Teaching Reform of Curriculum System under the School-Enterprise Collaborative Training Mode

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Abstract: In recent years, the school-enterprise collaborative talent training model, as a new type of education model, has received more and more attention from universities, enterprises, governments and the whole society. School-enterprise collaborative education is an important reform direction for China's higher education to serve the society, serve the society, and promote social development. It is also an inevitable trend of China's higher education development. This paper analyzes the problems existing in the curriculum system teaching under the traditional talent training mode, and proposes a new model of the curriculum system teaching based on the school-enterprise collaborative talent training model. Guided by the school-enterprise coordination mechanism, the combination of professional teachers and enterprise engineers in colleges and universities guarantees the teaching of the course. The combination of textbook theory knowledge and engineering projects is the teaching implementation of the course teaching content, which strengthens the talent engineering quality and engineering practice ability. The intensity of training will provide guarantee and continuous motivation for further improving the quality of professional personnel training and meeting the needs of talents in society and enterprises. The construction of a school-enterprise collaborative innovation and entrepreneurship training system is mainly to establish a variety of talents that are oriented to the needs of personnel training in economic and social development and to cultivate social and technological development. In order to solve the problems of derailing the theory and practical application of colleges and universities, and weak students' ability to work, it provides a certain reference for cultivating innovative and entrepreneurial talents that meet social requirements.

1. Introduction

At present, people have different levels of practice and theoretical thinking on school-enterprise cooperation. Domestic and foreign research institutions and scholars have different interpretations of school-enterprise cooperation. Broadly speaking, school-enterprise cooperation refers to various cooperative activities carried out by educational institutions and industry in the fields of personnel training, scientific research and technical services. The National Council for Cooperative Education explains that cooperative education is a unique form of education that combines classroom learning with paid, planned, and supervised work experience in public or private institutions; it allows students to get out of school. [1] It is a joint participation of both schools and enterprises, with complementary advantages and close cooperation to cultivate students' comprehensive quality. The aim of vocational ability and employment competitiveness is to use the two different educational resources and educational environment of the school and the enterprise, to adopt the organic combination of classroom teaching and student participation practice, the combination of theory and practice, and the combination of in-class and extra-curricular integration. In summary, the definition of school-enterprise cooperation is interpreted as: various cooperative activities carried out by educational institutions and industry in the fields of personnel training, scientific research, technology development and social services.

2. The School-Enterprise Collaborative Curriculum System Teaching Reform Ideas

The overall idea of the curriculum reform under the school-enterprise coordination mechanism is

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to establish a school-enterprise coordination mechanism. Based on professional investigations, closely integrate the latest development trends and needs of the professional, school and enterprise jointly develop training programs and select representative professions.[2] The teaching reform of the curriculum system is shown in Figure 1.



Fig.1 Teaching Reform of the Curriculum System

This article takes a university Internet of Things major as an example. The purpose of school-enterprise collaborative cultivation of the Internet of Things to integrate innovative talents is to form a platform for the operation mechanism of "co-construction, co-management and sharing" between schools and enterprises. The school and enterprise mixed investment will be used to build an integration innovation training platform.[3] According to the construction needs, the relevant technical equipment will be invested in the annual and phased stages to ensure that the platform can track the latest and most cutting-edge technologies and equipment. The platform introduces the processes, norms and systems for the operation of cooperative enterprises, introduces the operational service system of cooperative enterprises, and builds a comprehensive base integrating teaching, research and service.

2.1 Management Share

With reference to the modern corporate governance system, the management and management model of the same management is formed, and the "Internet of Things Professional Group Management Committee" jointly established by the school and enterprise is established. [3]We will make decisions on issues such as asset management, personnel recruitment, and talent development plan formulation, and continuously optimize and improve the series of systems for professional group construction and management, teacher mutual recruitment, and embedded talent training, and jointly develop strategies for school and enterprise development.

2.2 Talent Co-Education

The company proposes the latest job requirements and standards, and the school and enterprise jointly negotiate and discuss together to formulate a talent training plan.[4]The school and the enterprise jointly set up a curriculum development team to develop a curriculum system and a practical teaching system that integrate professionalism, skill training, innovation and entrepreneurship education, jointly establish teaching standards and assessment standards, and continuously update teaching items and contents.

2.3 Teacher Mixed

Establish a school-enterprise mixed faculty team, implement the "double professional

leade"system, and the school and enterprise experts jointly serve as professional leaders; implement the "mutual and mutual employment system", the school hires cooperative enterprise engineers and technicians to become part-time teachers, undertake Part of the professional core curriculum and the main practical courses of teaching work, the cooperative enterprises hired college professional teachers as supervisors and engineers to realize mutual recognition and role interoperability[4].

2.4 Resource Mutual Assistance

Enterprise resources and school resources are complementary to each other. The cooperative enterprise R&D project will be introduced into the school innovation studio, and the enterprise project will be transformed into a school teaching project. The cooperative enterprise professional quality training and talent certification resources will be introduced into the school to jointly carry out technical training and skill appraisal.

2.5 Cultural Blending

The school's cultural accumulation and corporate culture construction, management inheritance, technology research and development, team building and other experience from the surface of the "active close" to the deep "interaction." In the professional group to build and create a strong corporate culture atmosphere, introduce the management system of the enterprise; school-enterprise cooperation to carry out innovation and entrepreneurship activities, hold employment seminars and entrepreneurship forums, tell lively and fresh entrepreneurial cases, share new information, new technologies, new development of. By building a high-level integration innovation training platform and integrating public service resources, we will build a public service platform for regional economic development and form a public service system with shared resources and complementary advantages.[5]Collaborate with the enterprise to coordinate collaborative innovation projects. On the basis of the existing research project management model, solve the difficulties of collaborative innovation projects, such as the salary of human resources. The teachers, enterprise technicians and students constitute the main body of collaborative innovation, and complete the innovation. At the same time as scientific research projects, cultivate innovative talents.

3. Implement Project Teaching Reform with Typical Projects as the Main Line

3.1 Carry out Project Teaching Reform

On the basis of learning from the research and practical experience of the engineering education model of the Ministry of Education, the teaching is carried out in the form of "projects", and students and teachers participate together. Students learn organically and decompose the typical items of the Internet of Things in various professional courses on a semester-by-semester basis, in accordance with the "Teacher's Guide (Selected Questions)--Student Report (Opening Questions)--Project Implementation (Execution)--Project Reporting (Conclusion)".Organizational implementation, to promote the improvement of all students' ability to acquire knowledge, apply knowledge, share knowledge, disseminate knowledge and summarize knowledge. Teachers use creative thinking teaching in teaching to encourage students to try more.

3.2 Construction of a Training Platform for Deep Integration of Production and Education

According to the "basic platform and application subset" IoT development model, according to the three levels of the Internet of Things perception layer, network layer and application layer, respectively, "IoT key technology", "network engineering and security", "cloud computing technology and application". The basic platform for "mobile internet software development"; combined with industry applications, the application of "IoT smart city training platform", "Internet of Things industry application training platform", "Internet of Things technology display and experience interactive platform" and other application subset platforms. We will build a "virtual simulation training platform" for online and offline learning, and build an "Internet of Things Innovation Studio". The training platform defines the property rights with the input of each entity, carries out the enterprise operation management according to the modern enterprise management

system, and realizes the win-win situation of the school and enterprise through the operation mechanism of the innovative training platform.

3.3 Establish a "Double-Type" Teacher Team for School-Enterprise Collaboration

Give full play to the role of enterprises in the cultivation of talents, and form a team of mixed teachers. Cultural infiltration and team integration between the two sides are the primary conditions for the smooth progress of the work. [6]The cooperative enterprise selects excellent technical and management personnel with certain qualifications to enrich the part-time teaching team, formulates the part-time teacher management norms, and improves one-on-one assistance. The part-time teachers bring the latest technology and latest project practical experience of the industry enterprises into the classroom. With the help of teachers, the special ability of teaching is continuously improved, and the full-time teachers improve their practical experience and practical ability in the process of pairing. Pay attention to the cultivation of the application ability of teachers' IoT industry, take the deep cooperation of schools and enterprises as the entry point, let the teachers participate in the actual project development as technicians, feel the technical atmosphere and corporate culture of the Internet of Things industry, and update their knowledge ability structure in time. Highlight key breakthroughs, set up an IoT technology R&D and industrialization technology innovation team, undertake key projects such as large-scale enterprise entrusted projects and enterprise technological transformation projects in smart manufacturing and smart agriculture, and industrialize R&D results through industry, university and research. [7]Combine and enhance the application ability and level of the teacher's Internet of Things industry. Clarify the responsibility of all teachers for innovation and entrepreneurship education. In the pre-job training, curriculum rotation training, backbone training, and industrial enterprise training, the awareness and ability of promoting innovation and entrepreneurship education will be taken as important contents; the full-time teachers of innovation and entrepreneurship education will be selected to participate in specialized training and to work in industry enterprises.

4. School-Enterprise Collaborative Curriculum Implementation and Assessment Methods

4.1 Course Implementation.

Joint teaching mode of professional theory courses. The curriculum in the professional training program includes general education courses, basic subjects and professional basic courses, professional core courses, and professional direction courses.[5] The construction of the joint curriculum teaching mode, rationalize the boundary relationship between professional core courses and professional direction courses, compile the curriculum syllabus of school-enterprise coordination, and strengthen the introduction of project cases, engineering software, industry norms and regulations, etc. Teachers mainly teach systematic theoretical knowledge and allocate more time; enterprise instructors mainly teach engineering project cases, combine the theoretical content of the course, analyze the process of engineering application and key knowledge points, and impart work experience and experience to deepen the integration of theory and practice. The company's tutor's teaching plan is arranged into a training plan, and the evaluation method for the joint teaching of schools and enterprises is formulated.

4.2 Practice (Experimental) Course Joint Guidance Mode

Guided by enterprise needs and talent training objectives, combining theoretical teaching with practical teaching, combining intra-campus experiments with corporate practice as a breakthrough, with professional practice as the starting point, schools and enterprises work together to cultivate students' application and analysis of knowledge.[6] And the ability to solve practical problems. The course experiment takes comprehensive experiment as the starting point, and based on the simulation experiment teaching platform, gives full play to the advantages of numerical experiments, selects the more complicated practical work related to the enterprise engineering project as the experimental content, builds the professional knowledge and highlights the

engineering application. A training platform for multi-level systems of capacity development. Formulate comprehensive experimental guidance rules to guide students to design independently, conduct independent experiments, enhance experimental interest and motivation, and cultivate students' ability to comprehensively apply knowledge and analyze problems.

4.3 Graduation Internship Adopts Flexible Internship

That is, the graduation internship teacher decides the time of graduation internship according to the progress and content of the graduation design and the actual situation of the internship project. Pay attention to different professional directions and different internship purposes, choose different engineering projects to ensure the quality of internship. Graduation design is an important stage for comprehensive training of students. According to the graduation design requirements of different professional directions, combined with part of the construction enterprise or design enterprise project, the selection of the topic, and the appointment of engineers with rich engineering experience and in-school instructors to form a "double division" joint guidance.

4.4 Supervision and Assessment.

In the teaching process, the mechanism of the "School-enterprise Cooperative Teaching and Guidance Group" should be fully utilized to ensure the closeness and coordination of school-enterprise cooperation and ensure the "seamless connection" of the teaching process. The joint lectures should have corresponding student achievement evaluation methods, such as usual questions, discussions, final exams or examinations. The grade overlay mode can be used, which can increase the proportion of usual grades (40%-50%). At the same time, the school also needs to strengthen process supervision and management, such as formulating and implementing leadership lectures, supervision and supervision at the school and hospital levels, student feedback, graduate employment tracking and feedback system, etc., strengthening process supervision and target feedback modification measures. Based on the school-enterprise collaboration model, the reform and implementation of the curriculum system has a good role in improving the knowledge and quality of graduates. It highlights the improvement of students' engineering application ability and adapts to industry enterprises and social development talents. Demand, lay a more solid foundation for student entrepreneurship and employment. The training program is applied to the excellent class teaching process of civil engineering majors in our school.

5. Conclusion

School-enterprise collaborative training of talents is the main way to reform higher education in China, and is also a powerful measure to improve the quality of education. Constructing a school-enterprise collaborative innovation and entrepreneurship talent training system is a new type of education model for the cultivation of higher education talents in China, and is the main path for cultivating applied talents that meet the needs of the current society. This paper analyzes and contrasts the status of co-cultivation talents between schools and enterprises at home and abroad, and lists several representative universities in China that are co-cultivating talents in schools and enterprises, and analyzes their specific practices in the process of school-enterprise collaboration. As well as their strengths and weaknesses, and based on this, a relatively systematic school-enterprise collaborative innovation and entrepreneurship talent training system was Starting from the goal of school-enterprise collaborative innovation and constructed. entrepreneurship training, this paper puts forward the specific implementation plan of school-enterprise collaborative innovation and entrepreneurship talent training, including: curriculum design of school-enterprise collaborative innovation and entrepreneurship training, teaching model reform, practical design, establishment of school A mechanism for effective collaboration between both parties. It is proposed that the school-enterprise synergy needs to change the school-enterprise concept and integrate the school-enterprise culture. Finally, the evaluation criteria for the training of school-enterprise collaborative innovation and entrepreneurship were determined.

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