Research on the Enterprise Integrated Teaching System in University of Applied Technology

XIAOXUE LI

ABSTRACT

The University of applied technology has the dual attributes of vocational education and higher education. In the establishment of the teaching system, the general quality education and the professional practical ability are both taken into consideration. With the acceleration of the 2025 process of manufacturing in China, the demand and requirement for new application technology talents are continuously improved. The paper studies the construction of enterprise integrated teaching system by analyzing the shortcomings of the traditional teaching mode of engineering education, and the perspective of cultivating technical talents of engineering application. Through collaborative innovation and cooperation with enterprise, an enterprise integrated teaching system should be established to highlight the teaching characteristics of application technology college.

KEYWORDS

University of applied technology, enterprise integrated, teaching system.

INTRODUCTION

Throughout the industrial revolution and higher education reform, the reform of higher education corresponds to the talent demand reflected by the characteristics of industrial revolution in different periods. At present, China's economic development is entering the crucial period of structural adjustment, transformation and upgrading, and the new and old growth kinetic energy is changing. Innovation driven development, "The Belt and Road Initiative", "Made in China 2025" and a series of major strategic implementation is in depth implementation [1]. Scientific discovery, technological breakthrough and industrial revolution show a new trend. The new economy characterized by new technology, new industry, new format and new mode is booming. Technical personnel should have higher engineering application technology for cross-border integration, new requirements to deal with the new economy on the training of technical personnel of project application. In addition to facing the future, combined with the needs of local economic development layout of new engineering majors, it needs to establish a more diversified and individualized engineering application technology education training mode.

---

Xiaoxue Li, sophia2211@qq.com, School of Mechanical and Traffic Engineering, Erdos Institute of Technology, Erdos, Inner Mongolia 017000, China
The emergence and development of the University of applied technology is closely related to the industrial revolution and the development of the real economy [2]. Industrial division of labor promoted the subject of refinement, the industrial development requires specialization of applied talents, which requires universities in scientific research focus on technology, especially the application technology, and pay attention to the cultivation of talents, thus the high-level university of applied technology came into being. Integration of production and education, training of engineering and technical personnel by school enterprise cooperation is the common law of the successful countries of the International University of applied technology. With 2025 Chinese manufacturing continues to promote industrial upgrading and transformation, the establishment of innovation driven modern industrial system, the complex and innovative technology talent demand is also increasing. Facing the economic and social development and industrial upgrading, it is very important to establish an enterprise integrated teaching system which is closely related to industry.

TEACHING MODE OF HIGHER ENGINEERING EDUCATION

The training of applied technical talents belongs to the category of Engineering education. Engineering education was initially influenced by scientific engineering, and the training mode of engineering talents was similar to that of scientists [3]. Most of them were engineering education models under the scientific paradigm. With the introduction of European engineer education mode, it is differentiated into engineering scientists and engineers two kinds of training mode of Engineering education. Since the implementation of the "excellent engineer education program" in 2010, China's engineering education began to change from training engineering scientists to training engineers, namely the engineering education model under the engineering paradigm. This education model emphasizes the organic unity of science education, humanistic education and engineering education, and pursues the balance in the two dimensions of theory and practice, and realizes the all-round development of knowledge, ability and accomplishment.

Personnel training objectives need to be supported by the corresponding teaching content, teaching content is displayed through the curriculum system [4]. In professional teaching, engineering education in colleges and universities mainly includes hierarchical teaching mode, modular teaching mode and CDIO teaching mode. Hierarchical teaching model is constructed according to the sequence of public courses, basic courses, professional basic courses, specialized courses and specialized elective courses. The system is beneficial for students to master subject knowledge system. Although the hierarchical curriculum can achieve more in-depth professional learning goals, but it cannot reflect the actual engineering. Modular teaching mode consists from several courses to form a curriculum module, and then several curriculum modules are combined into the curriculum system, students can choose the course module. Modular teaching mode is beneficial for students to build their own knowledge system flexibly and reflect the engineering practice to a certain extent. According to the engineering life cycle process, the CDIO model opens the course, reflects the actual process of the project more truly, and improves the efficiency of the students' understanding of the engineering and the law of the engineering.
NEW REQUIREMENTS FOR ABILITY TRAINING OF APPLIED TECHNICAL TALENTS

In the early twenty-first Century, the new industrial revolution gradually developed. Compared with the previous industrial revolution, the new industrial revolution is characterized by rapid convergence of technological integration, technology, products, business models, etc., and highlight personalized services through big data. The new industry calls for new engineering talent, new industrial era puts forward new requirements for personnel training. Table 1 lists the quality of future engineers and ability requirements [5]. From the table 1, we can see that the new industrial era pays more attention to the scientific and technological literacy, engineering practice ability, interdisciplinary ability, technical adaptability and system comprehensive ability of the talents. The goal of talent cultivation is to highlight the students' communication ability, team cooperation ability, creative thinking, global vision and social ethics.

Corresponding to the quality and ability requirements of future engineers, it is necessary to establish new goals for talents training in Applied Technology universities. University of technology, compared with traditional university, because of the main focus of the personnel training to adapt to the actual needs of social development and changes of economy and enterprises, can be flexibly adjusted to adapt to changes in the job market, so it is more able to adapt to the new industrial revolution put forward the requirements of talents. The talents trained in Applied Technology University have a strong professional ability, both have a certain theoretical basis, and have a strong ability to comprehensively use all kinds of knowledge and skills to solve practical problems. In the face of the new industry is coming, the personnel training and professional settings should be based on the requirements of industrial development, construction of teaching system and adaptive mechanism and enterprise integration training, training to adapt to enterprise development needs, to solve complex engineering problems, applied

<table>
<thead>
<tr>
<th>World Economic Organization</th>
<th>Ability (cognitive ability, physical ability); Basic skills (process skills); Complex skills (social skills, systematic skills, complex problem-solving skills, resource management skills, technical skills)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEBT Professional Certification Standard</td>
<td>Ability to apply knowledge of mathematics, science and engineering; Ability to design and develop data processing; Design capabilities based on actual requirements; Ability to identify, explain and solve engineering problems; Understanding professional responsibility and moral responsibility; The ability to communicate effectively; Ability to carry out lifelong learning; The ability to use technology, skills and modern engineering tools.</td>
</tr>
<tr>
<td>American Academy of Engineering</td>
<td>Excellent analytical skills; Practical ability; Creative ability; Communication ability; Leadership ability; Business and management capabilities; High moral standards and professional qualities; Vitality, agile, adaptive and flexible; Lifelong learning.</td>
</tr>
<tr>
<td>The meeting of Tianjin University in the construction of new engineering</td>
<td>National feelings; Innovation and entrepreneurship; Cross disciplinary integration: Critical thinking; Global view; Autonomous lifelong learning; Communication and negotiation; Engineering leadership; Environment and sustainable development; Digital ability.</td>
</tr>
</tbody>
</table>
talents with good communication ability, innovation ability and comprehensive ability of the system.

ENTERPRISE INTEGRATION TEACHING SYSTEM CONSTRUCTION

Facing the new goal of talent training in the University of applied technology, it can realize the adaptive demand for Industry and enterprise development, and the openness and integration of the teaching system is the key. Specialties setting, and curriculum system should be integrated into the core demand and frontier zone of industrial development to achieve service personnel training in the development of emerging industries and the upgrading of traditional industries, and to improve the sensitivity of the talents in the development and change of industry.

As shown in Figure 1. enterprise courses integrate with basic courses of discipline, professional basic courses and professional core courses. Professional basic courses emphasize the basic and general application of knowledge theory, and butt with the general requirements of industry production. Professional core courses are based on training objectives, pay attention to complex engineering problem solving, abstract from practical engineering application cases, and sum up knowledge and ability. The enterprise curriculum is aimed at the enterprise post, the teacher is composed of the enterprise expert, the student participates in the real project directly, sets the teaching content completely according to the production craft and the technical process. At the same time, the ability goal of the enterprise curriculum guides the establishment of basic courses, basic courses and core courses, which will lead to the unification of learning and application. According to career orientation and enterprise demand, the curriculum system should be reconstructed, and the teaching content should be determined to realize reverse design and positive implementation.

SUMMARY

The interactive development of the integrated teaching system in the University of applied technology is a process of continuous innovation and exploration. Whether it is based on the enterprise integrated teaching system of teaching curriculum, or for the teaching process of enterprise integration teaching platform,
should abide by the application of technical personnel training objectives principle. Combined with the development of industry and enterprises, it is necessary that fully considerate the driving role of enterprise talent demand, the implementation of key measures to achieve the school enterprise linkage, integration of production and education, highlighting the characteristics of the University of applied technology.

ACKNOWLEDGEMENTS

The research is supported by Key projects of Vocational Education in Erdos City (EZJZ1603).

REFERENCES