

# ***Innovation Research on the Mechanism of Talent Cultivation Combining Industry-University-Research under the Spirit of Craftsman***

Liu Yingjie<sup>1,a,\*</sup>, Liu Ruiyan<sup>2,b</sup>

<sup>1</sup>*School of Mechanical-Electronic and Vehicle Engineering, Weifang University, Weifang 261061, Shandong, China*

<sup>2</sup>*Weifang High-tech Phoenix School, Weifang 261000, Shandong, China*  
*a. ufoliuyingjie@163.com, b. ruiyan412@sina.com*

*\*corresponding author*

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**Abstract:** In order to keep up with the development of the society, cultivating and improving innovative talents is the key task of high education. Shortcomings in the traditional teaching model were studied to research the reform of the combination of Industry-University-Research in the Academy of Engineering under the spirit of craftsmanship. And a new efficient education model combined with craftsmanship and vocational skills was proposed to promote the improvement of the level of talent cultivation and teaching effects and provide new strategies for the cultivation of applied and innovative talents in China in the new society.

## **1. Introduction**

At present, the economic and technological development trends at home and abroad have undergone major changes, and new requirements have been put forward for the quality, ability and structure of China's talents[1]: combining production, education and research, and cultivating more talents with a strong innovative spirit and craftsmanship as well as improving the quality and quantity of innovative talents.

## **2. Problems in the Traditional Education Model**

In the traditional education model, there are still problems of neglecting practice and skills but emphasizing theory and knowledge.

### **2.1. The Cooperation between Enterprises and Universities Lacks Tightness and Efficiency Emphasizing Form**

Some engineering colleges and universities also develop innovation mechanisms for Industry-University-Research research, but the industry-university-research institutes implemented

by most colleges and universities are merely a cooperative mechanism between enterprises and universities. The purpose of enterprises is to make profits. So, the mechanisms are formalism on the surface of the cultivation of college students and have no practical effect.

## **2.2. The Education Structure Is Simple and the Teaching Staff Is Weak**

There are a large number of schools in our country and the gap in economic and environmental conditions have made some schools generally simplifies the educational forms of industry-university-research institutes. For some innovative practical teaching, the faculty team lacks necessary social practical activities and practical experience in enterprises, and can not effectively connect theory with practice. At the same time, although some colleges and universities also hire some first-line engineers from enterprises to come to the school part-time, but the enterprise engineers are not familiar with the students' learning situation. Part-time teaching is very different from long-term teaching, which is not conducive to the effective operation of the innovation mechanism of industry-university-research. Some colleges and universities are restricted by the setting of class hours and training rooms, and practical teaching can not achieve the expected results. Therefore, the simplicity of education and the weakness of teachers can not actively promote the operation of industry-university-research innovation mechanisms in universities[2-4].

## **2.3. The Teaching Concept Can Not Keep up with the Pace of the Times and the Setting of Teaching Content Can Not Meet the Needs of the Rapidly Developing Society**

Although most engineering colleges have carried out innovation and entrepreneurship education, the current innovation education has not really been integrated into the teaching process of professional courses. Talent training goals can not meet the needs of talents, and students' innovation and entrepreneurship awareness and professional practice ability can not be effectively cultivated.

## **2.4. The Teaching Conditions are Not Perfect**

Most engineering colleges and universities have established practical training rooms for innovative practical teaching. The training rooms are divided according to professional groups. The training rooms of different professional groups are quite different, and there are fewer connections between professional groups. Compared with ordinary classrooms, the training room has obvious changes in the spatial structure, but there are fewer connections between the training rooms of different majors and the construction of hardware facilities is also different[5].

## **3. Reform Measures of Talent Cultivation Mechanism**

Aiming at the shortcomings in the traditional teaching model, following the law of development of today's society, and further improving technological innovation and development, new education models should be explored and appropriate education reforms should be carried out.

### **3.1. Improving the Talent Training Program Promoting the Reform of Curriculum Construction and Building a Reasonable Practical Teaching System**

Engineering colleges and universities should formulate reasonable talent training goals based on talent needs, carry out major and curriculum construction reforms, and order teaching contents. And

also, engineering colleges and universities should select effective teaching methods, break through the drawbacks of traditional teaching, fully control the quality of curriculum construction, and promote talent training quality improvement[6].

### **3.2. Improving the Talent Introduction System Strengthening the Reform of Teacher Construction and Improving the Quality of Professional Teachers through Multiple Channels**

On the one hand, a complete enterprise training system for engineering teachers should be established to select a group of excellent teachers to go to relevant companies for on-the-job training which is conducive to cultivate students' hands-on and practical ability, and cultivate students' craftsmanship and vocational skills. On the other hand, high-tech enterprise personnel should be actively introduced to station in the school, enter the classroom and actively cultivate students' practical ability and increase practical experience. So that students can cultivate the "craftsman spirit" of excellence and conscientious work consciously[7-8].

### **3.3. Establishing a Special Functional Department to Cultivate a Group of Practical Skill-based Talents Meeting Actual Needs**

The integration of production, education and research is an inevitable trend in the development of engineering colleges. Only by combining Industry-University-Research can students learn to integrate theory with practice and apply the knowledge learned in class to practice. At the same time, the combination of Industry-University-Research is conducive to the talent training mechanism of engineering colleges and universities in accordance with the actual needs of society, industry and enterprises[9].

### **3.4. Running Schools Facing the Society and Strengthening School-Enterprise Cooperation and Exploring New Models of Talent Training**

Universities should strengthen school-enterprise cooperation with local enterprises, run schools facing the society, and explore new models of talent training based on the needs of enterprises. Enterprises should build practical training bases with universities and promote the integration of production and education according to the concept of employment and staff standards. And also, enterprises should realize resource sharing and complementary advantages with universities to help universities strengthen students' practical skills training, and guide students to establish correct employment concepts and self-confidence[10-11].

### **3.5. Taking the School-Enterprise Integration of Innovation and Entrepreneurship and Practice Teaching as a Link to Broaden the Ways of Training Bases**

School-enterprise cooperation is an inherent requirement for the reform of teaching models in engineering colleges. The school-enterprise integration and joint construction of a practice base is a bridge to achieve professional construction, internship, skills training, etc. It can improve the teaching quality of engineering colleges and universities, enhance students' practical ability, and provide graduates with employment internship opportunities. Combining the professional theoretical knowledge learned in the classroom with corporate practice is an important platform for students to enhance their own innovation and entrepreneurship capabilities.

In order to strengthen school-enterprise cooperation with school-enterprise integration and innovative practical teaching as the link, engineering colleges should utilize their own advantages in

accordance with their own talent training positioning and requirements, and realize resource sharing and complementary advantages with enterprises to achieve the goal of education[12-13].

### 3.6. Realizing Resource Sharing and Improving the Ability of Universities to Serve the Society

Taking employment as the orientation, all colleges and departments should appropriately introduce corporate training institutions to create conditions for teaching reform and promote resource sharing through school-enterprise cooperation, joint research institutes, and cooperation to establish workstations. The school-enterprise cooperation is conducive to the comprehensive quality of teachers and to achieve the purpose of strengthening professional skills as well as a win-win result for schools and enterprises[14-15].

### 3.7. Taking the Opportunity of Combining Industry-University-Research to Further Improve the Level of Talent Training

Taking the combination of Industry-University-Research as the driving force and meeting the actual needs as the orientation, theoretical research should be actively carried out. In the process of publishing academic papers and treatises, we must pay particular attention to the integration of theory with practice. This is also the internal requirement for the improvement of the comprehensive quality of teachers in engineering colleges and universities, and it is more conducive to the further improvement of the level of talent training[16-17].

## 4. Conclusion

Based on the combination of Industry-University-Research, with the goal of talent training, the combination of Industry-University-Research as the foundation, and the practical teaching link as the platform, it is conducive to the cultivation of students' craftsmanship. The talent training model and the reform of the curriculum system with professional characteristics and the use of cooperative education are effective ways to cultivate new talents with solid theoretical knowledge and strong practical ability. The combination of Industry-University-Research, as well as the reform of curriculum and talent training model are effective methods to cultivate students' craftsman awareness, craftsman quality and craftsman behavior.

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