

# Research of the Reform of Application Oriented Talent Training Mode in Mining Mechanical Engineering Teaching

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## Abstract

In the face of fierce competition in employment, it is necessary to cultivate high quality applied talents for the survival and sustainable in mining mechanical engineering teaching development of colleges and universities. Taking Hebei University of Economics and Business as an example, this paper puts forward the training objectives of "fine professional, strong practice and characteristics", based on the needs of the market and its own position. The new model of cultivating talents is explored, and the practical teaching system of two step education curriculum platform + three levels of whole course practice teaching system + N Extended characteristic training modules + system of application oriented personnel training mode is analyzed in the experiment part.

Keywords: REFORM; APPLICATION ORIENTED TALENT TRAINING MODE; UNIVERSITIES AND COLLEGES

## 1. Introduction

The rapid popularization of higher education plays an important role in providing talents for the reunification and national rejuvenation, which yet make talents cultivation, deviate from the market demand. On the one hand, the society is desperate for excellent talents while on the other hand graduation students are unable to find a job. The fundamental reason for this phenomenon is that the advanced talent training structure is unbalanced which is keen on cultivating academic talents while ignoring the cultivation of applied talents. The expansion of students' recruitment brings along with development for various universities which yet ask higher requirement [1-2]. To innovate the talent cultivation mechanism for universities is the most direct and clear requirement stipulated in Decision for higher education reform in 3rd Plenary Session of 18th CPC Central Committee which also points out the direction for development. The State Council Standing Committee meeting held by Pre-

mier of the State Council explicitly proposed to guide a series of universities to transfer to pay attention to the applied talents cultivation. Under such circumstance, the necessary path for common colleges and universities to achieve continuous development is to innovate the core competence to cultivate high quality applied talents [3-4].

## 2. The Cultivation Position and Target of Talents

General colleges and universities have to stick to the education philosophy of applied undergraduate education as well as the school operation thoughts of market-orientation, highlight employment, paying attention to quality, strengthening characteristics to come up with the talents cultivation targets of refining professions, strengthening practice and highlight characteristics [5-6].

### 2.1. Refining Professions

Solid professional knowledge is the basis to cultivate applied talents and schools should obey the

whole correlation of knowledge structure, and make general knowledge as guarantee to systematically grasp the professional knowledge of science and lay a foundation. The brand of school, faculty quality, subject foundation, and management experience and culture background can be powerful guarantee for students to consolidate their professional knowledge.

### 2.2. Strengthening Practice

Paying attention to the practical ability of university students aims to acclimate the development trend of higher education and cultivate the internal quality of applied talents. The cultivation of practical ability is in accordance with the recognition regulation of university students. Education, as a recognition process should demonstrate its subject position-practice.

### 2.3. Highlighting Characteristics

School characteristics are special connotations accumulated with a long-term operation. Only when sticking to the characteristics, general colleges and standards can form a brand and being competent in fierce competitive environment. Taking full advantage of the special characteristics of schools and the social demand, setting multidisciplinary specialty as well as urgently wanting specialty, teaching students according to their aptitude with classified guidance, and determining the cultivation direction based on individual personality can help to improve students' employment ability [7-8].

## 3. Two Stepladder-type Educational Course Platforms-refining Professions

### 3.1. General Education Course Platform

General education course platform is divided into general courses for whole school and general course for certain majors. General courses for whole school are public elementary courses opened for all majors while general courses of certain majors are opened for some special majors.

#### 3.1.1. Properly Construct Knowledge Structure and Scientifically Promote General Education

Adhering to the quality education philosophy, strengthening public elementary courses and basic courses, scientifically construct the knowledge structure for students and strengthening the basic knowledge as well as basic quality cultivation are necessary methods.

#### 3.1.2. Introducing Excellent Teaching Resources and Laying a Solid Professional Basis

The teaching quality assessment system can be adopted to carry out the system for teachers to take up a job through competition which can maximize the excellent teacher resources with a high sense of responsibility and good teaching effect. Besides, schools have to consolidate the basic knowledge.

### 3.2. Professional Education Course Platform

Professional education course platform include professional basic course, specialized course, elective course and practice. The setting of professional basic course and specialized course should be set according to the professional features and sticks to the principle of improving students' ability. The setting for elective course should adhere to the principle of developing students' personalities based on expanding the knowledge structure. The practice should adhere to the continuous system for four years, including cognitive practice, specialized investigation, professional internships and employment practices.

#### 3.2.1. Focus on Basic Course and Specialized Course

Colleges and universities have to construct a stepladder-type teaching system from cultivating basic courses and specialized courses to cultivate specialized talents from the perspectives of knowledge structure, ability quality, and adaptation. Based on the target of cultivating specialized talents, basic courses should be carried out in the freshmen year while specialized courses can be carried out after stepladder year.

#### 3.2.2. Distribute Professional Training and Strengthen Complementary Advantages

Divide the majors into superior majors and common majors to carry out distribute training. Superior majors are brands of school which have created a stable and good pattern in terms of recruiting, training, and employment. Common majors can take advantage of superior majors to positively develop interdisciplinary courses with independent settings.

#### 3.2.3. Break the Major Barrier and Pay Attention to Interdisciplinary Knowledge

It takes employment as the direction, focusing on reforming the teaching plan arrangement and launching cross-disciplinary special courses, allowing interdisciplinary education, paying attention to the comprehensive integration of knowledge to break the major barriers.

### 4. Three-level Complete Practice Teaching System-strengthening Practice

Introduce the teaching philosophy of practice into practical teaching system, take a three-level complete practice teaching system based on split level, step by step, four-year continuous teaching so as to facilitate the reform innovation. Gradually build a cognitive practice layer, comprehensive simulation practice layer and innovative practice layer.

#### 4.1. Cognitive Practice Layer

The aim of cognitive practice layer is to help students grasp and understand the basic theoretical

knowledge based on cognitive testing which is made up of professional basic testing and comprehensive testing.

### **4.2. Comprehensive Simulation Practice Layer**

The aim of comprehensive simulation layer is to further improve students' practical ability and implementation ability via simulated operation process based on grasping the comprehensive application knowledge, which tries the utmost to make students extensively participate in work and find out the most appropriate and is made up of comprehensive testing and training projects.

### **4.3. Innovative Practice Layer**

The aim of innovative practice layer is to pay attention to cultivate their innovative ability in the premise of grasping the basic knowledge and comprehensive practical ability. It enables students to complete the operation related to enterprise and finance while taking real enterprises as cases to know the profit and loss, which can help students have practical experience like participating in real social economic activities to gradually cultivate their innovative ability.

## **5. N Expanded Special Cultivate Models-high-lighting Characteristics**

Adhere to implement the teaching approach based on internal class teaching and out of class activities so as to realize open practice teaching, encourage students to study independently, fully mobilize the enthusiasm and initiative of students. What's more, schools can develop expanded and flexible cultivation models such as academic competitions, community Club, school and enterprise Alliance, industry research, scientific research innovation and students can be granted with quality grades and the main contents as well as approaches show as follows:

### **5.1. Academic Competitions**

Encourage teachers and students to actively participate in influential professional skills contest to cultivate students' competitiveness, develop their expertise. Through participation in academic competitions, their learning, practical and innovative ability can be improved.

### **5.2. Community Club**

Actively promote the development of students' professional associations, and guide students to develop professional and innovative activities which can develop their abundant skills, team spirit as well as leadership skills and practice innovation skills a variety of Club activities, develop students' professional skills, teamwork and leadership skills.

### **5.3. School and Enterprise Alliance**

The alliance can help to train applied talents, who can take the initiative to adapt the changing social

needs. The working experience via alliance can help students learn the production model, and running philosophy of enterprises, which can also help them establish cooperation relation with enterprises and is beneficial for their employment after graduation.

### **5.4. Industry Research**

Organize students to design questionnaire, survey, data analysis and write articles to help them fully understand their professions too scientifically and correctly plan for the future.

### **5.5. Scientific Research Innovation**

Schools should encourage students to independently carry out research activities or actively participate in teachers' scientific research project, regularly organize students to apply for research report and support them on excellent projects. What's more, schools have to regularly hold exchanges meetings in terms of graduate entrance exam, scientific research innovation and research project application. As a result, students can innovate their thinking ability after referring to literature, improve their practical ability while participating in experiment which are beneficial for employment.

## **6. The Guarantee System for Applied Talents Cultivation**

### **6.1. Policy System Management Guarantee**

Launch series rules and regulations to standardize the school teaching and management. Students are encouraged to participate in various skill training classes, specialty classes, professional skill competition to carry out innovation and entrepreneurship. Besides, capitals should be appropriated to encourage and award excellent students and tutors.

### **6.2. Faculty Team Construction Guarantee**

Build a dynamic teaching team dominated by full-time teachers supplemented by part-time teachers. Besides, these teachers have proper age, education background and title structure. Moreover, teachers can be assigned to cooperative enterprises to be trained, professional skill training can be carried out and enterprise managers with abundant working experience can be recruited so as to optimize the faculty structure.

### **6.3. Teaching Management Platform Guarantee**

Construct a multifaceted, three-dimensional and connected information platform for teaching so as to realize the modernization of teaching management means. While taking advantage of comprehensive resources such as education funds, time, information, and teaching condition the regulated management for teaching management activities also provides guarantees.

### **6.4. Teaching Quality Supervision Guarantee**

Establish three-level teaching quality supervision organization made up of school, dean's office and col-

lege. In each term, supervised teacher will randomly evaluate the teaching quality, which can be also assessed based on student evaluation and feedback so as to assess the teaching quality.

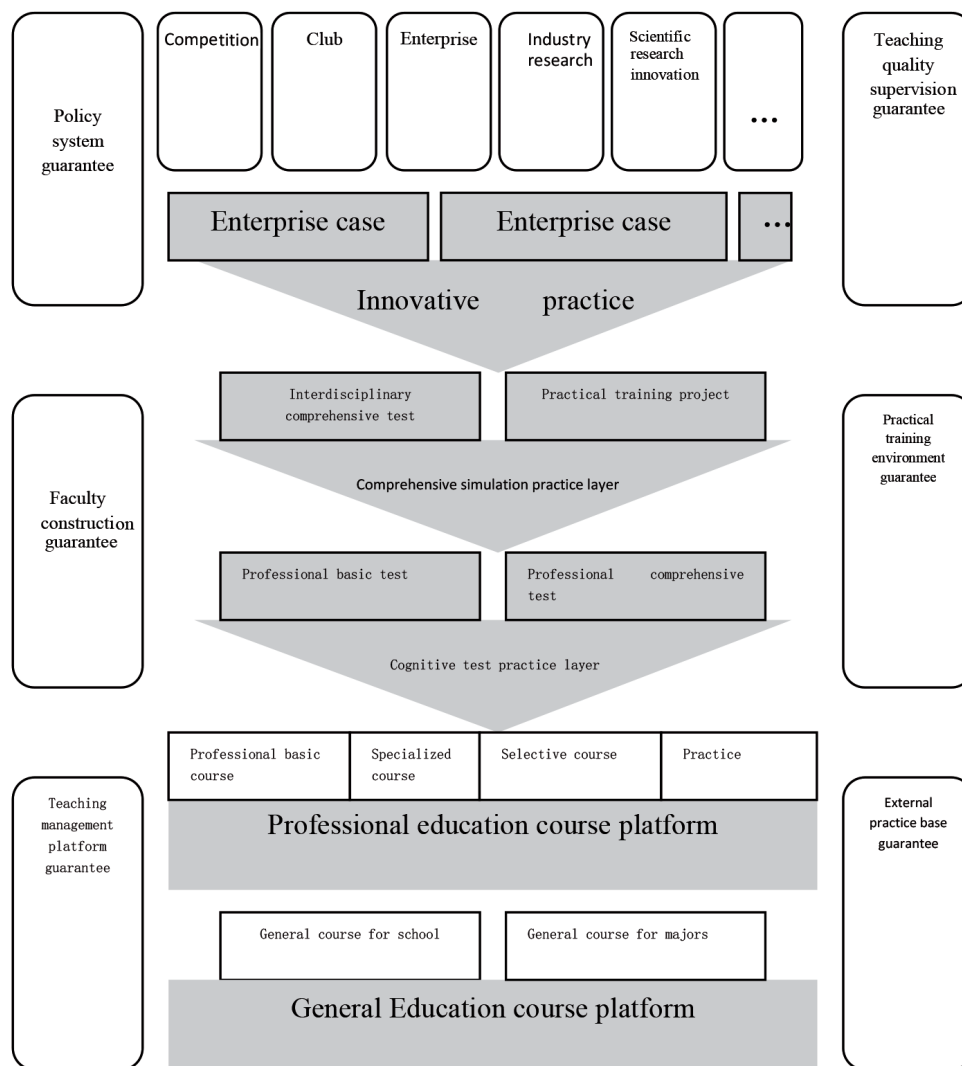
### 6.5. Practical Training Environment Guarantee

Increase education funds; actively promote the hardware environment construction for experiment and training. In spare time, laboratories are open and experiments can be carried out on weekends or in the evening. At the same time, special lectures can

be conducted to stimulate students' enthusiasm. The excellent experimental training environment provides good conditions for teachers' teaching and scientific research as well as innovative practice for students.

### 6.6. External Practice Base Guarantee

Establishing talent cultivation mechanism with enterprises to innovate internship model, provide scientific service, deliver talents, combine production, teaching and research, provide professional training can greatly improve students' practical, innovative and entrepreneurship capacity.



**Figure 1.** The cultivation model for applied talents

### Conclusions

Hebei University of Economics and Business is one of the ten key universities in Hebei. After years of exploration, especially the teaching practice reform in recent five years, Hebei has gradually developed its applied talents cultivation characteristics, winning good effect. For example, students won various awards in Challenge Cup, China Undergraduate Mathematical Contest in Modeling, National ERP

Board simulation Contest. Since 2009, 293 students won national and provincial level awards. In 2012, our university was rewarded as the Exemplary Career Center in Hebei. What's more, various Medias have reported the applied talents cultivation model of us which wins extensive support among students, parents and society. In recent years, the employment quantity as well as quality keeps a good momentum, winning unanimous praise among enterprises. To

conclude, we have made a positive contribution to the national and local economy.

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