

Construction Strategy of Practical Training Base in Applied Undergraduate University

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Abstract: Analyze the role and many difficulties faced by the construction of practical training bases inside and outside the college in the teaching process of universities, especially in undergraduate universities, and understand the existing experience of the construction of the cooperation between training base platforms and universities. Reasonably adjust the construction and operation plan of the practical training base for machinery majors, discuss the specific “internal and external” strategies and methods, and initially build a platform for the integration and development of applied undergraduate institutions in the region. Explore the promotion methods of construction experience, and try for the optimal allocation of educational resources.

The continuous development and improvement of the construction of practical training bases is an important direction and a key link for the development of China's applied undergraduate universities at this stage. It requires the cooperation of the education of the school, the national policy, the educational institutions in the region where the school is located and the construction of enterprises. However, due to the unscientific system and mechanism, there is a contradiction between uncoordinated educational operation and school training needs, which has led to a series of problems in the overall effect of training, the corresponding investment of enterprises, teachers and student employment fields. The training of applied talents is an important part of China's higher education. The scientific nature of its training plan must be explored.

1. Learn from the Experience of Excellent Training Bases

In German "dual system" training model ^[1], one perspective is the teaching of basic courses charged by universities, the educatee receive formal professional education behaviors in universities. It mainly based on the teacher's teaching, complete the specialized courses and basic courses required by education outline and teaching standards, including elective courses, and entrepreneurship credit courses. The other perspective is the students' practical skills training received in enterprises when they are seniors. It is completed in enterprises. The practical training and internships of students are mainly organized and implemented by enterprises. The experimental equipment provided to students should meet the requirements of direct and active use at this stage, which can ensure that after graduate with internship in the enterprise, students can get on the job right away. Instruments and equipment the applied universities need can be compared with the equipment on the factory to complement each other. And the exclusive facilities can be invested by enterprises, for product development and innovation, and for joint investment with enterprises to fulfill each other in resources.

Using the small factory established in the universities to complete the coherent operation mode of the perfect transition from "theoretical learning" to "in-post graduate practice" inside the campus. This new model is dominated and led by the university. On the one hand, it provides teaching venues and cooperates with industry enterprises determining the required technical requirements for the use of production equipment in enterprises, and teaching students in accordance with production and scientific research needs in combination with production factors. This is a important implement, which can vigorously improve teaching quality and cultivating the high-quality and practical talents who can adapt to on-site production and have management ability. This kind of practical teaching method combining the in-campus factory with the advanced production methods of enterprises, has

played a prominent role in effectively improving the pertinence and effectiveness of education, and has improved the quality of training skilled talents.

2. Formulate a Scientific and Reasonable Talent Training Plan

2.1 Refine learning content

The applied undergraduate focuses on the "application", requiring each major to closely integrate local characteristics, focus on students' practical ability, cultivate innovative and applied talents, and reflect "application" in the construction of the teaching system. The core is practical teaching. Over the years, colleges and universities have made bold reforms and attempts to practice teaching while reforming theoretical teaching.

Initially conceive to establish practical training construction alliance of applied undergraduate universities in the region. The standard is "high-level, high-efficiency, distinctive, and large-scale". The alliance can carry out a comprehensive depth statistic construction of "collaborative education, mutual assistance, synergetic development". And the formation of sound strategies in funding sources and sustainable development^[2].

Establish a management institution for the joint participation of schools and enterprises. The staff in the institution must adhere to the method of "internal and external" to form an operating mechanism of "school-enterprise cooperation, cooperative education, collaborative production, joint research and development" and to organically realize the integration of the campus environment and on-site environment of the enterprise, the school culture and the corporate culture. Among them, the enterprise provides real production projects, and the school-enterprise cooperation develops practical training projects to highlight the teaching, production, training, appraisal and technical service functions of the training base.

During the learning process, the training is implemented according to the requirements of knowledge and skills. For example, after a period of theoretical study, students go to the factory to practice and then come back to study to connect the content of learning and practice. Our college actively explores a teaching mode with a high degree of integration between theory and practice, initiates course reform throughout the college, identifies 17 courses as courses reform projects, and builds integrated courses, focusing on the teaching of knowledge and relying on teachers' professional knowledge to transit to a ability-based and applied education that is mainly adapted to talent training and employment. Through vertical project education, with projects and tasks as carriers, students are the mainstay in the classroom and the teachers play a guiding role. Through teaching videos to enhance students' interest in learning, combined with course evaluation and stage assessment to increase students' enthusiasm as well as significantly reduce the absenteeism and leave rates. Theory and practice are closely integrated into the teaching. The internship also changes the original simple mode and combination of practice and learning, such as mechanical processing training for mechanical majors, whose actual training content includes mechanical identification training, tolerance measurement training, material technology analysis and non-destructive testing, tools and sharpening, CNC programming, component adjustment and alignment, manual programming and CNC turning, CAM and CNC milling, etc. The training is carried out using the hardware factory in our college. In order to improve the students' comprehensive practical skills, the class students perform rotation operations; half do operations, and half of other do knowledge learning. Only two students are arranged to operate one machine tool, and the remaining students are trained by professional teachers on other skills. The learning content is specific, and all the students can feel involved, which can realize the integration and synergy of theoretical teaching and practical teaching, the combination of lectures and practice, ensure that the practical training and internship work goals are consistent with in-post work, the combination of learning and practice, and to achieve the effect of ability training and job docking.

2.2 Improve teachers' practical ability

Applied talents must first have strong application abilities. As teachers who directly pass on

knowledge and skills, they are facing new opportunities and challenges. The Communist Party and China have established a strategy of rely on science and education to rejuvenate the nation and talent strategy. It is clear that only first-class education and first-class talents can build a first-class country. The key to the strategic deployments lay in talents, foundations in education, and nature in teachers. It emphasizes the fundamental role of teachers in education, deepens the comprehensive reform of teacher work, and strives to create a high-quality professional and innovative teacher team with superb ability, reasonable structure, and full of dynamic to lay a solid foundation for cultivating newcomers of the era who are responsible for national rejuvenation. The construction of the teaching staff has become a major project and a key task, which always placing education in a strategic priority development position ^[3]. Our college has started to plan to send teachers to the enterprise for practical training. Teachers must sign the target responsible letter before being sent to the enterprise for practical training. And after the training, the college evaluates them according to the required goals, which effectively promotes the effect of teachers' practical training in enterprises. In the course of corporate training, the teachers of the school combined the actual situation of the enterprise to train the employees of the enterprise. Without the trainees leaving the factory, the teachers went to the enterprise to train them, and trained a large number of usable and retainable technical personnel for enterprises. The cohesiveness and social competitiveness of the enterprise have been stimulated, the inherent potential of the employees have been promoted, the mental outlook and hard work spirit of the employee have been improved through the training, and thereby forming a good and harmonious working and living atmosphere among employees, and improving the skills of the employees. The trained people have become the backbone of technology and management in various departments of the enterprise, adapted to the needs of manufacturing enterprises for the development of talents, and made the enterprise invincible in the competition ^[4].

2.3 Guarantee of improving the students' basic abilities in the training base in campus

Established in 2000, our college's mechanical engineering fundamental experiment teaching center is a school-level demonstration center that integrates teaching and scientific research, skill training, and social service in the school's key construction and management project. The center aims at the cultivation of applied talents, insists on taking students as the main body, persists in the coordinated development of imparting knowledge, training skills and improving comprehensive quality, and strives to cultivate students' professional and technical application ability, engineering practice ability, and high-level comprehensive design and analysis ability, continuous and progressive scientific research and innovation, entrepreneurial ability. In recent years, investment has been increased, and the teaching, learning, practicing rapid prototyping technology room and bearing packaging production line have been developed.

Our college has signed school-enterprise cooperation agreements with more than 30 enterprises, actively established a cooperation guarantee mechanism, and improved the practice management mechanism for students to enter the enterprise, such as the establishment of a school-enterprise cooperation management system and students in-post internship system, and clarified the responsibilities of both parties, carry out school-enterprise cooperation, and finally achieve the common development of schools, business units, school teachers and students, and achieve "multiple wins". Ensure that school-enterprise cooperation continues to develop on the basis of mutual benefit.

In the watts metallurgical bearing practice base, through the reasonable arrangement of professional practice links of machinery, automation, and marketing majors, the practical ability of students in our college has been greatly improved. For example, the internship in functional knowledge and electrical engineering of automation major, contact with transformation equipment and electrical control equipment such as inverters, servo motors in mechanical major, etc. Students in mechanical manufacturing major and automation major of mechanical engineering department through the internship in watts metallurgical bearing practice base learned about production and processing enterprise management, process analysis of bearing sleeve parts, process specification design of bearing sleeve parts, bearing sleeve processing, and so on. Students can independently

solve problems and form good habits after discovering problems and tried to analyze and apply the knowledge and related skills they have learned and master. Through marketing internship, students majoring in marketing are familiar with the working environment of the actual e-commerce network marketing job and the division cooperation. Through the actual e-commerce projects of enterprises, they can also comprehensively master the planning, implementation process, implementation and skills of online marketing.

Actively expand training places. Contact enterprises before enrollment in the automotive service engineering major, and send teachers to enterprises to conduct internships to improve teachers' practical ability. Teachers can quickly adapt to the teaching work of secondary vocational and graduate students, and achieve a good school-enterprise docking. Carry out school-enterprise cooperation, strengthen the construction of a dual-teacher team, and change the practice teaching model for promoting teachers' practical teaching levels. At the same time, teachers are sent to enterprises to train employees for the enterprises to build a good channel for students to improve their competitiveness when they come to the enterprises.^[5]

Improve the construction of the national data platform and carry out the sharing of training bases. The NC Training Center has undertaken NC and heat treatment internships in the college's headquarters mechanism, active and talented classes, and has realized the optimization of resource utilization.

The enterprise hopes to obtain technical and management talents suitable for its development through school-enterprise cooperation, and seeks to obtain technical support and guidance services from the education team when the technology is bottlenecked. The enterprise saves resources and improves competition, maintain the market share of products and maximize the benefits in the continuous advancement.^[6] For horizontal projects carried out by school-enterprise cooperation, school teachers and research teams provide technical support to enterprises and help enterprises solve technical problems. With the continuous deepening of school-enterprise cooperation and continuous development of communication and operation, teachers have come into contact with advanced equipment and core techniques of enterprises during the project development process, and the teachers' knowledge have been updated, which has transformed into the real education influence of the classroom. Our college has set up a research and development center in the practice base, and arranged special personnel to work in the teaching affairs office and scientific research office in order to jointly carry out project research and development to provide theoretical and technical support for enterprises. Teachers and enterprise technical staff have overcome many technical problems in production. Teachers' technical level has also been greatly improved. The achievements in project research and development have been unanimously affirmed by both parties.

The school actively cooperates with industry enterprises during the teaching operation, hires enterprise experts to carry out discussions on talent training programs, introduces talent market requirements, hires people with high professional titles in the company to teach elective courses for students, and allows both professional teachers and enterprise technical backbones to address class. The talents thus cultivated have the knowledge and abilities required by the enterprise and can fully meet the needs of the enterprise.

Strengthen the communication and cooperation with professional counterparts' vocational skill appraisal centers. Through the affirmation on certification of vocational skill appraisal centers, promote the dual certificates or multi-certificate system of diplomas and skill certificates, and actively apply for job skill appraisal bases as well as existing CNC intermediate turners passing acceptance. For now, 28 people have passed the assessment and obtained the intermediate certificate.

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