

Experience of Continuing Engineering Education in China: Retrospect & Prospect

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Abstract

With the rapid and persisting development of economy of China, continuing engineering education becomes more and more flourishing, and the society and people has widely accepted and attached great importance to it. Thus looking back on and learning from the past of continuing engineering education in China and estimating its trend in the future are quite meaningful to boost the development of continuing engineering education in China. this paper describes Experience of Chinese Continuing Engineering Education in past and in Prospect.

I. Rapid development of economy in China and the development of continuing engineering education

At present, there are various forms of continuing engineering education, such as: open universities, self-taught examinations, remote education, short-term training etc. And about 23 million people accept these educations every year. The reasons for the rapid development of continuing engineering education in China are:

1. Development of human resources is boosted by the rapid development of economy, transformation and adjustment of economic structure to knowledge intensive and technology intensive industry. The development of China has entered into a critical

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transforming period with GDP per capita of \$ 1000-3000. The aim of China is to build a society with more eudemonia, justness, harmoniousness, saving and vigor.

2. The government of China has approved several educational laws and development plans to effectively support continuing engineering development. For example: Compendium of the Reform and Development of Education in China, Educational Law of People's Republic of China, the 21st Century Action Plan for Invigorating Education, the 2003-2007 Action Plan for Invigorating Education etc. Under the conception of Big Education and Big Training, the continuing engineering education will have ability construction at the core and carry out Renewal Projects for Specialists' Knowledge and train specialists needed by our country.

3. The speed of the development of education is relatively slow compared with the development of economy, and this is a promoting factor for the development of continuing engineering education.

4. Influence of internationalization of higher education. The educational area where overseas famous universities and training organizations entered most and easiest is continuing engineering education.

5. Construction of lifetime education system and studying society. With the popularization of higher education in China and elevation of its popularization rate, people in China have adopted the concept of lifetime education and know that "Education will change and decide the future life of a person, as well as the development of a country."

In the recent ten years, the development of China's continuing engineering education is rapid. It's obviously difficult to find an accurate and complete statistic data about the nationwide continuing engineering education to fully show this development. But we could catch a glimpse of it from the status of the 2004 development of China's education and the development of Zhejiang University. According to statistic data, about 5.6 million people accepted continuing engineering education in college in 2004.

The development of Zhejiang University's continuing engineering

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education is evident. Aside from keeping and developing traditional education projects (i.e. adult higher education, learners have to take national adult college entrance examination, learn and pass required courses, and only then will they acquire college diploma, and are conferred a degree if they meet the requirement of conferring a degree by Zhejiang University), training at the high-end of continuing engineering education is developing rapid. Especially these years, more and more people take part in the training, about 30 thousand people every year. Combining traditional education projects, there are 60-70 thousand persons accepting continuing engineering education in the university, which is twice as many as general undergraduate students (there are 25 thousand full time undergraduate students).

II. Challenge and the developing trend of China's continuing engineering education

While China's economy is developing rapidly, it also faces several challenges and difficulties; the most crucial problem is to transform the awesome population burden into the advantage of human resources. Comparatively, the resources of higher education in China are still insufficient. There are totally around 2500 universities in China, one for every 500 thousand persons on average. Persons who have accepted higher education account for only 5% of total population. According to incomplete statistic data, 3/4 specialists' educational levels are lower than junior college education and their creative abilities are relatively inadequate. Thus the task of China's continuing engineering education is to elevate the integral quality and creativity of Chinese people and to face positively the challenge of technology revolution and human resource competition.

Considering the developing status of China's society, economy and higher education, continuing engineering education in China will develop as follows:

1. In response to the need of continuing engineering education by the rapid development of society, China's continuing engineering education will enter

into a prosperous developing period and result in a large training market of continuing engineering education.

2. Knowledge renewal, technology creativity, change of productive mode, variance of social mode and educational concept, and lifetime continuing education have become an important trend.

3. The steady and favorable development of China's national power are transforming people's confidence in the nation into the confidence in the quality of their lives, and accepting high quality continuing engineering education has become a main stream.

4. The trend of internationalization, international and regional cooperation of China's continuing engineering education.

5. 'Informationalization' and diversification of the method of continuing engineering education.

6. Universities' s active propelling of continuing engineering education out of their consideration of the development of the country and themselves.

7. Universities' increased cooperation with corporations.

III. Actuality and aim of Zhejiang University's continuing engineering education

(I) Actuality

Continuing engineering education starts from 1957, mainly focusing on undergraduate or higher level continuing engineering education.

At present, there are about 30 thousand persons accepting short-term training at school annually, and there are more than 30 thousand students accepting other forms of non-full-time or partly-full-time education, mainly open universities,

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and acquiring educational diploma or degree. In Self-taught examination, which is of China's educational characteristic, about 300 thousand students applied to take exams in our university in 2004.

(II) Aim of Development

1. Further developing China's continuing engineering education China is a developing country with a large population, unbalanced development and a large gap of education level with developed countries. Based on the general actuality of China's present higher education and human resources, first of all, we have to construct a creative system for the country, energetically develop higher education, cultivate large numbers of high level creative talents, elevate the total creative ability of China. Thus the task of China's continuing engineering education is quite arduous. As a famous university, Zhejiang University shall further develop China's continuing engineering education.

2. Integrating the characteristic of development of regional economy, to provide private corporations with continuing engineering education Zhejiang Province is one of the earliest opening-up provinces and is also one of the most developed regions in China. According to the economic structure of Zhejiang's economy, private economy accounts for more than 95% in the total industrial production value in Zhejiang, and 45% in the total production value. And at present total capital of Zhejiang's private corporations are still increasing and their scales and strengths are also swelling. Meanwhile, in order to survive and develop in the furious market competition, more and more private corporations are actively adopting brand strategy, voluntarily regulate themselves with international standard, and these corporations have acquired relatively high international status. Of 50 most influential private corporations in China in 2005, 26 are in Zhejiang, accounting for 52%.

It's one of our efforts to carry out private corporation carving out, training of creative talents and professional technology training. Zhejiang University and Zhejiang province hold a cooperative summit of Technology, Talents and Development in November 2004, to explore the problems of industrialization of research results and construction of the platform of continuing engineering

education with local government, etc. Zhejiang University, Zhejiang government and corporations have joined together to carry out the Plan of Growth of Zhejiang's Mid-size and Small-size Corporations. Managers of the 100 best mid-size corporations with fast development and the 100 best corporations with most developing potential will be trained by Zhejiang University, funded by the Government, to elevate the tactic ideation of managers, incorporate strategy and international view and let managerial sciences and technology be the productivity of corporations. In March 2005, the first higher study & research class of business administration for mid-size and small developing corporations in Zhejiang was held in Zhejiang University. 50 directors or general managers of evaluated mid-size or small developing corporations will study in Zhejiang University at weekend for one and a half years. This plan is now determined to have a term of three years.

3. Building a cooperative platform of continuing engineering education among nations, regions and universities.

Chinese government encourages international cooperation in higher education and career education, and encourages cooperation between Chinese higher educational organization and overseas famous higher educational organization. In September 2003, Educational Department issued the statutes of international cooperative education, the most important principle of which is to expand the opening-up, bring in high-quality educational resources, manage properly and ensure every party's legal rights. Because of its agile running mode of continuing engineering education, less policy limits and urgent social need, as well as technology's advantage, the market of continuing engineering education will develop faster.

Zhejiang University has carried out several international and regional works in the area of continuing engineering education. For example: cooperating with several universities in Hongkong, Macao, Taiwan, etc. Adult Educational Institute, Zhejiang University, was founded in 2000, with the cooperation of Germany National Adult Educational Institute, to focus on the

continuing engineering education and comparing the educational status of two countries to probe the cooperative area. Now, Comparison of Adult Education between China and Germany has been published bilingually. Our university is endeavoring to enlarge the scope of cooperation with international famous universities and training organizations.

4. Building evaluation system for continuing engineering education. With the increase of continuing educational organization in China, aside from universities, governments or corporations may have their continuing educational training organizations. As the education and training goes into market, several training organizations are funded and registered personally, and thus it is needed to build a relatively uniform standard system to regulate these activities. So we are doing researches of Evaluation and Estimation System of Continuing Educational Organization, to find a scientific way through research, on the one hand to propel the fast and healthy development of China's continuing engineering education, and on the other to ensure our educational qualities and levels.