Research on Standardized Construction of Practice Base for Innovation and Entrepreneurship Education

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Abstract. The construction of practice base for innovation and entrepreneurship education forms a vital part of improving comprehensive ability of students in higher education. However, some deviations appeared during the construction in recent years, which affected the teaching quality of colleges and universities as well physical and mental health of students. Therefore, arguments are made on construction of practice base for innovation and entrepreneurship education in this paper from aspects of advanced science and technology, practical ability and business needs, for the purpose of exploring new orientations for the construction.

Introduction

In the context of innovation and entrepreneurship education in China, how to improve comprehensive quality and capacity of students is a difficult problem in front of colleges and universities. According to statistics, the population of new graduates in China is growing year by year, which increases to 749 million in 2015 from 699 million in 2013. All of them are facing huge pressure of further education or employment. Additionally, economic growth of China slows down in recent years. Students can hardly get established in social competition after graduation without improving their comprehensive ability in school. The construction of practice base for innovation and entrepreneurship education points to clear direction for further development of colleges and universities. In these practice bases, students participate in research and development, machining, and other practice projects of enterprises selectively based upon their self-ability and interests, laying steady foundation for stepping to the society in future. However, some disadvantages appeared in these bases recently. For example, some practice bases for innovation and entrepreneurship education are reduced to only working place of students, and some university teachers are bosses here. This phenomenon severely affects the teaching quality of colleges and universities as well physical and mental health of students. As a result, it is very necessary to standardize the construction of practice base for innovation and entrepreneurship education\textsuperscript{1-4}.

Standardized Construction of Practice Base for Innovation and Entrepreneurship Education

(1) Construction from Advanced Science and Technology

Modern science and technology develop fast with each passing day. Some newly learned may become out of date soon. If colleges and universities maintain original teaching mode except for basic subjects, the theories learned by students may become or even have been obsolescent. If the practice base for innovation and entrepreneurship education is constructed based upon advanced science and technology, the students will necessarily learn the up-to-date knowledge. By defining the development direction of science and technology, the self-knowledge level can be improved selectively.

The application of virtual reality technology for underwater escape is taken as an example. Foreign armies always make much account of training on underwater escape ability. They conducted relevant research in as early as 1960's. At present, USA, Russia, Japan, Sweden and some other countries have established perfect training bases of underwater escape, provided with
advanced simulation training system, improved supporting facilities as well as effective technology, approach and manner of underwater escape, which greatly increase the survival probability of underwater escape. USA established excellent underwater escape simulation and training places in Washington's Child Air Force Base, Pensacola Florida Naval Air Station, Alaskay Elsen Air Force Base, and etc. Trainees learn the knowledge about underwater escape, escaping procedures and skills, and become familiar with personal protection devices through the simulation and training system, which will simulate scenes of various water conditions. Underwater escape training in foreign countries mostly adopts the combination of virtual and physical devices. That is to say, some trainings are conducted on physical devices, and others using virtual reality technology. Utilizing various high-end workstations, high performance graphics accelerator card and interactive device, the virtual reality system effectively shield surrounding reality environment by means of sound and vision, making the trainees absolutely submerged in the virtual world. Such technology was firstly proposed by VPL Exploration Co., USA in the middle of 20th century. Later, NASA Ames Space Center initiated to manufacture virtual reality system making use of LCD TV and other devices. Its development has roughly experienced three main stages. Stage I was 50–70’s, the exploration period of virtual reality, marked by American scientist I.E. Sutherland developing the first computer graphics-driven helmet display HMD and head position tracking system in Harvard University in 1968. Stage II was 80–90’s, when the virtual reality technology stepped to application from the laboratory. The landmark event was Michael completing VIEW virtual reality system equipped with data glove and head tracker in 1985. Stage III began from 90’s till now. The virtual reality technology develops from experimental use to the market gradually. Underwater escape simulation and training research of Chinese Army started in 1990’s, later than foreign countries. At present, the research on underwater escape simulation and training is progressing gradually. Chinese Navy has achieved certain results in methods, procedures, techniques, protective devices, simulators, training sites, etc. of the underwater escape simulation and training, and are actively preparing for the construction of training base. CNOOC (China National Offshore Oil Corporation), Shanghai Municipal Public Security Bureau Police Aviation Force, and other organizations have established underwater escape training bases with certain level. All these research and practice results lay a good foundation for the development of underwater escape simulation and training system in China. Additionally, most of these systems in China are physical, requiring long development cycle, complicated composition and higher cost. Virtual escape device similar to those of foreign countries is not reported till now.

It follows that, advanced science and technologies as well as their applications in China still have a large gap with foreign countries. Virtual reality technology has been listed as one of the national key development projects. The students of colleges and universities will face the risk of failure and being eliminated in the society, unless these schools of higher education timely adjust their development policies to make knowledge reserve by basic courses and specialized courses, and explore advanced science and technology using practice base for innovation and entrepreneurship education.

(2) Construction from Practical Ability

Although imparting knowledge predominant, colleges and universities have the theories seriously out of step with practice. Moreover, theories cannot be deepened without the practice as examination means. Machining operation is taken as an example. Students of Machinery Major will learn about the process related knowledge, in which the surface roughness is one of the most basic concepts. Usually the textbook describes the characteristics and shows the picture of surface roughness. But students are unable to judge the exact roughness in factory. That is the theory out of step with practice. The practice base for innovation and entrepreneurship education just provides a safe and comfortable environment for students to exercise the contents described in textbooks. All kinds of unexpected problems will occur in actual machining operation. Solving these problems will improve the students' skills, but also deepening the knowledge.
(3) Construction from Business Needs

In order to construct practice bases from advanced science and technology and practical ability, enterprise cooperation must be introduced in addition to investment of schools. From actual business needs, schools of higher education will help enterprises to solve production problems making use of their own advantages of science and technology. In this process, students are trained in respects of thinking, practice, coordination and organization. Additionally, the present and future development trends of various industries can be understood for the purpose of adjusting instructional objective and teaching program, so as to improve the competitive power of college and university graduates.

Conclusion

In summary, innovation and entrepreneurship education in China develops later than western countries. Therefore, unnecessary detours are inevitable. However, it is believed that, innovation and entrepreneurship education in China will progress to a new stage if we start from actual needs of society, make it our duty to enhance the comprehensive ability of students, and insist on the standardized construction of practice base for innovation and entrepreneurship education.

References


