

## EXPLORING A NEW PATTERN OF VOCATIONAL EDUCATION AND TRAINING

**Yang Haicheng Wang Tingrui**  
**Northwestern Polytechnical University**

**Abstract:** The 21st century is a new era in which information technology is developing rapidly and the demand from labor force market has broken the traditional concept of education. Vocational education and training as a life education is now regarded as a new type of educational system. But how to help this new system further develop so as to become gradually perfect is a big issue which calls for exploration in our country. We have done a great deal of beneficial exploration in this field and have founded a new Information Technology College by taking the advantage of teaching resources from Northwestern Polytechnical University (NPU), which is one of key universities in China, and the capital from two companies. It is a sub-college of NPU, but it has independent running system. We have gained initial experience in the reform of curriculum development, construction of laboratories and training center, employment of teachers, teaching quality control and evaluation. And we are willing to share them with other participants. Functional words: vocational education and training, teaching resources, teaching quality control, practice training, field school.

As the 21st century becomes a new era in which information technology is developing rapidly, the new development of high-tech, which is changing by each passing day, has broken the traditional concept of education. And vocational education and training as a life education now has developed into a new type of educational system. In "the Project of facing 21st century and vitalizing Education", the State Ministry of Education clearly points out that we should vigorously develop our higher vocational education and training, improve the technological and literature quality of all our civilians and promote employment so as to meet the urgent needs in developing our national economy. It also points out that higher vocational education must face local economic construction and social development, meet the demand of labor market, foster qualified personnel for the first line of production, service and management so as to show its unique characteristics. Therefore, the study and research of the demand in the development of Chinese higher vocational education and exploring diverse patterns of developing this new system becomes a heating topic in our higher educational circle. Based on the State Council's policy of developing higher vocational education and the strategy of developing infrastructure in western China, the school authority of Northwestern Polytechnical University (NPU) decided to found a new college at the beginning of 1999, NPU-GL Information and Technology College, and started enrollment in the same year. The new college is now composed of 6 departments with 10 specialties. From the experience we gained from practice over the past years, we'll explore a new pattern of higher vocational education and discuss some of the issues concerned.

### **I. THE DEVELOPMENT OF HIGHER VOCATIONAL AND TECHNICAL EDUCATION BECOMES INEVITABLE IN RESPONSE TO THE DEVELOPMENT AND NEEDS OF SOCIETY, ECONOMY, SCIENCE AND TECHNOLOGY, AS WELL AS EDUCATION.**

#### **1. To vigorously develop higher vocational and technical education is the demand to develop national economy, science and technology.**

Since the 20th century, rapid development of science and technology and economy has led to a great and apparent change in social structure and occupations. This rapid development of high-tech and its wide application in various fields in national economy, as well as the rapid development of service industry, has produced a multitude of new occupations. On the other

hand, the original occupations either disappeared or divided into new branches or combined with other forms of occupations. Whatever new occupations are created and whatever vocational positions are divided into or combined with, they require high-tech and relatively higher intelligence, thus increasing the percentage of positional technique and a variety of labor skills. As a result, this new development helps vocational education develop to a new trend of higher level and produces new demand of higher vocational education.

**2. To vigorously develop higher vocational education is the demand for further development of our higher education.**

China's higher education, for a long time, seems to be a one-way system, in which students are trained for a certain discipline of specialty. This one-way system, in which students are trained in a mono-pattern, no longer meets the needs of economic and scientific development because the rapid development of science and technology has brought about short cycle of its application in production. With higher education reform further deepening, the reform of our higher educational structure becomes urgent and inevitable. Higher educational institutions should not only turn out large number of qualified personnel for the development of science and technology, as well as engineering, but also turn out qualified personnel with well-trained technique and skills, who are badly needed in various vocational posts. Meanwhile, higher vocational education opens another new channel for young people to receive higher education, thus constructing "a motorway interchange" and creating a great impact on our entire educational system.

**3. To vigorously develop our higher vocational education is to meet the demand of our social development.**

Over the past two decades, the people's living standard has been significantly improved and the government's policy of "one couple, one child" has been widely accepted both in big cities and countryside. In terms of Chinese traditional culture, parents always expect that their only child can receive better education, hoping he/she will enjoy a better life when growing up. Consequently, after their basic life necessities, such as food, housing, clothing, are satisfied, the Chinese parents try to save as much money as they can for their children's educational expenses. We, therefore, have a large educational consumer market, which is regarded as the largest in the world. It is predicted that in the coming twenty years higher education will become more popular in China, with the people's living standard further improved. As a result, more and more parents hope that their children can receive higher education after their children's completion of high school education. In order to meet this demand of broad masses and to enhance the overall quality of our entire nation, we should explore a great variety of channels of higher education so that the students' individual potentials can be fully developed and students can select their own way of development in accordance with their personality, interest, preference and their strong points. And the teachers can teach them according to their aptitudes.

The connotation of higher vocational education In its "Resolution Concerning the Deepening Reform of Educational System And Promoting Overall Quality Education" issued in 1999, the State Council pointed out that higher vocational education is an important component in our higher education and major effort should be devoted to develop it. It also pointed out that higher vocational education should turn out qualified personnel with necessary theoretical knowledge and stronger practical skills in order to meet the needs in our production,

construction, management and service industry both in urban and rural areas. From the above statements, we can clearly see the definition of connotation of higher vocational education. Furthermore, we can understand and analyze its connotation in terms of the four types of qualified personnel needed in human productive and social activities. Based on their functions in social activities, economic operation and development and the development of science and technology, qualified personnel can be classified into four types. The first is academic, who are mainly engaged in discovering rules, creating theories or theoretical and consultant work. The second is engineering, who are mainly devoted to planning, scheming and designing. The third, technical, through whose work, the work of the second type of personnel, such as planning, designing, can be changed into material things or products, causing concrete function to human's social activities. The fourth, skilled, who are mainly engaged in the work of direct operation. We can, therefore, come to the understanding that in terms of hierarchy higher vocational education is part of our higher education and it belongs to the category of higher educational system. In terms of types of qualified personnel, it is vocational and technical education and this education is based on the students' successful completion of their high school education. It trains qualified, advanced and practical personnel for the first line of our production, construction, management and service industry. That is to say, its objective is to train advanced technical and specialized personnel.

Exploring a new pattern of vocational education in NPU-GL Information and Technology College. This college is one of the colleges in NPU, which integrates the advantages of NPU, such as teacher resources, knowledge and technique in aeronautic, space and marine fields, with the capital from Shaanxi GL Printing Limited Company and GL-NPU Software Limited Company. It was founded on the cooperation of three partners and it takes the fundamental task as to train applied, advanced and specialized personnel to meet the needs of social construction. In our vocational education and training, we give priority to the students' applicable ability so as to train qualified and specialized personnel with proper basic theoretical knowledge, stronger applicable technical ability, wide range of knowledge and high overall quality.

## **1. Specialty arrangement**

The principle of our specialty arrangement is to meet the needs of the development of our national economy, especially that of our information industry, and to take the advantages of disciplines and specialties of NPU. In the light of the above principle, the college constitutes six departments with ten specialties. They are as follows: computer, communication & network, electronic trading, information & automatic control, foreign languages and arts. Ten specialties are specified as: computer & its application, English language, communication & network engineering, electronic trading technique & its application, modern trade & business, network finance, public relationship & secretarial service (arts and airhostess training), computer aided design (CAD), automatic control & its application and information system & management.

## **2. Curriculum development**

Our curriculum development focuses on the satisfaction of social needs and the training of ability of learners' specialized technique. So the final goal is to train qualified personnel who can meet the urgent needs in our production line and possess necessary theoretical and specialized knowledge and who can have a better mastery of English language in listening, speaking, reading. These qualified people should be able to operate personal computer work with Internet and have practical skills and technique in their own specific fields. They should

also possess the spirit to undertake pioneering work and a better vocational moral standard. And they are cooperative and healthy both physically and psychologically. The corresponding principles of our curriculum development are as follows:

- 1) Curriculum development should not only be adjusted to the demand of social development, but also to that of socialist market economy and information technology.
- 2) The relationship among knowledge, ability and overall quality should be properly handled and a good balance among vocational ethics, intelligence, physical health and aesthetics should be well kept.
- 3) Priority should be given to applicable and practical curriculum. And proper percentage of basic theoretical courses, courses of specialties and field practice should be taken into account.
- 4) Experts in corresponding industries, enterprises and business should be invited participate in curriculum arrangement, classroom teaching and lab work. And contact should be established with them.
- 5) We should fully realize the unique characteristics of vocational education and closely combine theory with practice, knowledge with ability training and concentrate on the ability training through all the teaching and learning activities.

### **3. Construction of the field school**

Teaching and learning practice is of great importance in all the teaching activities if vocational education shows its unique characteristics. Practice time in all the specialties is made up of about 40% in all classroom teaching and learning activities. Meanwhile, we strengthen the construction of practice and training center which is located in the training center building which serves as campus network center, TV program broadcasting center, as well as communication center. Installed on the top of this building are the radio communication antenna, TV receiver antenna and radio call station antenna. Inside the building, there are 10 labs (computer, foreign languages, electronic technique, automatic control, communication, network, information, multi-media, multiple purpose and basic theory lab) and one cabled communication center. It also has 6 training school centers (electronic training, designing and manufacturing, computer component installation, software development, scientific and technological making, super market and bank), 2 exhibition rooms (computer development and information technology development), 2 large PC centers used for students' training and practice as well as graduation project.

The new college can take the advantage of association and connection established by NPU with industries, enterprises and companies for scientific research and cooperation in aeronautic, space and marine fields so as to build up its own outside field schools with them. At present, it has field schools in GL-NPU Software Development Limited Company, Xi'an Aircraft Building Company, Chengdu Aircraft Building Company and Northwestern Airline Company etc. Further more, the new college will establish close ties with some scientific research institutions, companies, department stores and banks so as to provide ideal practice and training centers outside school.

### **4. Construction of teaching staff**

In order to ensure teaching and learning quality, both experienced professors, associate professors and experienced engineers, technicians and managers from industries or companies are invited to be instructors for the college. Graduate students working for master or doctor

degree are also invited to be tutors. Now the new college has 4 full-time instructors, 32 concurrent, among whom, 11 are professors, 5 associate professors, 2 lecturers, 4 teaching assistants, 8 graduate students for doctor degree and 5 for master. The teacher and student ratio is now 1:13. Our teaching staff will be expanded as the student enrollment increases. On the basis of the characteristics of vocational education, the teacher and student ratio is set as 1:20 with teacher combination of full-time and concurrent instructors, but with the concurrent as the main force, Among the teaching staff, full-time instructors will account for 25% and concurrent for 75%. We will also make a better use of teaching resources from the departments and colleges in NPU. Especially, we will select and invite instructors from scientific research staff and lab technicians so as to take advantage of their strong points. Some best students with better overall quality, who will graduated from this college, will be encouraged to be come teachers here and opportunities will be provided to them for further education if they want to work for further academic degree. Teaching methodology is emphasized and we will try to establish a teaching staff with "two-functions", that is, teachers serve as classroom instructors as well as engineers in the practice and training center. In this way, responsible and efficient teaching staff can be formed.

## **5. Teaching quality control system**

Teaching and learning quality is the lifeline of the college and this quality depends on teacher quality and responsibility, as well as school administration. Therefore, we have drawn on the experience of NPU and established a set of complete teaching quality control system with the characteristics of higher vocational education. Furthermore, research work will be carried out on the system.

### 1) Teachers' reward system

On the basis of their contribution, moral standard, vocational capacity, the teachers will be regularly evaluated both by students and school authority. Those who work hard with better teaching effect will receive a reward in the end of the academic year in addition to their regular pay. Those who are not responsible or are not qualified in their teaching work will be fired.

### 2) Establishment of relatively perfect and strict regulations and rules in teaching quality control

Standard teaching administration plays an important part in the improvement of teaching quality control. So the college has set up and issued several regulation, such as "Students Manual", Teachers Manual" and "Regulations of Teaching, Administration and Service for the Purpose of Fostering Students". Each staff member and student has respective copy so that every work is carried out in accordance with regulations.

### 3) Regular assessment and evaluation

Mid-term and final term assessment should be regularly carried out at the level of teaching group and departments, in which both students and teachers should participate. Effective measures should be taken if any problems are found in teaching and learning process.

### 4) Optimizing teaching program

Teaching content should be constantly updated and optimized to keep pace with the development of science and technology, especially that of information technology, as well as the demand of labor market. And qualified personnel from related industries, enterprises and business are invited to participate in the above activities.

**6. The establishment of a cooperative system in running the college**

The new college has a completely new running system in which the dean is responsible for decision making under the leadership of Board Committee. This system emphasizes the cooperation with industries concerned so that classroom teaching can be closely combined with development of society, production, science and technology so as to absorb new technique and scientific achievement. It has an independent finance accounting from NPU and the service work done by specialized companies in the society.

The founding of this new college has been sponsored and supported by all sides from the society. We have made great achievement, but also run into some difficulties. We'll share our experience with other participants and solve our problems with their help.