Research on the Training Mode of Innovative Talents for Design Majors in Higher Vocational Colleges under the Background of School-enterprise Collaborative Education

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Abstract. Based on the analysis of the problems of the current art design specialty in higher vocational colleges in the talented person training mode innovation, on the basis of clothing and apparel design major for example, from the curriculum system, teaching mode, the training room construction, and teaching material development and so on four aspects, the synergy between colleges education mode of higher vocational design engineering, this paper discusses the reform path of innovative talents in order to improve the students' innovative undertaking comprehensive ability, and in personnel training mode reform for higher vocational arts related aspects to provide reference on the basis of theory and practice.

Understanding of the Significance of Collaborative Education between Higher Vocational Colleges and Enterprises

Collaborative education in higher vocational colleges is a systematic innovative organizational model. The key to its implementation is to make each subject that affects collaborative education use its resources and conduct effective cooperation around the subject of talent training in higher vocational education, so as to produce the best effect [1]. Talent demand is rapidly changing in the modern economic development and changing circumstances, local vocational colleges how to take the initiative to regional economic development and industrial docking requirements, improve the quality of higher vocational technical training of personnel, obtain the cooperative as the main line, realize the education resources, material resources and human resources effective reorganization, through the Collaborative education and training high skilled talents truly adapt to the needs of society, is an important path to the local sustainable development in higher vocational colleges [2, 3].

Development Status and Existing Problems of Design Majors in Higher Vocational Colleges

Although higher vocational education in China starts late, development is rapid. At present, the scale of students has occupied half of the total number of students in colleges and universities, making great contributions to the popularization of higher education [4]. However, while the higher vocational colleges are rapidly expanding the scale of teaching, there is also a problem of how to improve the quality of higher vocational students to meet the needs of social and economic development for skilled personnel. In recent years the rapid development of social economy, higher vocational colleges has made some design majoring in educational idea, talent training mode, curriculum setting, teacher team construction, training equipment, teaching material development, cooperation between colleges and so on, can't meet the needs of the students' comprehensive vocational ability training, different levels and design industry disjointed phenomenon, embodied in the following aspects.

Talent Training Program and Curriculum Structure are not flexible, and there is a Gap with the Market Demand

According to investigation, at present the talent that a lot of higher vocational colleges design
kind professional fosters a program to begin to admit a new before each session already made good. In the 3-year training period of this class of students, this training program should be used for at least 3 years, and the curriculum system of most higher vocational colleges should also be used for at least 3 years [5]. It is possible to adjust the curriculum after the graduation of a class of students, resulting in some unreasonable curriculum settings or content cannot keep up with the demands of vocational positions. It has affected students' ability to analyze and solve problems in specific work, and even prolonged the adaptation period of students' vocational positions.

The Construction System and Strength of Double-quality Teachers are not Perfect

At present, many higher vocational colleges is a full-time graduate or above in the recruitment requirement, this requirement improves the cultural quality of professional art teachers, but many of the young teachers from college graduates recruitment, serious lack of enterprise practice experience, the actual beginning ability is weak, which affect the students' knowledge and skills of system culture.

Training Equipment Obsolete, Slow Update, and the Gap between the Enterprise

With the rapid development of modern science and technology, new equipment is being developed day by day. In order to improve production efficiency, the updating speed of equipment is also being accelerated. However, the equipment used for practical training in many higher vocational colleges is obsolete, some of which have been used for more than 10 years. After students enter the enterprise, they have to re-adapt to the new equipment of the enterprise, thus extending the adaptation period for students. Even if the equipment is updated, the procurement process is complex and the update speed is slow. General training room equipment construction will take 1-2 years, even 3-4 years, the purchase of new equipment is no longer new.

Teaching Materials Use Object is not Clear, Update Lag

Higher vocational education and common undergraduate course, specialized subject and technical secondary school exist very big difference on educational target of talent cultivation, although current higher vocational college designs kind of professional teaching material to increase somewhat, but a lot of teaching material content is pointed not strong, look to suit undergraduate course already, suit higher vocational school again, it is technical secondary school even, actual use rises the effect is very poor. Moreover, many textbooks are only written by professional teachers, and there is no real training program for skills needed by enterprises and industries. Moreover, new equipment, new technology, new materials, new ideas and so on cannot really enter the teaching materials, making it difficult for higher vocational design majors with the production, construction, management closely linked.

School-enterprise Cooperation is not Deep enough, more Form than Content

In the process of actively exploring the right mode of personnel training, the running practice of higher vocational colleges has been improved with the updating of running philosophy. At present, many higher vocational colleges attach great importance to the cooperation between schools and enterprises. However, some enterprises consider their own interests and have little enthusiasm for cooperation, mainly focusing on professional practice and graduation practice. There is no effective mechanism between schools and enterprises to promote the in-depth cooperation between schools and enterprises.

Innovation Talent Model Reform of Design Majors in Higher Vocational Colleges under School-enterprise Collaborative Education Mode

Taking clothing and Apparel Design as an example, this paper actively explores the training mode of innovative talents for design majors in higher vocational colleges under the school-enterprise collaborative education mode. The major of Clothing and Apparel Design is the key major of art and design college of Heyuan Polytechnic. In recent years, this major has been
actively exploring and trying the talent training mode. Since 2013, it has started to implement the talent training mode of "double-track parallel, development and innovation". One of the "two tracks" refers to cooperative enterprises. After years of school-enterprise cooperation, a teaching mode suitable for the major has been explored.

**Schools and Enterprises Jointly Develop and Implement the "Term Project Curriculum Throughout" Practical Teaching System**

The term project type is a work-oriented learning process that reconstructs knowledge and practice knowledge with the realization of practical training projects as the core [6]. On the basis of the "dual track, expanding and innovating" talent training model and the reform of the curriculum system based on the work process, the professional and the enterprise jointly formulate and implement the "semester project curriculum" practical teaching system [7], as shown in Figure 1, that is, during the 3 years and 6 semesters of higher vocational colleges, each semester designs a comprehensive practical course according to the characteristics of professional courses and the requirements for professional ability development. The actual training project of this course comes from the actual case of the cooperative enterprise. The knowledge points and skills required cover other professional courses in the semester and can effectively improve the students' comprehensive practical ability. Moreover, the actual training project can adjust the content of the actual training project from time to time according to the "mutation" such as the development needs of clothing companies, fashion trends, and clothing technology innovation, and increase the flexibility of the talent training program and curriculum content design.

![Figure 1. Term Project Curriculum Design.](image-url)

**Modern Apprenticeship and Project Team Tutorial Teaching Model**

Modern apprenticeship system was proposed by the Ministry of Education, PRC in 2014, aiming to deepen the integration of industry and education, school-enterprise cooperation, further improve the school-enterprise cooperation education mechanism, and innovate the training mode of technical skills talents [8]. Modern apprenticeship is a modern talent training mode that focuses on skills training for students through the dual subjects of school and enterprise, and the joint teaching of teachers and enterprise technical and managerial personnel [9, 10, 11]. Modern apprenticeship education mode makes enterprises truly become one of the "parents" of talent cultivation. School-enterprise cooperation no longer just stays at the participation stage, but becomes the dominant party in talent cultivation, making the school-enterprise integration more profound. This professional actively respond to a nation called on to explore modern apprenticeship education mode, in 2018 and Heyuan Tiansheng sports Products Co., Ltd. signed a modern apprenticeship
agreement, jointly established the talent training scheme. The Enterprise Big Classroom, the Clothing Industry Engineering, the Clothing Production Management And Quality Control, the Enterprise With Post Practice dominated By Companies such as course have added in the talent training scheme, truly achieve "zero contact" with the enterprise, students change employees job before graduation.

In addition, in the second and third years, students shall implement the project team double tutorial system, that is, according to the requirements of product and technology research and development of enterprises, students shall be divided into several groups according to their skills and expertise to form product and technology research and development teams, and professional teachers in the university and technical personnel or management personnel of enterprises shall serve as mentors. Experienced school teacher professional theory, enterprise technology or management practice experience, the students to accept new things quickly, have strong learning ability, the three "combination" of the project team, from the Angle of the enterprise, not only can bring the limitation to the enterprise, and strengthen the professional ability of their own positions, and on the perspective of higher vocational colleges, increased the professional teacher's practical experience, at the same time, in the project team, the students' learning is no longer a passive, but rather in a member of the product or technology research and development, greatly mobilized the students' initiative, enthusiasm and creativity.

Schools and Enterprises Jointly Build Training Base, All-weather Open Training Room

During the provincial key specialty and construction of the demonstration, This major had expanded the clothing CAD training rooms, costume design training room, clothing structure clothing, etc., and Jointly built the "school factory" with Yichun group Co., Ltd. computer flat seaming machine, five line overclock machine, computer flat head keyhole machine, double needle chain machine, double needle sewing machine, computer digital printing machine, laser cutting machine, automatic cutting bed, automatic sewing machines, attach waistband machine and other modern clothing equipment, follow the enterprise production needs. The course of Use and Maintenance of Clothing Machinery and Equipment was added into the curriculum. During the first semester of each freshman, we should be skilled in using these machines and equipment. And implement all-weather open training room, training room as a place for students completely open practical skills training, students can contact new equipment in the industry, learn new skills, and students autonomous learning in the "learning factory," not only can exercise the students' ability of autonomous exploration, and shortened the student enterprise adjustment period.

Schools and Enterprises Jointly Develop Specialized Teaching Materials

Although there are a lot of textbooks for clothing majors, there are also some problems, such as outdated contents that cannot keep up with modern higher vocational education ideas, more theoretical knowledge, less practical training, and weak content system. So this professional and enterprise cooperation according to the character and talent training courses need to jointly develop the series of teaching materials of Clothing Project Tutorial—Female Bottoms workmanship, the Clothing Structure Design Project Tutorial—Female Bottoms, Clothing Project Tutorial—Clothing Design Practice and Clothing Project Tutorial—Clothing Photoshop Software Design. Through the study of this series of teaching materials, students cannot only better combine the professional core knowledge system of fashion design, fashion structure and fashion craft, but also participate in the actual operation projects of enterprises, realize the close contact with enterprises, and effectively improve the comprehensive professional ability and quality.

Conclusion

School-enterprise collaborative education mode not only provides targeted talents for enterprises, but also effectively solves the problem of improving collaborative education mechanism for higher vocational design majors and attracting more social resources into talent training, which is an important way for higher vocational colleges to innovate talent training mechanism. At the same
time, the collaborative education model between colleges promote the industry and enterprises to participate in the whole process of vocational education personnel training, major setting and industry demand docking, course content and the enterprise product development docking dock with the production process, the teaching process, vocational education and life-long learning [12], improve the quality of the creative talents training and pertinence, reaches the school and companies win-win.

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