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Under the Background of New Engineering Disciplines Construction and Exploration of The Integration of Industry, Academia and Research and Platform Collaborative Education Model

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Abstract: In the context of new engineering disciplines, the integration of industry, academia and research and the construction of platform collaborative education mechanisms have developed rapidly in the cooperation between universities and enterprises, and their existing problems have gradually emerged. Analyzed the characteristics of the integration of industry, academia, and research and the platform collaborative education model under the background of new engineering, and pointed out the challenges it currently faces. Explored the construction of the integration of industry, academia, and research and the collaborative education model of platforms, and proposed suggestions for building an education system guided by "production", two-way cooperation between schools and enterprises, implementing a "multi mentor" education model, and building a cloud platform.

Keywords: New Engineering, Industry university research, Collaborative education, Cloud platform.

1. Introduction

Since the 21st century, the Fourth Industrial Revolution has quietly arrived, driven by technological innovation and industrial transformation. High tech industries have developed rapidly, and various industries have undergone earth shaking changes. The emergence of new engineering disciplines has given rise. In 2017, the Ministry of Education officially released the "Guidelines for Research and Practice Projects in New Engineering", sparking a wave of reform in higher engineering education. In 2022, the State Council released the "14th Five Year Plan for the Development of Digital Economy", which pointed out that the digital economy is the main economic form of the new era, and China will vigorously promote the development of the digital economy during the "14th Five Year Plan" period. Therefore, changing the traditional concept and teaching mode of higher engineering education, cultivating innovative and versatile new engineering talents, will provide important support for the development of China's new economy.

The integration of industry, academia, and research and platform collaborative education is achieved by integrating education, scientific research, and production, and using this to build tripartite communication and resource sharing the platform aims to achieve mutual promotion and coordinated development among enterprises, universities, and research institutions, optimize resource allocation among the three, and cultivate application-oriented and innovative talents. The goal of new and versatile talents. Although many universities have signed industry university research cooperation agreements with enterprises, providing strong support for cultivating new engineering talents and promoting higher engineering education reform, there are still many shortcomings, such as low integration of industry university research, poor initiative of production enterprises, difficulty in building cloud platforms, incomplete cloud platform functions, and difficulty in achieving real-time communication. Therefore, in analyzing the characteristics and aspects of the integration of industry, academia, and research and the platform collaborative education model. On the basis of facing challenges, we will construct a new model of industry university research integration and platform collaborative education under the background of new engineering disciplines, and cultivate innovative and composite talents for the new era. Type of talent is currently the top priority for industry university research cooperation among universities, enterprises, and research institutions

2. The Characteristics and Challenges of The Integration of Industry, Academia and Research and Platform Collaborative Education Model Under the Background of New Engineering Disciplines

2.1. Characteristics of Industry University Research Integration and Platform Collaborative Education Model

The connotation of new engineering is emerging, new and new. Emerging refers to new disciplines that are oriented towards the future. New disciplines are the transformation and upgrading of existing disciplines, while new students are interdisciplinary disciplines that emerge in the context of new engineering disciplines. In this context, collaborative education between industry, academia, and research requires characteristics such as innovation, practicality, applicability, development, and interactivity. The construction of cloud platforms is used to achieve linkage between universities, enterprises, and research institutions, and to improve the evaluation feedback improvement system of industry university research. At the same time, cloud platforms should have new and rich functions in the digital economy, allowing the three parties of industry, academia, and research to

achieve real-time interaction among personnel, real-time information updates, and uninterrupted resource sharing. The collaboration between industry university research collaboration and cloud platforms requires the integration of their respective advantages, which means that the current integration of industry university research and platform collaboration will inevitably present new characteristics such as offline practice, online communication, and real-time sharing.

2.2. Challenges Faced by The Integration of Industry, Academia, And Research and The Collaborative Platform Education Model

2.2.1. Lack of motivation and cooperation mechanism for the tripartite cooperation between industry, academia and research

In the process of integrating industry, academia, and research, the lack of motivation and cooperation mechanisms among the three parties is mainly reflected in the following aspects. One reason is that the three parties of industry, academia, and research have different goals, and enterprises focus on current interests, with little motivation to participate in collaborative education between industry, academia, and research. The second is the collaborative education of industry, academia, and research in nurturing students The initial investment cost is too high, and the willingness of enterprises and research institutions to participate is low. In addition, the uneven development of enterprises makes it difficult for small businesses to provide a good practical environment. Thirdly, from the perspective of universities and research institutions, most teachers and researchers mainly rely on papers to improve their performance, and their participation enthusiasm is relatively low. Therefore, the lack of cooperation among universities, enterprises, and research institutions directly affects the effectiveness of industry university research integration and platform collaborative education. Practice is a key link in the collaborative education of industry, academia, and research institutions. To meet the requirements of the development of new engineering disciplines, at least one of the three parties - universities, enterprises, and research institutions - should be the main decision-making and risk bearing entity. At present, there are relatively few detailed rules regarding the rights and responsibilities of the three parties of industry, academia, and research in various aspects. The integration of industry, academia, and research and the platform collaborative education model lack effective institutional guarantees, which directly affect the distribution of interests and achievements among the three parties of industry, academia, and research. At the same time, the value goals of the three parties of industry, academia and research are not consistent, which makes it impossible to apply the law of economic value to meet the interests and demands of all parties in the process of collaborative education between industry, academia and research. 1.2.2 Collaborative education between industry, academia and research should run through the entire university education system Taking the Materials Science and Engineering major at Chongqing University as an example, the practical credits of undergraduate students only account for 17.86% of all credits, which cannot meet the requirements of cultivating new engineering talents (see Table 1). In the practical stage, the only internships that have direct contact with enterprises are metalworking internships, professional knowledge internships, and production internships, accounting for less than 5%. From the perspective of practical experience, professional knowledge internships and production internships are concentrated in the fifth semester and the summer vacation of the third year, respectively. Collaborative education between industry, academia and research should run through the entire university education, which is also an important step in achieving the requirements of the construction of new engineering disciplines.

2.2.2. Construction and Resource Sharing of Industry University Research Collaboration Education

Cloud Platform Cloud platforms are an inevitable trend in the development of the digital economy era. The purpose of building cloud platforms is to achieve real-time communication, resource sharing, and establish a comprehensive evaluation feedback improvement system. Cloud platforms need to provide rich online teaching resources, including interdisciplinary courses and future oriented new subject courses. In order to meet the requirements of the development of new engineering disciplines, the resources and website related technologies of cloud platforms need to be updated in real time. This requires cloud platform managers, resource builders, and technical maintenance personnel to scientifically and reasonably divide labor and promote the smooth progress of higher engineering education reform.

3. Two Way Linkage of School Enterprise Cooperation

Universities organize students to regularly enter relevant enterprises for learning, allowing them to personally experience the production site and understand the production equipment and raw materials required by the industry

And develop market-oriented products and carry out practical operations to cultivate students' engineering awareness and practical abilities. Through seminars, industry and academia

Discuss, sort out, and summarize the technical difficulties in enterprise production by the third party. In addition, utilizing high-quality resources from both universities and enterprises for student graduation

Design (papers), such as encouraging experienced engineers to assist and guide students, and providing high-quality teachers in related fields. Universities invite corporate engineers to give lectures on campus, allowing students to understand the development status of enterprises, reflect on the current situation, gain a deeper understanding of the research direction of the topic, and further understand the employment direction and market. By developing a thorough and detailed linkage plan in advance, the tolerance rate of enterprises entering schools can be improved, and long-term cooperative relationships can be established between universities and enterprises. The two-way linkage between "students entering enterprises" and "enterprises entering schools" benefits enterprises, universities, and students simultaneously, effectively promoting the effective combination of "production" and "education", and providing innovative talents for the development of the new era.

4. Implement the "Multi Mentor" Education Model

Universities and research institutions focus more on

fundamental theoretical research, while enterprises place greater emphasis on practical issues. Individual teachers have limited involvement in subject areas, making it difficult for them to

Integrating principles from multiple fields with engineering technology. The joint guidance of "multiple mentors" between universities and enterprises is conducive to solving the problem of collaborative education among industry, academia and research

The problem of difficulty in interdisciplinary collaboration and the integration of theory and practice.

5. Conclusion

The premise for the construction of the model of integrating industry, academia and research and platform collaborative education is the full integration of industry, academia and research. This not only requires the three parties of industry, academia and research to utilize their own advantages. To make up for the problems in the integration process, it is necessary for the three parties of industry, academia, and research to jointly bear the risks, clarify their own responsibilities, and ensure the stable operation of the cloud platform. Country. The support of families and local governments is an important cornerstone of the integration of industry, academia, and research. Good policy guidance will attract more enterprises and universities to participate, contributing to the integration of industry, academia, and research. The integration and platform collaborative education lay a solid foundation.

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