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Research on higher technical education meets the demands for talents in equipment manufacturing industry in China

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By considering the current situation of talents in equipment manufacturing, the development trend, and the demands for talents in equipment manufacturing industry in China, this paper will represent the achievements which have been attained in higher technical education in recent years. Meanwhile, some problems, such as low innovative and practical abilities in talents cultivating still exist. After analyzing these situations, the conclusions were deduced: educational administrators, relevant industrial enterprises and technical education colleges should cooperate in order to promote the reformation and development of higher technical education in a deep insight.

Key words: Equipment manufacturing, demands for talents, higher technical education.

INTRODUCTION

Higher technical education plays an important role in cultivating millions technicians. The talents quality influences the manufacturing development, even national competitiveness. So this paper will discuss how China’s higher technical education meets the demands for talents in equipment manufacturing industry.

The equipment manufacturing industry is a strategic industry which provides technical equipment for other industries. It is one of the engines for China’s economic growth. In recent years the quantity, structure, quality and cultivating mechanism of manpower resource in China’s equipment manufacturing industry show a good momentum of development. Nevertheless, they still can not meet the need from industry development. So the new situations bring new challenges for talents cultivating.

STATUS AND PROBLEMS

With the continuous development of equipment manufacturing industry, the quantity of talents increases reposefully. Nowadays, the quantity of talents in equipment manufacturing industry is about 17.97 millions. Since 2005 till now, the quantity of talents increases with the average annual rate of 3% [Jizhen, 2008]. At the mean time, the quality of human resource improves gradually. More and more talents in this area have the bachelor degree, even master degree.

However, comparing with the demands of equipment manufacturing industry, high level and creative talents are woefully inadequate. The rate of high level talents in workers is greatly low. Skilled technicians can meet the practical needs. The graduates can not correspond with the industry’s requirements and standard. There exists a big gap between the programs provided by colleges and practical needs from manufacturing industry. Especially the graduates’ operational capacities and skills of problem solving should be promoted.

The current situation

In the perspective of global view, equipment manufacturing industry has entered a high-speed development period. And it shows the statement of globalization, innovation, informatization [Scherer, 1980]. Affected by financial crisis, developed countries have changed their development steps, and began to implement”reindustrialization” by focusing on new energy
resources, advanced material, electronic information, energy saving and environmental protection and other emerging industries [Jingyan, 2009]. This puts pressure especially on developing countries.

In the perspective of domestic view, after many years development, China now have become a industrial system which is complete in range, large scale equipment manufacturing industries country. But China’s manufacturing industries are large, not strong, and the innovation abilities are weak. Even so, China is now at the period of boosting domestic demand, fast infrastructure construction, and transformation and upgrading of industries. So there are huge market demands for developed equipment. This provides the opportunities for equipment manufacturing industries to promote core competitiveness [Maclaurin, 1987].

The talent-demanded orientation

Because of the development demands of China’s manufacturing industries, several kinds of talents will be desired in future years in China.

The demands for high-level qualified technical personnel. This sort of talents is severe needed, because we need them promote their self-innovation abilities and core competitiveness, and break through some frontier technologies, basic technologies and key technologies.

The demands for talents of special fields. There are great gaps between China and many developed countries in CNC machine, automatic production line and other high-end manufacturing facilities and technologies. So we extremely need the talents in these fields.

The demands for inter-disciplinary management talents. To realize the upgrade of China’s manufacturing industries, the inter-disciplinary management talents who not only know electronics, computer related to equipment manufacturing industries, but also are good at manage those large-scale, high-level professional companies.

The demands for professional technical personnel. The development of modern equipment manufacturing industries causes the workers should be more technical so that they can follow the new technical requirements and space.

HIGHER TECHNICAL EDUCATION’S CONTRIBUTION TO EQUIPMENT MANUFACTURING INDUSTRIES AND ITS PROBLEMS

Facing the demands for qualified technical personnel, we should train more reserve talents. In this process, higher technical education plays a very important role. To some extent, China's equipment manufacturing industries can not development so well if there is no the significant contribution from higher technical education.

Differing greatly from those of Euro-American countries, higher technical education accounts for a large proportion in China's higher education system. As a whole, after years of development, higher technical education has been built an integrated system which can sustain the talents demands for the development of China's manufacturing industries [Shulian, 2009]. Under the leadership of the old generation, the new generation engineers and technicians have grown up. They play an important role in notable national major construction projects, for example, Manned Spaceship, Three Gorges Project, Qinghai-Tibet Railway, Chang E project and so on.

In the meanwhile, there exist many problems in higher technical education, which will probably hinder the healthy development of China’s manufacturing industries.

The first problem is talents cultivation mode in higher technical education is fairly single. There are troubles for many technical institutes to cultivate inter-disciplinary talents. Their programs system and instructional methods are lack of diversity and flexibility. The assimilation trend of talents cultivation mode is very serious.

The second problem is practice teaching is quite weak in many technical institutes. Equipment manufacturing industries are mostly technology-intensed enterprises. So the standard for talents’ practice abilities is very high. But in many current technical institutes, the scientificalness is paid more attention, and the practice abilities are despised.

The third problem is the industry-university research cooperation in technical institutes is not well implemented. For many colleges, the connection with enterprises is quite loose. The students cannot get enough internship opportunities. So they need more time to accommodate their jobs once graduated. All of these will affect the talents’ technical abilities and spirit of innovation. And in the long run it will hurt the healthy development of equipment manufacturing industries. So there exist so many problems. What should technical institutes do to solve these problems?

CONCLUSIONS AND SUGGESTIONS

To solve the above problems, we cannot accomplish the whole task at one stroke. So we should make overall plans and take all factors into consideration in order to further the healthy development of higher technical education, and finally, the sufficient supply of technicians.

The administrators should enlarge financial investment and set up scientific evaluation mechanism. Generally, the construction cycle of technology-related programs of equipment manufacturing is longer than other programs. And its cost is very high. It is hard to attract external investment through market mechanism. At the same time, the operation of technology-related programs needs huge infusion of funds, or it will affect the quality of teaching, and it will finally bring about the downgrade of talents
cultivating. So higher education administrative sectors of government should enlarge financial investment on higher technical education.

Furthermore, the sightless pursuit for great scale and comprehensiveness in many colleges arises in recent ten years. The situation gets worse in some places. By analyzing the reason, we think it relates to there is only one evaluation mechanism which can be applied to colleges that are different types, different condition and different level. In many college rankings, the focus is put on the college scale, faculty scale, articles, doctoral program quantity. This caused become a negative guidance to colleges, so that many colleges pay too much attention to these evaluation index. So we should set up a set of evaluation mechanism that classifies levels and types. On by this, the characters of higher technical colleges can come true.

More equipment manufacturing enterprises should be gotten involved in higher technical education so that college-enterprise integration can happen more times.

The graduates from technical colleges, which compared to excellent technicians, are just semi-finished products. It is definitely true especially to equipment manufacturing enterprises, because the graduates need several years to adapt industry position. So the administrative departments of equipment manufacturing industries should encourage college-enterprise integration by tax preference and graduates employment, and even can require some enterprises to assume certain duties of college-enterprise integration[6]. In addition, there are many measures which can promote the integration between technical colleges and equipment manufacturing enterprises. For example, more equipment manufacturing get involved in the key construction programs, and more students get involved in technical innovation in enterprises, and so on.

Internal reform of higher technical colleges should carried out so as to tag the latest progress of equipment manufacturing industries.

For technical colleges, the development orientation must be on the basis of the progress of economics and society development, and their own historical basis and current conditions. The development speed of equipment manufacturing industries go faster and faster. And modern technology changes with each passing day. So the programs related to equipment manufacturing should be adjusted in season. Besides, China’s higher technical colleges should be more international. Higher technical education in many Euro-American countries is well developed. So China’s higher technical colleges would learn a lot from them.

REFERENCES


