

Curriculum Development of Professional Talent of Mechanical Equipment Maintenance in Vocational School ---Based on Demands of 63 Companies Tianjin

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ABSTRACT: It is more important for vocational school to cultivate talents in process of training students' skills. The key to improve the quality of vocational school is to develop curriculum to meet the demands of the enterprise 'skilled personnel. This research show demands of skilled personnel in mechanical equipment maintenance professional by survey of 63 enterprises in Tianjin. It provides the basis for curriculum development of professional mechanical equipment maintenance.

KEYWORD: demands of skilled personnel; curriculum development; vocational school

1 INTRODUCTION

Vocational school is an important part of our education system. It is playing a very important role both in improving national quality and strengthening national industry development. It is the crucial factor for building a harmonious society and constructing human resources power.

Under the push degree of the central government and local governments since the founding of new China, a historic breakthrough took place in vocational education. Vocational schools cultivate a large number of high-quality workers and skilled personnel to serve people and society indeed. These skilled talents made an important contribution to the sustained and rapid development of our country. It fully shows vocational schools joint efforts of the society from all walks of life, specially industry and enterprises to improve their quality; therefore, it is approved in great development by the public.

However, the situation changed greatly with the development of the economy. At present, China's economic development has entered a new historical stage. Industrial development puts forward new requirements for high-quality workers and skilled personnel. But, vocational school is still the bottleneck of the national education system in China in many aspects, such as the quality of talents, professional structure, etc. If the curriculum of training skilled personnel does not any adjust, it cannot meet the demands of economic and social development very well.

2 THE PURPOSE OF THIS RESEARCH

In order to make mechanical equipment maintenance professional training of talents better adapted to the demands of China's development of society and economy to promote employment of graduate, vocational schools should know information about demands of companies under the new situation and adjust its training scheme, and the curriculum need to be further adjusted according to the requirements of industry. Vocational schools should:

1. Get information about demand of professional talents in industry and company;
2. Analyze knowledge and ability structure of mechanical equipment maintenance skilled talents based on the questionnaire and interviews;
3. Understand the enterprise evaluation of graduates;
4. Reform course structure and course content in vocational school to promote the quality and quantity in professional training of talents.

3 THE RESEARCH CONTENT

The research contents of the mechanical maintenance professional are as follows:

1. To understand the work status of the mechanical maintenance graduates in enterprises;
2. The enterprise needs to provide professional jobs;
3. To improve graduates working ability.

Research of enterprise' demands are as follows:

1. The talents type that enterprise need;
2. The enterprise staff training requirements and curriculum content.

4 THE RESEARCH METHOD

Considering the imbalanced economic development in different regions, this research selected 63 enterprises in Tianjin as the object. The organic processing operation in all these enterprises requires quite a number of mechanical maintenance technical workers which can be further divided into three different levels: intermediate workers, senior workers and technicians. There are many of these enterprises involved in school-enterprise cooperation, which means they are willing to hire the vocational graduates and launch on-the-job training for their employees, all the above mentioned factors make the research more purposeful. These 63 enterprises belong to different type of industries such as: electronic, machinery processing, metal casting, building materials, rubber, oil chemical, communication technology, auto accessories, textile, steel, electric power, mould and so on.

The researchers draw up research outline and questionnaire in advance, and then offer the interviewers with professional training in order to guarantee the quality of this research. The survey totally gets access to 63 enterprises by on-site interviews and questionnaire. The researchers issued 1053 questionnaires of professional research, 1003 effective questionnaires were taken back.

5 ANALYSIS OF THE RESULTS

5.1 *Mechanical maintenance professional graduates employment analysis*

Main employments of mechanical maintenance professional graduates are in the area of large industrial park in Tianjin, Binhai New Area in particular.

5.1.1 *The work unit*

Enterprise is the main channel for mechanical maintenance professional graduate' employment, which relates to state-owned enterprises, private enterprises, joint-stock enterprises and oversea-capital enterprises, including 21 equipment manufacturing companies, 2 new energy companies, 4 automobile manufacturing companies, 2 food processing equipment companies, 6 iron & steel enterprises, 18 mechanical & electrical equipment enterprises, 5 engineering and construction enterprises. 1 ship manufacturing company, 2 petroleum equipment manufacturing companies, 1 textiles, 1 medicine enterprise, 1 pharmaceutical

enterprise, 2 medical equipment manufacturing enterprises.

Industry distribution profiles as shown in the figure below:

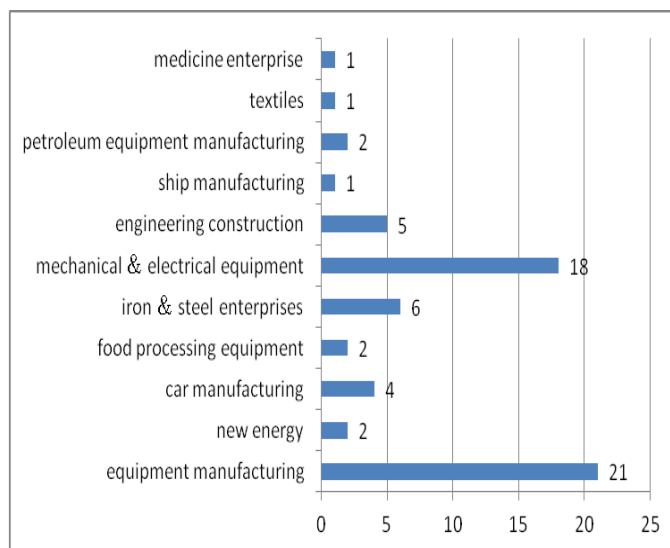


Figure 1. Distribution enterprise field

5.2 *The nature of work*

Nearly 86% Vocational school graduates who engaged in operating machine on the assembly line. They have not only diploma but also senior skilled worker certificate or intermediate class skills worker certificate. About 10% of them engaged in maintenance and 4% of them engaged in management. It shows us clearly from the survey that the longer years of the employees have been trained, the richer experience they have in the industry, the more opportunities they will get to engaged in technical work. The average age of skilled workers is 26 and the average monthly salary is nearly 3000 RMB.

5.2.1 *Professional match*

The enterprises we visited to mainly provide for positions of mechanical equipment installation maintenance, fitter, machine maintenance, maintenance, mechanical and electrical integration equipment maintenance, and inspection measurement and so on. These are good cooperation between vocational school and enterprise. The rate of position matching professional is very high, up to 90%. That position matching professional counterparty takes smaller rate, 10%, almost no professional is mismatch.

5.3 *The demand for professional knowledge structure of enterprise staff*

The majority of companies believe that literature knowledge, professional knowledge, practical ability and Characteristics of individuals are very important.

Courses should be more systematic, detailed, and straightforward; it is able to give trainee the latest information in the field of view. Figure 2 responses to common demand of common course.

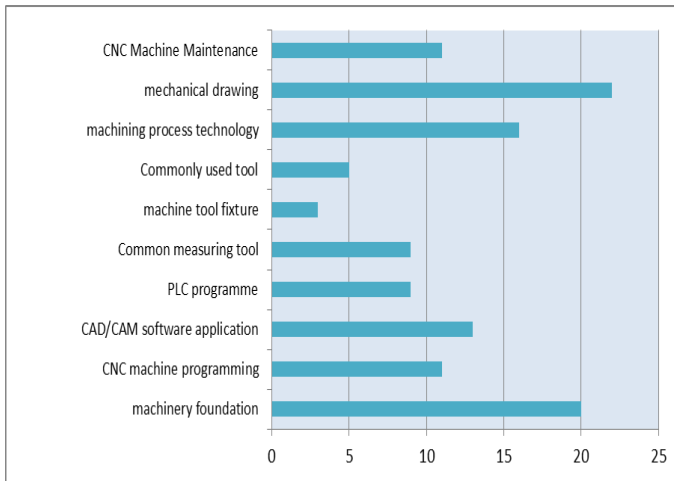


Figure 2 curriculum requirements of enterprise

5.4 Evaluation of students majoring in mechanical equipment maintenance

5.4.1 The comprehensive quality evaluation

Questionnaire is concerned about business ability, working ability, communication skills, management ability, flexible ability, analysis ability and innovation ability and so on. It helps researcher observe the comprehensive abilities of graduates.

The investigation result is shown in figure 3.

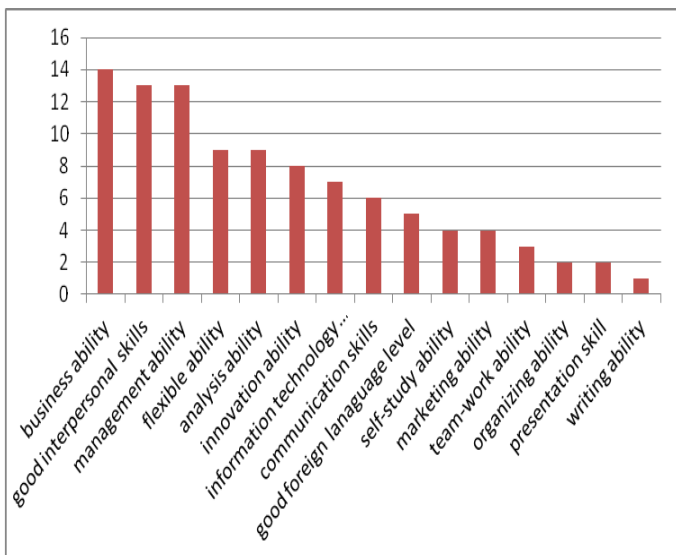


Figure 3 graduate comprehensive qualities

5.4.2 Business capability evaluation

Questionnaire is closely related to the advantages of vocational school graduates. It inspected graduates to adapt to the position that enterprise provide for. Nearly 70% of the graduates are competent meanwhile 21% of the graduates have some

competitiveness. Only 9% of the graduates are competent gradually. The result is shown in figure 4.

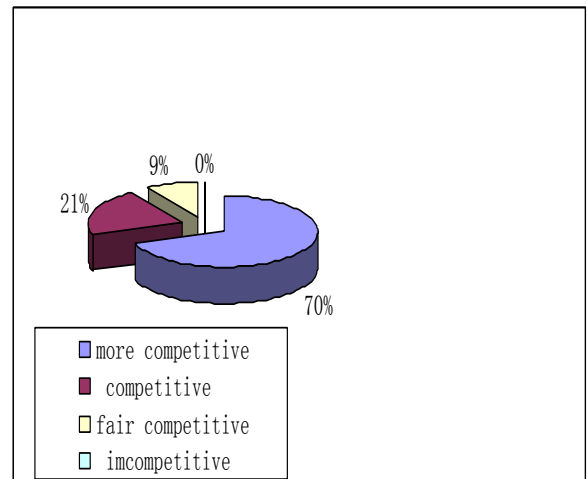


Figure 4 graduate business capabilities

The results of the survey indicate that the graduates of mechanical maintenance are quite competitive. Enterprises and industry are will to provide position for graduates and accept students as interns. But Vocational school will do effort in training students in the self-study ability, marketing consciousness and ability of organization and expression ability.

5.5 Vocational school-enterprise cooperation intention

Companies surveyed about 90% have university-enterprise cooperation intention with our school, is willing to adopt the method of cooperation with ordering cultivation, appointed technical personnel to the training of students, accept our school teachers go to the factory practice learning, the students in our school went to visit the practice, to make our school staff skill training, etc., the results of the survey is shown in figure 5.

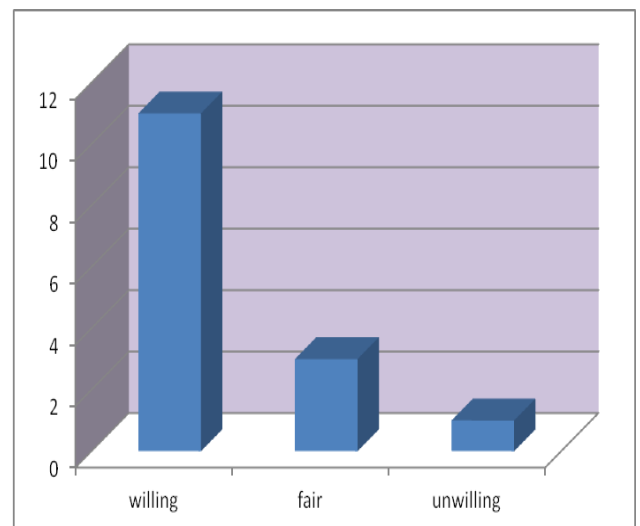


Figure5 vocational school-enterprise cooperation intentions

6 REVELATION

6.1 *Tendency of enterprise*

Enterprise' demands of professional talent mechanical equipment maintenance are very urgent. Companies want students graduate from vocational school to adapt to the job of companies immediately and to operate independently in the production field of operation. Vocational schools should take it into full consideration in training talents, with particular emphasis on operating and right situation.

6.2 *Skills talents training target*

Professional talents training goal decides the personnel training way selected and the method of training. We take the geographical advantage of vocational schools -- Bohai economic circle, Binhai new area and Beijing-Tianjin-Hebei region development opportunities to service local economic development. The professional talents cultivated by vocational school could operate independently on assembly line to solve the problem of enterprise.

6.3 *Curriculum development*

The scientific approach is an effective means to achieve their goals. The root of curriculum development understands the characteristics of skill-talents. Enterprise think vocational school should get the latest information into the course. Vocational school also should adjust course plan with the change of industry demand. Machinery and equipment maintenance is to emphasize hands-on ability, so course content should combined theory with production practice, pay more attention to solve practical problems in the field of production.

Courses provided for students should cultivate the students' self-confidence, sense of responsibility, active thinking, and innovation ability and so on. Curriculum development should meet the needs of enterprise and give priority to school-based teaching material in time. The extremely difficult content should be removed, so as not to increase the burden

for teachers' work or do harm to students' confidence for learning.

As to the vocational schools, they need to innovate in the course content, fully consider the real demands of the enterprises, and make their students well-prepared for the position. What's more, vocational schools should also strengthen the linkage mechanism between the reform of the curriculum and the development of the industry, give full consideration to the local industry development reality, set curriculum on the basis of this reality on purpose of promoting the industry ultimately, and introduce the technology standards in enterprises to the process of developing professional courses.

Vocational school also should advocate a concept of lifelong learning; build a broad knowledge platform for all employees, deepen the cooperation with the enterprises to exploit school-based curriculum, and achieve integrative optimization of the structure of the curriculum.

6.4 *Process*

We take action in the curriculum reform in class 2014 students of class 2014 and try to set up a system of literacy class, professional course and intensive courses, especially the course of the case of enterprise practice to strengthen the training and draw new technology of the industry in the class. School-based curriculum develop that consist of solve problem about real situation and of factory, living task. Teachers improve teaching methods by take product as teaching methods and make integration of theory with practice

We also establish curriculum development standards and evaluation system, improve the quality of training.

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