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Exploration of Teaching Reform and Practice in the Industry Education Linkage of Clothing Design Majors in Applied Universities

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Abstract: The clothing industry is transforming towards digitization and branding, and enterprises have put forward stricter requirements for the comprehensive literacy of clothing design talents. The problem of traditional teaching models being disconnected from the actual needs of the industry is becoming increasingly apparent. To improve the mismatch between talent cultivation and industry development, this article takes the linkage between industry and education in applied universities as the core idea, constructs an operational mechanism for school enterprise collaborative education, reorganizes and adjusts the original curriculum system, jointly builds a practical teaching platform for real scenarios, and promotes reform implementation through project-based teaching, dual mentor collaborative guidance, and diversified dynamic evaluation. This has significantly improved students' ability to implement design practices and their level of professional adaptation, and also provided a reference for the teaching reform of similar applied design majors.

Keywords: Application-Oriented Universities, Industry Education Linkage, Clothing Design, Reform in Education.

1. Introduction

With the iteration and upgrading of digital technology, the clothing industry is undergoing a profound structural transformation. The industry development model has upgraded from traditional processing and manufacturing to the direction of collaborative development of creative research and development, brand operation, and digital production. As a result, the talent demand structure has undergone significant adjustments, and the existing clothing design talent training system is no longer compatible with the employment needs of enterprises. For a long time, the teaching of fashion design majors in applied universities has focused on theoretical lectures and artistic creation practices, and there is a disconnect between the teaching scenarios and the real design processes, production techniques, cost control, market operations, and other industrial links of enterprises. Students in school tend to focus more on rendering and conceptual design, lacking awareness of the entire clothing industry chain; Graduates often need a longer period of time to adapt to their positions after entering the workforce, and some graduates choose to switch careers due to difficulty in quickly matching job requirements. Promoting the deep linkage between the industrial chain and the education chain can embed industry resources into the entire process of talent cultivation, transform enterprise job standards, project experience, and cutting-edge technologies into teaching content, make talent cultivation goals closely follow the pace of industrial development, effectively bridge the gap between university talent cultivation and actual market demand, and is an inevitable path for the fashion design profession to improve the quality of education and achieve connotative sustainable development.

2. Research Methodology

2.1. Background of Industry Education Linkage Teaching Reform

2.1.1. Difficulties in Cultivating Talents in the Field of Fashion Design

The talent cultivation system for fashion design majors in Chinese universities is mostly based on the logical construction of disciplinary knowledge. The teaching content focuses on artistic aesthetics and basic theories, with insufficient coverage of practical content such as market dynamics, process implementation, large-scale production, and commercial operations. In the clothing style design course, students only need to complete the rendering and design explanation writing, without considering practical factors such as clothing fabric cost, production cycle, and product consumer acceptance, which leads to clothing design works lacking practical market value despite having artistic and fashionable qualities. Students' completed design works often remain at the level of creative expression, lacking consideration for cost budget, fabric feasibility, production process limitations, and the real needs of consumer groups, making it difficult to directly transform them into products that meet the practical needs of enterprises. Classroom teaching still relies on one-way teaching by teachers and passive acceptance of knowledge by students. The ability of students to explore independently, collaborate in teams, and solve practical problems during and after class is limited, and their innovative thinking and hands-on abilities are not fully exercised[1]. Professional teachers in universities have solid theoretical knowledge, but they lack experience in frontline practical projects in enterprises, and their understanding of new materials, technologies, and business models in the industry is not timely enough. The update speed of teaching content is significantly lagging behind the development of the industry. Especially the teaching coverage of digital technologies such as 3D virtual fitting and intelligent cutting

is seriously insufficient. This leads to a low degree of job suitability for graduates in terms of the quality of talent cultivation. Enterprises need to invest a lot of time and cost in pre job training, covering basic process operations, production process standardization, and market thinking cultivation one by one. The supply of talent is difficult to effectively adapt to industry demand in the long run.

2.1.2. Policy Driven Integration of Industry and Education

The continuous introduction of policies by the government to promote the integration of industry and education and the collaborative education between schools and enterprises has provided clear direction and institutional support for the teaching reform of applied universities. From 2014 to 2016, the concept of "integration of industry and education" was first proposed in the "Decision on Accelerating the Development of Modern Vocational Education" during the early exploration stage; The period from 2017 to 2019 was the stage of top-level design and institutional establishment. Documents such as "Several Opinions on Deepening the Integration of Industry and Education", "Implementation Measures for Building Industry Education Integration Enterprises (Trial)", and "National Pilot Implementation Plan for Industry Education Integration Construction" established the status of industry education integration and constructed the basic framework of the policy system; The period from 2020 to 2022 is the stage of improving quality and innovating models. Documents such as the "Action Plan for Improving Quality and Improving Vocational Education (2020-2023)", "Opinions on Promoting the High quality Development of Modern Vocational Education", and "Guidelines for the Construction of Modern Industrial Colleges (Trial)" clearly indicate that policy priorities will shift towards improving quality and innovating specific carriers; From 2023 to present, it is a stage of deepening implementation and system upgrading. Documents such as the "Opinions on Deepening the Reform of Modern Vocational Education System Construction", the "Outline of the Plan for Building an Education Strong Country (2024-2035)", and the "15th Five Year Plan for Education Development" have been further refined, focusing on building more specific integration carriers and action plans. A series of national policy documents explicitly propose to deepen school enterprise cooperation, encourage enterprises to participate in the entire process of talent cultivation, and promote the formation of an integrated education pattern of "industry university research application". Encourage deep cooperation between universities and industries, jointly participating in the formulation of talent training programs, curriculum development, practical teaching organization, and faculty team construction, gradually breaking down the barriers between the education chain and the industry chain. Enterprises are gradually shifting from simply accepting interns to fully participating in the education process, deepening cooperation through various forms such as co building laboratories, joint enrollment, and order based training, creating favorable external conditions for the reform of industry education linkage teaching[2].

2.2. Construction of Industry Education Linkage Teaching Mode

2.2.1. Collaborative Education Mechanism between Schools and Enterprises

Collaborative education between schools and enterprises is based on a long-term and stable cooperative relationship, clarifying the responsibilities, rights, and interests of both parties in talent cultivation, and forming an operational model of complementary advantages and common development[3]. Universities and clothing companies sign formal cooperation agreements, detailing key matters such as cooperation content, resource investment, and ownership of results to avoid cooperation becoming a formality. Establish a teaching guidance committee composed of professional leaders, backbone teachers, enterprise designers, technical directors, and human resources supervisors, hold quarterly special meetings, and jointly determine training objectives, curriculum structure, and teaching content based on industry job competency standards. Enterprises open up real design projects, production workshops, brand operation processes, market data and other resources to universities, providing students with practical scenarios that are close to their positions, and introducing real tasks such as seasonal new product development and sales of popular design products into the classroom; Universities rely on their professional advantages to provide creative support, new product research and development assistance, talent reserves, and brand culture sorting for enterprises. They organize teachers and students to participate in enterprise brand promotion, public welfare design, and other activities, achieving mutual empowerment between schools and enterprises. Both parties shall establish a normalized communication mechanism, communicate industry trends and teaching progress in real-time through online work groups, adjust teaching arrangements in a timely manner, solve problems such as venue allocation, equipment use, mentor time coordination, and student internship safety during the practical process, and ensure the stable progress of education work.

2.2.2. Curriculum System Restructuring

The curriculum system breaks the traditional theoretical curriculum based approach and constructs a clear and progressive teaching content framework around the actual needs of the industry. In the design of the professional curriculum system, theoretical teaching, skill training, and project practice are integrated to support each module and jointly serve the training goals of composite fashion design talents. Delete outdated theoretical content that is disconnected from industry applications, compress pure art foundation course hours, increase practical course content such as creative fabric design, fashion photography technology, clothing live streaming operation, digital display, etc., and integrate real enterprise cases into core courses such as style design, structural design, craft production, brand planning, etc. In the courses of clothing brand planning and marketing, the sub brand incubation project of cooperative enterprises is used as a carrier to enable students to complete the entire process of market research, positioning analysis, product planning, visual design, etc. Practical teaching is divided into three levels: basic skills training, professional job training, and comprehensive project practice. Basic skills training focuses on basic skills such as fabric recognition, basic sewing, and hand drawn renderings; Professional position training is conducted for different job directions such as design, plate making, technology, and operation; Comprehensive project practice enhances students' comprehensive application level through complete enterprise projects[4]. At the same time, it integrates the cutting-edge content of sustainable fashion, digital virtual design, China-Chic cultural innovation, etc., and sets up characteristic

courses such as "digital expression", "dyeing and weaving clothing design and technology" to broaden students' knowledge and vision. The course content is dynamically adjusted based on industry technology updates and market trends. Every semester, we collaborate with enterprises to evaluate and optimize the course content, ensuring that teaching always has practicality and foresight.

2.2.3. Co Construction of Practical Teaching Platform

The school and enterprise jointly build a practical teaching platform that combines on campus and off campus, providing students with a training environment that is highly close to the real industrial scene. We jointly build professional design studios and craft training workshops on campus, equipped with commonly used design software (Style3D, CLO3D), digital plate making equipment, digital printing equipment, and ironing equipment according to enterprise standards. We simulate the working atmosphere of the enterprise design department and production workshop, and divide functional areas such as design area, plate making area, craft area, and exhibition area to meet the needs of daily skill training and small-scale project practice. Enterprises establish off campus practice bases and arrange students to participate in on-the-job internships and project training in different positions such as design, technology, and marketing departments based on their professional directions and career plans. Senior technical personnel from the enterprise provide guidance and develop personalized internship plans, allowing students to fully participate in the entire process from design drafts, pattern adjustments, sample clothing production to product implementation, and become familiar with job responsibilities and industry standards. Both parties also jointly built an online teaching resource platform, integrating exclusive resources such as internal training materials, project cases, operation tutorials, industry information, fashion trend reports, etc., to develop online virtual simulation training projects, facilitating students' independent learning and communication. The practical platform not only undertakes teaching functions, but also supports school enterprise cooperation in product research and project development, jointly applying for various levels of scientific research projects and teaching achievements. Students can participate in it and enhance their comprehensive design literacy and innovation ability in real tasks[5].

2.3. Implementation Paths of Teaching Reform

2.3.1. Project Driven Teaching

As an exploration of teaching organization form, project driven approach can efficiently and quickly respond to the needs of the industry, meet the needs of industry talents, and deeply integrate the educational resources and elements of the industry into talent cultivation, effectively improving the ability and quality of talent cultivation, and promoting the development of school enterprise integration[6].Through project driven teaching with real enterprise design projects as the core carrier, teaching objectives and tasks are decomposed into various stages of project implementation. Schools and enterprises jointly screen projects with moderate difficulty and in line with teaching progress, including series clothing design, brand visual upgrade, market research and planning, exhibition visual design, e-commerce product shooting and promotion, and other types. Students work in groups of 6-10 people to independently select projects, clarify division of labor and collaboration mechanisms, complete the complete process of requirement analysis, creative conception, scheme design, fabric selection, sample production, and presentation, and receive guidance and evaluation from two mentors from the school and enterprise simultaneously. In the requirements analysis stage, the enterprise mentor leads students to visit the market, connect with customers, and clarify the core requirements of the project; During the creative ideation stage, on campus mentors guide students to engage in brainstorming, while corporate mentors provide suggestions from a market feasibility perspective; During the sample production phase, technical personnel from the enterprise provide on-site guidance on process operations; During the presentation stage, invite the management team and industry experts to conduct a review. During the project promotion process, students need to independently coordinate division of labor, handle process problems, optimize design schemes, and respond to unexpected situations such as cost overruns. In the process of solving practical problems, they need to understand the application of theoretical knowledge. This model breaks the boundaries of the classroom and extends learning scenarios to enterprises and markets, effectively enhancing students' design and implementation abilities, communication and collaboration skills, and professional thinking.

2.3.2. Construction of Teaching Staff

The construction of teaching staff in application-oriented universities is a rigid task in implementing the national education reform strategy. The construction of a "dual teacher" teacher system, as a core policy link, effectively strengthens the type characteristics of education through the systematic reconstruction of teacher standards[7].The dual mentor system provides students with on campus academic mentors and corporate practice mentors, who work together and complement each other's strengths to complete the task of educating students. On campus mentors focus on theoretical system construction, design thinking training, and learning planning guidance, helping students establish a solid professional foundation and academic vision, guiding students to participate in subject competitions and innovation and entrepreneurship projects; Enterprise mentors come from frontline positions such as design, technology, and operations, with rich practical experience. They focus on imparting job skills, industry standards, workflow, and professional ethics, guiding students to complete project practice and internship tasks, and sharing workplace experience and industry networking resources. In order to improve the overall teaching level, the school has formulated a management method for teacher enterprise practice, regularly arranging teachers to enter enterprises for on-the-job training, participate in project research and development and production management, accumulate frontline experience, and require each teacher to have at least two months of enterprise practice experience every two years; At the same time, provide teaching method training for enterprise mentors, invite education experts to explain teaching design, classroom organization, student communication skills, and issue teaching guidance qualification certificates. School enterprise teachers jointly participate in curriculum development, textbook writing, and project guidance, collaborate to write school-based textbooks and practical training guides that are in line with industry reality, jointly carry out teaching seminars and research projects, achieve resource exchange, and comprehensively enhance the comprehensive strength of the teaching team.

2.3.3. Design of Dynamic Evaluation System

The dynamic evaluation system abandons the traditional

single assessment method mainly based on written exams and constructs a multi-party, full process, and comprehensive evaluation model. The evaluation subjects include on campus teachers, corporate mentors, industry experts, and student group peer evaluations. On campus teachers focus on evaluating theoretical knowledge and design thinking, while corporate mentors focus on evaluating practical abilities and job suitability. Industry experts provide performance evaluations from a professional development perspective, while student peer evaluations focus on contribution and communication skills in team collaboration, comprehensively measuring students' learning outcomes from different perspectives. The evaluation content covers multiple dimensions such as theoretical knowledge, practical skills, innovative creativity, team collaboration, professional attitude, and project completion quality. Theoretical knowledge assessment is conducted through classroom tests, case analysis reports, and other forms, while practical skills are evaluated through skill tests, work production, and other methods. Innovative creativity and project quality are jointly scored by school enterprise mentors, and professional attitude is based on feedback from internship units and daily performance records, focusing on both results and growth processes. Evaluation runs through the entire teaching cycle, continuously recording and providing real-time feedback through classroom performance, stage assignments, project progress reports, internship logs, achievement displays, etc. Monthly student ability development reports are generated. The assessment results are promptly used for teaching adjustments, and training and guidance are strengthened for areas where students are generally weak. For example, practical training hours are increased for students who are not proficient in process operations, and case analysis courses are added for students who lack market thinking, so that evaluation truly serves the improvement of abilities and achieves continuous optimization of teaching and learning[8].

3. Conclusion

This article is based on the systematic practice of industry education linkage teaching reform in the fashion design major of application-oriented universities. Based on the national policy of industry education integration and regional industrial needs, it further constructs a school enterprise collaborative education mechanism with clear rights and responsibilities, reconstructs a curriculum system that adapts to the development needs of the industry, jointly builds a multi-level practical teaching platform, and promotes the improvement of fashion design talent cultivation through project driven, dual mentor system and dynamic evaluation system. In the research, emphasis is placed on the deep integration of theory and practice, and cooperative enterprise resources are transformed into teaching design content, effectively solving prominent problems such as the disconnect between traditional teaching and industry, insufficient practical ability of students, and mismatch between talent supply and demand. Through teaching reform, students' practical implementation ability, innovative thinking, and career adaptability have been significantly improved. The employment rate and job satisfaction of graduates have also increased compared to before the reform. Many students have been recognized by enterprises and signed employment agreements during their internships. This research has a complete structure and strong operability, which can not only promote the steady improvement of the teaching quality of applied university clothing design majors, but also provide reference examples for other applied design majors to deepen the integration of industry and education, help universities cultivate more high-quality design talents that adapt to industrial development, provide continuous and stable talent support for the innovation and upgrading of the clothing industry, and promote the deep integration of the education chain and the industry chain.

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