Research on the Training Model of "Double Certificate"+ "Double Ability" Talents in Applied Undergraduate Colleges and Universities

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Abstract—The cultivation of applied talents should attach importance to the connection between theoretical teaching and practical teaching, attach equal importance to both theoretical and practical teaching, set up a curriculum system with the cultivation of innovative and practical abilities as its core competence, integrate enterprise practice and social needs into the talent cultivation program, and solve the problem of disconnection between theoretical teaching and practical teaching. This paper takes Wuchang Shouyi University as an example. To explore the "dual-ability + dual-certificate" talent training mode of Applied Undergraduate Based on Industry-University-Research Cooperative education. This talent training mode refers to the operation mechanism which is employment-oriented, student-centered and ability-based, and which is supported by the policy support system of industry-university-research cooperation education, the "double-qualified" teacher team security system, the applied talent training system and the vocational qualification certificate management system. The purpose is to cultivate the students' innovative ability and practical ability as the core of the ability quality. (Abbreviated as "dual ability", and obtain academic certificates and professional qualification certificates (referred to as "dual certificates") personnel training mode.

Keywords—component; applied undergraduate colleges and universities; "Dual Ability + Dual Certificate"; talent training model

I. INTRODUCTION

Applied undergraduate education, namely vocational education at undergraduate level, and traditional undergraduate education are two types of parallel development of undergraduate education, there is no hierarchical difference [1].

Due to the historical development of higher education in China, policy orientation and educational concept, most ordinary undergraduate colleges and universities still run schools according to the way of academic universities, and there are some differences in the orientation of development goals, discipline and specialty, and teaching orientation of Applied Undergraduate Colleges and universities.

In addition, Application-oriented Undergraduate Colleges and higher vocational colleges both belong to the modern higher vocational education system with the aim of training application-oriented talents, but there are significant differences between them in terms of personnel training specifications and quality. The cultivation of applied talents should attach importance to the connection between theoretical teaching and practical teaching, attach equal importance to both theoretical and practical teaching, set up a curriculum system with the cultivation of innovative and practical abilities as its core competence, integrate enterprise practice and social needs into the talent cultivation program, and solve the problem of disconnection between theoretical teaching and practical teaching. Therefore, Application-oriented Undergraduate Colleges and universities need to explore an innovative talent training mode different from the traditional ordinary undergraduate and higher vocational colleges.

Wuchang Shouyi University is located in the Application-oriented Undergraduate Colleges and universities. Under the condition that it has the training mode of "production, learning and research" in its professional curriculum system, teaching staff and the degree of school-enterprise cooperation, it explores a "dual-ability + dual-certificate" talent training mode of the Application-oriented Undergraduate Based on the cooperative education of production, learning and research.

II. TRAINING MODEL OF PRODUCTION, LEARNING AND RESEARCH

The cooperative education of industry, University and research focuses on cultivating students' excellent quality, comprehensive ability and employment competitiveness. It takes full advantage of various educational environments and

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resources, such as schools, enterprises and scientific research institutions, as well as their respective advantages in personnel training, and organically combines school education with scientific research practice, which mainly teaches knowledge in class, with direct acquisition of practical experience [2].

The Outline of the National Medium and Long Term Education Reform and Development Plan (2010-2020) puts forward the following proposals: "Establish and improve the school-running mechanism led by the government, guided by the industry and participated by enterprises, formulate laws and regulations to promote school-enterprise cooperation, and promote the institutionalization of school-enterprise cooperation." Under the current situation, industry organizations, enterprises and universities lack endogenous motivation or platform and mechanism for cooperation because of their different demands. To strengthen the education of Industry-University-Research cooperation, government guidance and policy support are still needed. To give full play to the leading role of the government in the industry-university-research cooperation education, the government should become the driver, regulator, supervisor and evaluator, promote the introduction of complete legal documents and supporting measures to support the industry-university-research cooperation education, establish the financing innovation mechanism, incentive innovation mechanism, benefit distribution mechanism [3], as well as coordination mechanism and performance evaluation mechanism System [4].

Taking Wuchang Shouyi University as an example, this school mainly adopts the following three modes of talent cultivation based on industry-university-research cooperation education.

A. School enterprise cooperation

According to the needs of local economic development and school personnel training, relying on specialty to run schools and enterprises, giving full play to the school's professional advantages, intellectual advantages and talent advantages, and through effective management mechanism in schools, establishing a close relationship between school-run enterprises and teaching units. Make the integration of production, teaching and research in a unified management system to form an integrated teaching factory or entity company. Teachers can organize teaching content around products, promote the reform of teaching content and curriculum system, and students can participate in product production and technology development, so as to shorten the distance between teaching and production practice. In the evaluation of employment, the school emphasizes practical experience and the promotion of teachers, which requires more than half a year of enterprise experience [5].

B. School cooperation

In order to make full use of school resources, according to the different characteristics of each school, School-School cooperation can be realized by linking different schools. Major reference to the professional characteristics and effective resources of different schools, teachers and students to exchange learning, according to the advantages of different schools in different courses, such as the scientific rationality of the training system, the integrity of curriculum and practical type, to effectively adjust their teaching content. In Wuchang Shouyi University, we have contacted many universities including Wuhan University of Technology, Hubei University of Economics, Hubei University of Technology, Wuhan University of Light Industry, Wuhan Business College and so on to conduct research and study, which has played a very good role in promoting the whole teaching.

C. School land cooperation

Each university has a large number of graduates each year, which flows to different enterprises in different regions. Schools can closely link graduates from different regions to facilitate further school-site cooperation. For example, enterprises and government agencies in prefecture-level cities and counties below Hubei have graduates working in them, relying on scientific research cooperation units, expanding cooperation channels, and establishing practice enterprise groups. Innovation laboratories are jointly built by schools and enterprises, which are funded by enterprises and managed by both schools and enterprises. Schools provide young teachers for laboratories, and enterprises send engineers and technicians to serve as instructors. There are three main sources of projects undertaken by innovative laboratories: projects put forward by enterprises according to their needs, self-selected projects by students, and scientific research projects by school teachers. Establish a practice teaching base in the enterprise, responsible for students/enterprise understanding practice, enterprise training, students' graduation design and so on. Through the above methods, the school achieves the goal that teachers and students enter the enterprise to participate in production activities and gain practical experience. The enterprise obtains considerable benefits from the topics completed by young teachers and students, and can recruit the most desired students. Thus, both sides of the school and enterprise achieve the goal of "mutual benefit and win-win".

These are the three training modes of the school under the long-term cooperative policy of production, teaching and research, but lack of demonstration and practical support for students' abilities. The implementation of any new system can not be separated from repeated explorations. Only by constantly improving the traditional training mode in practice can we find a new way of development and bring its greatest value into play for social economy and education. Through years of research and Practice on the training mode of industry, University and research, the school finds that students' abilities need to be realized through some paths, while considering the training of abilities, it needs to establish the standard of ability testing, so as to explore the "dual certificate"+ "dual ability" talent training mode of Applied Undergraduate colleges [6].

III. CREATING "DOUBLE CERTIFICATE"+ "DOUBLE ABILITY" TALENT TRAINING MODEL BASED ON INDUSTRY-UNIVERSITY-RESEARCH COOPERATIVE EDUCATION

On the basis of summing up the experience of talent training mode reform in engineering education such as Excellent Engineer Education Training Plan and CDIO, the school has carried out research and Practice on deepening the system mechanism of integration of production and education, school-enterprise cooperation and talent training mode
The "dual-ability + dual-certificate" talent training mode of applied undergraduate course refers to the operation mechanism supported by employment-oriented, student-centered and ability-based, which includes the policy support system of Industry-University-Research Cooperative education, the guarantee system of "double-qualified" teachers, the training system of applied talents and the management system of vocational qualification certificates, aiming at cultivating students' innovative ability and practice. Ability as the core competence quality (referred to as "dual competence"), and obtain academic credentials and professional qualification certificates (referred to as "dual certificates") personnel training mode [7].

A. Grasp the Foundation Work of the Construction of Production, Education and Research Base

Wuchang Shouyi University has refined a set of modular teaching and training mode in the long-term construction of production, teaching and research base, and has clearly formulated the training plan for practice. This set of teaching reform program has been unanimously approved by the relevant evaluation experts of the Ministry of Education, and Wuchang Shouyi University has been incorporated into the pilot unit of Jingchu Cooperative Education Reform in Education. Wuchang Shouyi University has signed cooperation agreements with dozens of enterprises successively, which laid a foundation for the reform of Applied Undergraduate Talents Training mode. Among them, Zhou Hei Duck Company has established a provincial demonstration base for internship, and at the same time, jointly with Zhengda, fine products shop, Yuwei duck neck and other well-known enterprises, through the practice and scientific research work carried out in the production site, students' innovation ability has been significantly improved. In addition, we should pay more attention to the role of innovation and entrepreneurship education such as subject competition in undergraduate talent training. Schools should absorb various social forces to sponsor and support the organization and development of various competitions, and selectively attract social forces to participate in the training process of students' practical and innovative ability according to different projects. By innovating competition forms and themes, offering internship posts, employment recommendation and generous bonuses, students are attracted to participate actively in discipline competitions.

B. Innovation and Practice Ability are the Core Ability for Students to Connect with Society

Innovation is the soul of a nation's progress and the inexhaustible motive force for a country's prosperity and development. With the development of science and technology and the intensification of competition, the cultivation of innovative talents has become an inevitable requirement for the development of education. Universities shoulder the primary responsibility of training qualified innovative talents. Optimizing the curriculum system of cultivating innovative talents is the primary task of cultivating college students' innovative ability. It mainly includes:

Firstly, we should absorb excellent teaching methods at home and abroad, rationally arrange the general curriculum system, and improve students' comprehensive quality..

Secondly, The opening time of core courses and characteristic courses should be adjusted so that students can learn professional knowledge as soon as possible and devote themselves to improving their competitiveness.

Thirdly, We should attach importance to the interdisciplinary curriculum system and expand students' academic horizons.

As for the implementation of practical teaching system, all curriculum experiments, curriculum design or comprehensive practice, cognitive practice, professional practice and graduation design should formulate detailed syllabus, clarify the nature and types of experiments, build corresponding professional laboratories, configure corresponding simulation and simulation software, and establish practice bases in cooperation with relevant enterprises. Extracurricular research requires every student to take part in it. In the training plan, it is stipulated that students must obtain corresponding extra-curricular research credits. All kinds of design contests require most students to participate in the preliminary contest as far as possible, and organize them to continue their research, which can be used as extra-curricular research credits [8].

C. Double certificate is the main basis for testing and supporting dual ability

"Double Certificate" training mode refers to the training mode of granting degree certificates and vocational qualification certificates at the same time when graduates from colleges and universities graduate. "Double certificate" education is not only conducive to colleges and universities to meet social needs, to promote the transformation and development of colleges and universities, but also conducive to the cultivation of talents, and to promote the employment of students [9]. Wuchang Shouyi University has refined a set of modular teaching and training mode in the long-term construction of production, teaching and research base, and has clearly formulated the training plan for practice. This set of teaching reform program has been unanimously approved by the relevant evaluation experts of the Ministry of Education, and Wuchang Shouyi University has been incorporated into the pilot unit of Jingchu Cooperative Education Reform in Education. Wuchang Shouyi University has signed cooperation agreements with dozens of enterprises successively, which laid a foundation for the reform of Applied Undergraduate Talents Training mode. Among them, Zhou Hei Duck Company has established a provincial demonstration base for internship, and at the same time, jointly with Zhengda, fine products shop, Yuwei duck neck and other well-known enterprises, through the practice and scientific research work carried out in the production site, students' innovation ability has been significantly improved. In addition, we should pay more attention to the role of innovation and entrepreneurship education such as subject competition in undergraduate talent training. Schools should absorb various social forces to sponsor and support the organization and development of various competitions, and selectively attract social forces to participate in the training process of students' practical and innovative ability according to different projects.
While carrying out the traditional diploma certificate education, the "double certificate" training mode integrates the talent training with the needs of regional economy and enterprise development, actively carries out the investigation and analysis of Vocational ability, guides vocational qualification education, and pays attention to the comprehensive training of students' knowledge, ability and quality. It is an effective and necessary means to solve the problem of shortage of applied talents [10].

D. The Guarantee System of "Double Teachers" Teachers

One of the bottlenecks of the Faculty of applied undergraduate colleges is the lack of professionally and practically experienced teachers. In order to guarantee the training quality of applied talents, Applied Undergraduate Colleges and universities should have a full-time and part-time "double-qualified" teaching team with not only broad theoretical knowledge and high academic level, but also strong practical and applied ability [11]. In the construction of "double-qualified" teachers, we should start from the following aspects:

Firstly, it is necessary to strengthen the support of various industry organizations for the training of professional teachers in Wuchang Shouyi University, including follow-up lectures, teaching seminars, lecture exchanges, cooperation in education and research, etc.

Secondly, we should improve professional teachers' practical teaching ability and arrange teachers to work in enterprises.

Thirdly, a group of mutual-employed teachers should be introduced through the "double-employment" system, especially managers and technicians from base enterprises as part-time teachers. The proportion of "double-qualified" teachers in this major has been raised to 45-50%, and the number of visiting professors and part-time teachers in enterprises has reached 10-15.

IV. CONCLUSION

In the preceding part, based on the cultivation mode of "double certificates" and "double abilities" on the basis of industry, University and research, some main modes of cooperative education between industry, University and research are briefly described, and the key to the implementation of the "double certificates" and "double abilities" talent cultivation mode based on the basis of industry, university and research is discussed in depth.

Encouraging students to participate in certificate training and strengthening teacher training and policy support can not only enrich and improve students' extracurricular learning efficiency, but also create conditions for outstanding students to stand out. On the basis of the multi-party cooperation training mode established by the school, it is beneficial to cultivate high-quality talents with innovative and practical abilities. Therefore, it is of great practical significance to deepen the teaching reform, improve the teaching quality, promote the development of teachers and train high-quality knowledge-based applied talents around the training of talents.

Combining school with industry and scientific research institutes organically, making use of the advantages of school, industry and scientific research institutes in personnel training, combining the school education environment with the production site environment with indirect knowledge dissemination in classroom and direct experience and ability acquisition in practice organically in the process of students' training, so that schools, teachers, students, society and enterprises can be established broadly. Universal connection, cultivate students' ability, improve students' quality in an all-round way. Through the cooperative education of industry, University and research, making use of the two educational environments of school and society, and rationally arranging curriculum learning and social practice, we can make the training plan, teaching content and practical links more close to the needs of social development, promote the improvement of students' practical ability and overall quality, and achieve the goal of training applied talents.

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