Strengthen Humanities Quality Education of Students from Science and Engineering Colleges

Hao ZHANG¹,a, Ying-Sheng HE²,b, Yi-Feng ZHU¹,c,*

¹Institute of Industrial Catalysis, Zhejiang University of Technology, Hangzhou 310014, China
²Department of Environmental Engineering, Zhejiang University of Technology, Hangzhou 310014, China

a hzhang@zjut.edu.cn, b hys.zjut@vip.126.com, c yifeng@zjut.edu.cn
*Corresponding author

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Abstract. In the new century, the knowledge-based economy is requiring workforce with not only profound professional knowledge but also comprehensive humanities quality. College education in China has a long-term separation of humanities education and science education, especially in science and engineering colleges. The experience of the humanities education in the developed countries provides beneficial inspiration for the reform of college education in China. In this paper, we discuss the perspectives both national and international for renewing the humanities education in China.

Introduction

Under the circumstance of knowledge-based economy, along with the current China industry restructure and the emergence of many new industries, in order to meet the requirement of the new economic developing pattern, employers must possess higher standards of culture, technology and intelligence, and must enhance abilities to adapt market and create values. Dr. Peter Ellyard, the director of Australian commission for the future, proposed that the talents towards the new century must hold “three passports”, first academic passport, second professional passport and third pioneering passport [1]. Cross-century talents must be the professionals with versatile background, which means that both a profound foundation of professional knowledge and a multidisciplinary basis are essential in the future. It is certain that in the new century, a higher quality of talent is expected. Therefore, the education of this new workforce is important and still has a long way to go.

Humanities Education in Developed Countries

Science education and humanities education are the two objectives in modern college education, both of which are mutually connected, complementary and spurring to each other. At the end of 60s, Dr. Eric Ashby, the formal vice-president of University of Cambridge, proposed his thought of “technological humanism”[2]. His educational philosophy is to make every effort to infiltrate humane knowledge into science education, to really make “intellectual systems” communicate with “human systems”. Thus it comes the unifying of “truth seeking” and “goodness purchasing”.

The combination of these two kinds of education concepts is widely adopted by various developed countries in the world, with special emphasis on the proportion of humanities education at universities of science and technology. These countries take several measures to fulfill this aim including: Firstly, strengthening basic education with focus on humanities, such as the universities in United States and Japan, the first and second year in college normally do not branch students’ majors, but encourage them to take basic courses in social science and natural science, therefore to enhance humanities education [3]. Secondly, set the interdisciplinary courses to promote the convergence of science and humanities education. According to statistics, American University has opened more than
500 such courses. In recent years, Oxford University has developed many courses which are combinations of at least two different subjects. These combinational courses accounted for more than one third of its curriculum. Third, open a large number of various optional courses, which generally account for more than 1/3 of the total course in developed countries. For instance, in France, the undergraduate optional course is in the proportion of up to 40%-60%.

Reform of Humanities Education in China

In contrast to these developed countries, China’s college education has a long-term separation of humanities education and science education [4], which are considered as entirely different academic subjects and therefore isolated from each other [5]. This is mainly due to the one-sided philosophy of education in China, which emphasizes that education should focus on training “specialized talents” rather than distract attention to versatile backgrounds [6]. The following is our opinions about integrating science education and humanities education for students from sciences and engineering colleges.

First of all, it is essential that instructors engaged in science and technology education should consciously promote the nature of science and the scientific spirit. Scientific spirit is originated from scientific nature which requires selflessly truth’s seeking and pursuing, including enterprising spirit, devoting spirit, pioneering spirit, skeptical spirit and spirit to serve mankind as well as for the benefit of mankind [wang]. The spirit of science is formed during the process of using scientific methods to explore the mysteries of the universe and pursue the truth. It is a spiritual wealth sublimated from scientific practice by scientific knowledge and methods. In the historical process of sublimation, it has experienced countless hardships and dangers, and baptized by blood and fire. Scientific spirit is more valuable than the abundant material wealth produced by scientific knowledge. It is "the life of science" and is the soul of scientific activities. It is because of this spirit, science has become a sacred cause, and the scientists have devoted themselves to expand and enrich the wealth of mankind with whole hearts. Therefore, instructors engaged in modern science and technology education need to pass on scientific knowledge and the technical method with the spirit of science, so that college students can gradually came to understand and internalize this spirit to their spiritual world while learning knowledge and methods of science. This internalized scientific spirit will not only boost students to absorb the professional knowledge of science and technology, but also enable them to possess proper values, ethics, ambitions and feelings as scientists. It always encourages them to go beyond themselves, and pursue a higher realm of life.

Secondly, scientists and technicians should have a strong sense of social responsibility. Science is a kind of cognitive activity and intellectual activity, and closely related with the future and fate of human social activities. Its greatest social function is to create the foundation and conditions for the mankind to move from the realm of necessity towards the realm of freedom. This sacred mission of science can only be realized by scientists and scientific technicians with strong sense of social responsibility. It is true that science is more and more closely related to society, the trends of both the socialization of science and spreading of science in the society have become increasingly prominent. Science has more and more direct impact on society, the social responsibility of scientists and technical workers is becoming more and more significant. Therefore, it has special meaning to assist students to form a sense of social responsibility. A scientific student with the mind of the rational logic and faith in truth will extend their passion and abilities from scientific level to social level, including concern about the society, participation in the society and impact in the society, which will result awe of society and courage to maintain the social axioms. By contrast, if students majoring in science and engineering are indifferent to social development, it is not only the failure of the science education, but also the disaster of the whole society. Therefore, in the education of science and technology, instructors should always run through the cultivation of students’ sense of social responsibility, which should be the incumbent duty.
Thirdly, it has become more and more important to shape philosophical temperament and spirit of college students. What is philosophical temperament? Albert Einstein said that the external world, independent of human existence, is like a huge mystery, gazing at this world is as attractive to him as it is to be liberated. These mind, emotion and pursuit of Einstein are the philosophy of temperament. One very important aspect of cultivating student with philosophical temperament is weaving the philosophical spirit into the texture of science education.

Last but not the least, the goal of cultivating all-round talents determines the importance of integrating science the science and technology education with personality education. The true, the good and the beautiful in science education can also be used to cultivate students’ personalities. For instance, in order to pursue the truth, selfless devotion in science is required which will cultivate students’ personality of dedication. To explore the vast unknown scientific world, students must be humble and modest which is a very valuable character. Scientific work usually requires spirit of teamwork which will cultivate students to respect and collaborate with each other. Therefore, all these contents in science education will assist students to form characters that not only will benefit science advancement but also themselves development.

Summary

To sum up, in cause of revitalizing humanities spirit and building up human civilization in new century, the education has an inescapable duty to shoulder this important historical mission. However, the reform of education in China is required to constantly promote the fusion of science education and humanities education, and to cultivate talents not only mastered the modern scientific knowledge and skills, but also has the noble moral sentiment. Only such a high degree of social responsibility of personnel can make contribution to human progress and social development.

References