

Construction and Practice of Collaborative Scientific Research and Education Platform for Light Industry Equipment Industry —— Taking the Advanced Manufacturing College of Shantou Polytechnic as an Example

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Abstract: Scientific research and education is an important part of the three-whole education system, and scientific and technological innovation is the core driving force of national development. Colleges and universities should grasp the scientific concept of scientific and technological innovation, and cultivate college students with innovation ability. Through the construction of "scientific research and education" platform and the close cooperation between enterprises and teachers and students of higher vocational colleges, it can not only improve students' cooperation ability, innovation ability and independent learning ability, but also bring theoretical and technical support to local enterprises, playing a positive role in promoting the formation of enterprises' technological achievements.

1. INTRODUCTION

"Who to train, how to train and for whom" is the eternal thought of education[1]. In the new era, General Secretary Xi Jinping has put forward many new ideas and new conclusions, and determined many new tasks and measures for China's higher education from the overall macro strategic perspective. The concept of "whole-staff education, whole-process education and all-round education"[2] has become a brand new educational concept and has been explored and practiced throughout the country. As the young people of the new era, graduate students should have the courage to establish great ambition, achieve great virtue, become great talents, shoulder the great responsibility of "three complete education", and pay more attention to the necessary character and key ability to adapt to lifelong development and social development[3-6].

This paper mainly around the light industry equipment design and manufacturing ability training target, through further strengthen cooperation with the government, industry, enterprise, and Shantou light industry equipment industry alliance provincial light industry equipment industry institute, teachers and students through the "value lead, platform, science and education integration" light industry equipment industry collaborative education platform, teaching depth fusion, practice, by participating in project to enhance the ability to solve practical problems, improve students' professional skills and theoretical level.

2. CONSTRUCTION IDEAS

Taking the light industry equipment industry in Shantou and eastern Guangdong as the background, Based on platforms such as "Light Industry Equipment Industry Institute, Light Industry Equipment Industry Institute and Industry-Education Integration Innovation Platform", Through the long-term and close cooperation between universities and enterprises in the talent training concept, curriculum system, teaching methods, teaching environment and facilities, management system, evaluation and quality assurance system, Gradually improve the new mechanism of collaborative education between universities and industrial enterprises, Cultivate and cultivate a large number of good professional ethics and the awareness of serving the country and society, Excellent engineering practice ability, engineering design ability and engineering innovation ability, Can adapt to the Shantou and the eastern Guangdong light industry equipment industry development needs of all kinds of three types of talents.

3. SYSTEM CONSTRUCTION

To build a collaborative education system of combining science and education, and guide schools and enterprises to support each other to fulfill their own responsibilities and missions through the cultivation and maintenance of the cooperative relationship between schools and enterprises. With specific cooperation projects as the link, establish a new model from single project cooperation to

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all-round strategic cooperation. Give full play to the role of teachers, and form a double excellent mode of "excellent professional teaching + excellent ideological and political navigation". We should implement the main responsibility of teachers 'classroom teaching, improve the long-term mechanism for the construction of teachers' ethics, create the characteristic mode of "scientific research team + education", and promote the institutionalized and effective comprehensive scientific research and education work system[7-10].

The author takes the initiative to undertake all kinds of high-level discipline competitions, and guides all students to form a virtuous cycle of mutual promotion between discipline competition and professional learning; stimulate the incentive mechanism in the student comprehensive assessment system; actively explore and expand new ways and modes of scientific research education, teachers to encourage and guide students to move from classroom to scientific research, and apply for various scientific research activities to create the atmosphere of scientific research education.

4. EDUCATION MODE

The light industry equipment manufacturing industry represented by packaging machinery, printing machinery, plastic machinery and food machinery is the traditional advantageous pillar industry in eastern Guangdong province, especially Shantou city. With the continuous development of intelligent equipment technology in China, a large number of light industry equipment enterprises represented by Shantou Light Industry Machinery Factory Co., Ltd. are experiencing industrial transformation and upgrading, and are in urgent need of a large number of high-quality intelligent light industry equipment industry needs the "three" talents. In view of the problems existing in higher vocational colleges in training "three types" talents for light industry equipment industry, Relying on the school-enterprise cooperation project of Shantou Light Industry Equipment Enterprise Alliance, vertical projects at all levels, "climbing plan" science and technology innovation cultivation project, various competitions, formed the implementation plan, This paper puts forward the "one leading", two promotion and three integration " based on school and enterprise integration, which organically combines the school, enterprises, domestic and international practical education resources, System to build a variety of ways of practice, Strengthen the immersive enterprise internship, Various ways to improve the modernization degree of curriculum and vocational education; Establish a teacher-student joint project team under school-enterprise cooperation, Hold lectures on scientific and technological innovation, Explore the talent training mode with the project as the background of "project joint application, project collaborative research and project achievement sharing", Cultivate the three types of talents needed for industrial upgrading.

5. METHOD CARRIER

5.1.Moral education first, comprehensively promote the "curriculum ideological and political"

All the professional courses have established the curriculum standards including the ideological and political courses. First grade, in the professional technology platform, mainly professional quality education as the core, such as in "mechanical drawing" "electrical foundation" "metalworking practice" course teaching, combined with national standards, industry standards to carry out civilized behavior cultivation education, integrity education, engineering standards, and preliminary professional ethics knowledge, promote the formation of students' professional quality. Second grade, through the professional direction and a variety of forms of skills competition, quality education and the combination of technical knowledge, operation skills, strengthen students' basic skills training, and team consciousness, self-discipline, home countries feelings and responsibility bear education, make the students form a healthy labor attitude, cultivate good professional ethics and professional dedication. Third grade, through the docking with industry post course task and post practice, under the guidance of teachers, let the students in the task experience what is the spirit and professional ethics, help students set up the correct outlook on life and values, improve self-improvement ability, for the society to cultivate sound personality, high quality of socialist workers.

5.2.Skills-based, multiple collaborative education

Centering on the light industry equipment design and manufacturing post ability training goal, further strengthen the cooperation with the government, industry and enterprises. And Shantou light industry equipment industry union provincial light industry equipment industry institute, to carry out the modern apprenticeship pilot, the "double mentor" system, the teacher is responsible for the field equipment operation and maintenance skills point teaching and examination, the school teachers to participate in student practice management and supervision, and according to the student internship content conception graduation thesis topic, and enterprise teacher to guide students to complete the graduation thesis based on the actual production.

5.3.Teaching resources and the construction of practical training bases complement each other

The construction of new form integrated teaching materials, online and offline mixed courses and the teaching resource database has become the focus of the work of teachers. The three complement each other and work trinity to build a new digital learning platform. Most teachers adopt natural steps, namely through preparing accumulation of various resources, including update

electronic courseware, recording knowledge short video (micro), expand knowledge video, establish exercise problem library, design online interaction, questionnaire, built MOOC class, on the basis of the online hybrid teaching, constantly enrich course teaching resources, optimize the teaching design, finally the new form integration teaching material construction, various resources in the form of qr code link to the press platform. The learning platform records various data of learners. Teachers can not only understand the learning situation of students through the platform, but also evaluate students through the online assessment Settings of the platform.

6. PLATFORM FEATURES

6.1.Brand features

This platform is launched by Shantou vocational and technical college advanced manufacturing institute, construction purpose is to provide opportunities for teachers and students to participate in enterprise applied scientific research projects, establish the mechanism of students 'scientific research activities, make full use of resources, with the ideal faith oriented, through scientific research projects, scientific research platform, the function of khalid ents, improve the quality of "scientific research education", cultivate students' scientific and technological innovation ability, enhance students' sense of responsibility, to professional and enterprise identity, pride of national development, form can serve the characteristics of the local economy project.

6.2.Practice characteristics

Skills-based, multiple collaborative education. Centering on the light industry equipment design and manufacturing post ability training goal, further strengthen the cooperation with the government, industry and enterprises. Jointly build Provincial Light Industry Equipment Industry College with Shantou Light Industry Equipment Industry Alliance, We will launch trials of modern apprenticeships, Implement the "double mentor" system, The enterprise master is responsible for the skill point teaching and assessment of the on-site equipment operation and maintenance, School instructors to participate in the management and supervision of student practice, And according to the student internship content conception of the graduation thesis topic, Guide the students to complete the graduation thesis based on the actual production together with the enterprise master; Students are trained through modern apprenticeship trials, Better understanding of the production process, Theory and practice are more closely linked, Learning ability and engineering application ability have been effectively improved; Deep integration of production and education, Learn to meet practical needs, Enhance the ability to solve practical problems by participating in the project, Improve your professional skills and theoretical level.

6.3.Outcome features

- Make full use of the school teachers advantage and equipment advantage, through cooperation with Shantou light industry equipment industry college fusion innovation platform, facing Shantou and Guangdong light industry equipment enterprises to carry out product development, technology research and development, project consulting services, the enterprise project and teaching, scientific research, competition, training three talents needed for industrial upgrading.

- Establish the teaching mode of school-enterprise cooperation and industry-university cooperation, build the provincial Shantou Demonstration Light Industry Equipment Industry College with Shantou Light Industry Equipment Enterprise Alliance, build the professional group on the industrial chain, carry out cooperation in order class, training base, technology research and development, social service and other aspects, to serve the development of local economy. With the College of Light Industry Equipment Industry as the innovation platform, professional teachers are encouraged to carry out in-depth school-enterprise cooperation in enterprise practice, curriculum and textbook development, technology research and development, and transformation of scientific research achievements. Teachers apply the scientific research experience, innovation ability and advanced techniques and methods learned in the process of school-enterprise cooperation to classroom teaching and practical training, which not only improves their theoretical teaching and practical teaching level, but also is conducive to innovating educational methods, enhancing students 'innovative ability and cultivating students' innovative spirit.

- Out of the past "pay too much attention to teaching skills, cultural education and ignore the professional quality training" myth, in the process of talent training into professional quality education, in the process of theory teaching and training practice spirit, labor spirit, labor spirit, honest and trustworthy educational elements, actively promote the course education construction, let the spirit of the student education process. A group of professional talents and skilled craftsmen from industrial enterprises are hired as part-time teachers to participate in practical teaching and strengthen the value guidance for students and craftsman spirit cultivation. According to the industrial development and enterprise demand, the university-enterprise cooperate to carry out the modern apprenticeship pilot work of electromechanical integration technology, so as to cultivate technical talents who meet the needs of modern manufacturing industry and have electromechanical professional skills and craftsman spirit.

6.4.Innovation features

- Break through the professional boundaries and build a curriculum system for the electromechanical integration technology professional group. According to the requirements of knowledge and vocational ability, the course system is divided into three course modules: job

foundation, job knowledge and job skills. According to the number of job positions oriented to the major, the job skills are then divided into several skill modules. The curriculum should not only be "necessary, sufficient and practical", but also pay attention to its forward-looking nature, and comprehensively cultivate knowledge, skills, ideological and political affairs, literacy and other programs.

- With the help of the School of Light Industry Equipment Industry, we will explore the mechanism of exchange of industry and education positions and mutual employment of full-time teachers, and take multiple measures to build a dual-teacher team of "mutual employment and mutual employment". The enterprise selects technical backbone to teach on-site or visit the school to guide students' practical training. Professional teachers of the school regularly take temporary posts in the enterprise to participate in enterprise engineering projects, understand the actual knowledge required in the development process of engineering projects, and apply the actual knowledge to teaching, so as to improve the advanced nature and practicability of the teaching content.

- Innovation new mode of university-enterprise cooperation, the two sides will jointly develop professional personnel training plan, the introduction of industry enterprise technical standards, joint development of professional courses and teaching resources, and guide the students' practice and employment work, product research and development, to build the campus productive training base, forming talent education, process should, achievement sharing, responsibility sharing close university-enterprise cooperation mechanism.

1) Through school-enterprise cooperation, the quality of talent training will be improved, the reform of professional curriculum, teaching team construction and practical teaching conditions will be promoted, and the zero distance combination of theory and practice can be realized, so that the trained students have a solid foundation of cultural professional knowledge, and a comprehensive ability to meet the job requirements.

- Constantly explore electromechanical integration technology professional group of talent training mode, to "thick foundation, high quality, wide caliber, practice" as the guiding ideology of professional construction, the talent training scheme and curriculum modification, make curriculum system pay more attention to practice to plan curriculum content, to determine the curriculum standards, professional quality as the course teaching objectives, in order to improve the practice and innovation ability as the breakthrough of curriculum reform.

7. CONCLUSIONS

Higher vocational colleges shoulder the responsibility of cultivating technical and skilled talents for economic development. They have the dual attributes of education and economy, and are the most direct and close type of local social economy among all kinds of education. The construction and successful operation of this platform reflects the responsibility of higher vocational colleges to serve the society and train technical talents for the local

economic development. Through the close cooperation between enterprises and teachers and students of higher vocational colleges, we can not only improve students 'cooperation ability, innovation ability and independent learning ability, but also bring theoretical and technical support to local enterprises, playing a positive role in promoting the formation of enterprises' technological achievements. The establishment of the scientific research and education innovation mode of "value leading, platform support, science and education integration" can cultivate talents with stronger applicability and higher skills for the light industry equipment industry enterprises in Shantou and eastern Guangdong.

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