growth. All the growths are based on constant revisions and explorations on knowledge and experience. (Ji, 1995, pp.105-107) Another philosopher who had an important impact on the critical thinking movement is Karl Popper, who was a famous British philosopher and a famous representative of critical rationalism. Pope believed that the most important spirit contained in human reason was the spirit of criticism and the fundamental method of science was trial-and-error method, namely the method of attempt and error elimination. In Pope’s perspective, science is a pilot that is hard to avoid mistakes. In order to improve the fidelity of scientific knowledge, theory and progress, we must use trial-and-error method to constantly attempt and eliminate errors. Pope thought that we should pay respect to every kind of scientific theory, viewing it a tentative solution for a certain problem. At the same time, we should carry out the “critical reflection”, critically choosing a better theory and eliminating the falsifiable theory. Therefore, the critical attitude is so far “the highest form of rational attitude or rationality.” (Ji, 1995, pp.105-107)

Under the influence of philosophers’ critical thoughts, American elite scholars have gradually realized that critical thinking is the key to open the innovation of science and knowledge from the defect of American higher education and launched a critical thinking movement. According to the Delphi research and plan report on the critical thinking by American Philosophic Society, critical thinking includes three aspects, namely “the courage to criticize” spirit, “critically” thinking ability and perfect personality.

Firstly, critical thinking refers to “the courage to criticize” spirit and the spirit of innovation. Critical thinking is the basis of innovation, which contains critique, the premise of innovation. Critical thinking is a thinking process of questioning and reflection,

whose core feature is active and rational reflection and questioning. Active reflection and questioning is the basis of critical thinking, whose basic belief is that any thought has no immunity to be questioned and any thought has the right to defend it. Critical thinking requires opening thinking and not subjecting to authority when creatively thinking. Use the method of “bold hypothesis and careful verification” in criticism to seek effective solution to the problem. It not only requires the courage to challenge others’ hypothesis and the spirit to demonstrate it, but also requires the courage to challenge your own assumptions and the spirit to demonstrate it. Critical thinking is the premise of innovation, while innovation is the goal and destination of critical thinking. Only with critical thinking can we discover new problems and actively think to provide conditions for innovation. Only with discovering problems and finding unreasonable factors from the established claims and facts can we achieve innovation.

Secondly, critical thinking also includes “critically” thinking ability. The ability of critical thinking is based on transcending the theme of general intelligence values, which contain clarity, accuracy, precision, consistency, relevance, legitimacy and integrity. To achieve these, they have to criticize six core skills of critical thinking, which respectively are interpretation, analysis, evaluation, inference, explanation and self-regulation. These skills are specifically performed as the ability of information collection, data analysis and evidence assessment, the ability of individual claims and logic judgment, the ability of obtaining universal law and assessing logical strength, the ability of correctly and clearly stating deduction and effectively interpreting conclusion and the ability of judging without the interference of original faith and understanding and keeping an open mind. Critical thinking skills help people to clear thinking channel, expand thinking space, and provide thinking method and inspection standard as so to improve thinking efficiency, secure the carry-out of innovative activities which help people to achieve expected innovative results. An ideal critical thinker is often able to skillfully and habitually use these six skills, therefore this ability is the core of creative education. The cultivation of “critically” thinking ability is to cultivate students’ ability of effective understanding, evaluation and knowledge applying. The stronger the critical thinking ability, the stronger creative ability is.

Thirdly, critical thinking is also a combination of personality. Critical thinking inherently contains a kind of human spirit, which is not only a liberating force of education, but also an important resource of personal and public life. Critical thinking not only pays attention to the enhancement of innovation spirit and thinking ability, but also values it as a part of individual personal growth and self-perfection, hoping to improve individual’s living ability and interpersonal skill. Critical thinking is the basis of individual autonomy, the one who is capable of self-manage, self-control and self-indicate. An independent and

healthy person in his personality must have the courage to pursue the truth, be full of curiosity, confidence, and trust, having the personal quality of prudence, sensitivity, flexibility, openness and understanding. A citizen who owns these personalities is a qualified citizen. And they are the basis of rationality and democracy. (Facione, 1990)

Under the promotion of critical thinking movement, critical thinking education in USA has gained strong support from public and governmental departments. In the 1980s, when President Clinton was in Arkansas, he made an act and guided that critical thinking should be added into the national education goal recommended by the National Management Association. After that, in the 1990s, the National 2000 Goal adopted by the Bush Government also included the critical thinking in its education. The Ministry of Education at that time set its goal that at the end of 20th century, critical thinking should open to all the college students. In 2009, President Obama also demanded that school education should pay attention to the cultivation of critical thinking and called for lifting the American measure standard of students, which is “students should not only be capable of writing answers, but also acquire 21st necessary skills, such as problem-solving ability, critical thinking, entrepreneurship and creativity.”³ Critical thinking courses have been established as the basis for all education. The system and curriculum of critical thinking have gradually realized in the countries such USA, Canada, Australia and New Zealand. At present, thousands of universities and colleges across the USA have offered this course, with different versions up to hundreds of textbooks. The United States also set up a Critical Thinking Association which mainly researches “critical thinking”. And the National Critical Thinking Academic Conference also is held annually. All of these have shown that scholars from America and other countries pay a lot attention to critical thinking, which has been the aim of university education and a basic course for cultivating college students’ comprehensive qualities, especially their creative ability.

3. PROMOTE CHINESE UNIVERSITIES’ CREATIVE EDUCATION BY CRITICAL THINKING

To largely carry out critical thinking education has important theoretical and practical significances not only for college students’ ability of discovering and solving problems, their individual all-round development but also for university’s education reform. Dr. Richard Paul, who is the authority internationally recognized, points out that critical thinking is the heart of education reform and education adjustment because it stands at the center of the challenge of 21st century. In 1998, World Conference

³FCT website. The pressing need for critical thinking.

on Higher Education published *Higher Education Declaration Faced in Twenty-first Century: Concept and Action*. The title of its first article is “the mission of education and training is to develop critical thinking and independent attitude”. And the fifth article is “the innovation of education method is critical thinking and creativity”, which means higher education institutions must educate students the ability of critically thinking and analyzing, curriculum reforms have to be made in order to surpass the simple cognitive master of subjects and curriculum must include skills of multicultural criticizing and creatively analyzing. (Wu, 2004) In recent years, many Chinese scholars from education area also began to appeal that we should enhance college students’ cultivation of critical thinking ability.

Critical thinking is an important way to cultivate students’ innovative and creative ability and to promote Chinese university “creative” education. In order to develop college students’ creative ability, we must first cultivate their critical thinking ability, which is an important support for creative ability. On the process of human creative activity, the process of creativity is a process of constant finding and solving problems. During this process, critical thinking permeates in it and supports the whole development of this process. On the one hand, the critical thinking ability drives innovation and promotes the occurrence of innovation activities and ensures it to continue to achieve innovative results, which are the source power and spiritual support of innovation. On the other hand, critical thinking skills help people clear the mind, expand thinking, provide thinking methods, testing standards and methods, so as to improve the efficiency of thinking, effectively protect innovative activities and contribute to expect innovation achievements.

Hence, we can see that critical thinking is essential to innovation. However, China’s college students generally lack the spirit of questioning and the ability of assessing knowledge. In the learning process, they have formed a relatively fixed pattern of thinking, keeping highly consistent with the teachers and books and seeking standard answers to everything. This doesn’t mean that Chinese college students are weak in innovation. Actually, it is our long educational system. Some scholars in China once sharply pointed out that the education of China’s primary school is actually obedient education, the education of middle school is of scores’ education and university education is knowledge instruction. At the 4th Chinese and Foreign Presidents Forum held in Nanjing on May 4, 2010, Richard Levin, the President of Yale University, said that the Chinese cultivation mode is teachers tell the knowledge from books and students memorize it. When it comes to examination, the students just need recalling the knowledge. Thus, this mode is difficult to develop and cultivate students’ innovative ability. At present, the undergraduate education of Chinese universities lack two important factors. One is the lack of the breadth of cross disciplinary,

and the other is the lack of cultivation of critical thinking.⁴ These judges may be partial, but the existed systems intentionally or unintentionally kill students’ ability of critical thinking, such as importing knowledge as the core of traditional education, the current entrance examination system, the corresponding management system and the evaluation criteria of college students. And the consequence is the lack of critical thinking ability leads directly to the low creation. Therefore, in order to enhance college students’ creative ability, we must cultivate their ability of critical thinking first.

Then, through which way and method can we effectively cultivate college students’ ability of critical thinking so as to generally launch creative education in our universities?

Sociologist Sumner (William Graham) once pointed out that if we want the critical thinking habit become a social routine, a method to solve problems, and an intellectual behavior and strength of social members, we must be aware that it is only the product of education and training. According to the experience of some developed countries, there are three main ways to conduct the education and training of critical thinking in universities, which are firstly to set up a special course on critical thinking, secondly to organically combine the cultivation of critical thinking with other subjects and develop students’ critical thinking through conventional classroom teaching, and thirdly to develop critical thinking through contact classes.

To develop students’ creative ability through critical thinking, we must reform the current educational evaluation and examination system to provide systematic guarantee for the enhancement of critical and creative ability of students. The current educational evaluation in China only relies on students’ final exam results. And this kind of examination is based on textbooks, which lead the teaching and learning stay around book knowledge. The consequence is that students only learn what the exam is going to test. Therefore, the cultivation of college students’ critical thinking becomes an empty talk, because such examinations only need students to repeat what they have recited or memorized. Creation is of no need or even is rejected. Therefore, in order to develop students’ critical and creative ability, we must reform the current educational evaluation and examination system. A new educational evaluation and examination system need the combination of evaluation process and teaching process, emphasizing the evaluation of teaching process and combining students’ classroom learning, discussion and homework into teaching evaluation. At the same time, we should flexibly use different evaluation methods on written exams, oral exams, case study, practical operation and thesis writing in view of different disciplines, majors and course natures. We should not only evaluate

⁴*Xin Hua Daily*, 2010, May 4.

students' professional knowledge and skills, but also should put students' self-management ability, learning ability, thinking ability into the contents of evaluation. Furthermore, we should largely encourage students to combine the learned knowledge with major theoretical issues, the hot, difficult problems and mainly focusing on observing students' logic judgment and reasoning ability, and encourage them express independent and creative ideas. In addition, the students shall actively become participants in the new evaluation and examination system, which mean the evaluation subjects are not only teachers, but also students. Educational evaluation is mutual. There are evaluations from teachers to students, students to teachers, students' self-evaluations and mutual evaluations between students. It allows students to put forward agreements or disagreements and even an appeal. Students' involvement in evaluation is a manifestation of educational democratization, which is propitious to improve the scientificity and effectiveness of teaching management in the universities, largely promoting students' learning enthusiasm and self-ability

REFERENCES

- Bohme, D. (2001). *On Creativity*. In D. Hong (Trans.). Shanghai Science and Technology Press.
- Dewey, J. (2001). *Democracy and education*. In C. Wang (Trans.). Beijing: People's Education Press.
- Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction (executive summary)*. The Delphi Report. Millbrae, CA : California Academic Press.
- Fhimah, P., Fhimah, N., & Tiwari, A., et al. (2009). The Critical thinking of Being normal Human phenomenon-perspectives from China and America. *Journal of Beijing University: Edition of Social Science*, (1).
- Freire, P. (2001). *Education on the depressed*. In J. Gu & Y. Zhao, et al. (Trans.). Shanghai, China: Huadong Normal University Press.
- Halpern, D. F. (2006). *Thought and Knowledge: An introduction to critical thinking* (3rd ed.) Hillsdale, N. J. : Lawrence Erlbaum.
- Ji, P. (1995). *A Study on the history of Western modern education schools* (pp.105-107). Beijing Normal University Press.
- Karl, P. (1986). *Assumption and contradiction*. Shanghai Translation Press.
- Karl, P. (1987). *Objective Knowledge*. Shanghai Translation Press.
- Sternberg. (2005). *A handbook on creativity*. In J. Shi (Trans.). Beijing Institute of Technology Press.
- Tracy, B., & Gary, K. (2002). *Critical thinking: A concise guide*. New York: Routledge.
- Wu, H. (2004). *Critical thinking and theoretical innovation and logical teaching*. A Thesis Presented on the 7th Conference of Chinese Logic Academy.
- Ye, Y. Z. (2006). *Creative teaching-the past, present and future*. Taiwan: Psychological Press.