

Research on Talent Training Model based on the "Three-Three Integration" Studio Model under the Integration of Industry and Education

-- Taking Wenzhou Design College as an Example

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Abstract: The Ministry of Industry and Information Technology has released the "14th Five Year Plan for the Development of Intelligent Manufacturing", which pointed out a new direction for design majors to carry out integration of production and education, and cultivate new technology application talents such as digital design and production, information management, etc. Wenzhou Design College cooperates with the government of Ouhai District to settle in Ouhai Fashion Intelligent Manufacturing Design Town, focusing on design majors such as shoes, clothing, furniture, and products. "Three-Three integration" studio model was proposed for cultivating new technology application talents. The model is grounded in industrial development, establishing a "training, research, and application" center tailored to the needs of new technology application talent cultivation. It also creates a practical teaching project system for new technology applications and forms a "three-in-one" teaching team necessary for nurturing new technology application talents.

Keywords: Industry-Education Integration; Three-Three Integration; Studio Model.

1. Introduction

In October 2017, the State Council issued several opinions on deepening the integration of industry and education, proposing to deepen the integration of industry and education, promote the organic connection between the education chain, talent chain, industry chain, and innovation chain, improve the quality of education, and promote economic transformation and upgrading [1]. In December 2021, the Ministry of Industry and Information Technology released the "14th Five Year Plan for the Development of Intelligent Manufacturing", which focuses on intelligent manufacturing and proposes to accelerate system innovation and synchronize the integration and development of upstream and downstream enterprises [2]. This has pointed out a new direction for higher vocational design majors to carry out integration of production and education, and cultivate new technology application talents such as digital design and production, information management, etc.

Secondly, looking at domestic vocational colleges, when implementing the integration of industry and education, it is common to choose industry enterprises in their respective professional fields as cooperation objects to carry out talent cultivation. For traditional manufacturing enterprises, the talents cultivated under this integration model generally lack the content of new technology application ability, and the forward-looking or developmental vocational ability is difficult to meet the new technology application needs of enterprise transformation and upgrading in the new era [3].

Thirdly, Wenzhou design college cooperates with the government of Ouhai District to settle in Ouhai Fashion Intelligent Manufacturing Design Town, focusing on design majors such as shoes, clothing, furniture, and products. "Three-Three integration" studio model was proposed for cultivating new technology application talents, based on the

operating experience of scientific research institutions in the past few years and the educational philosophy of Wenzhou Design College. This model is based on industrial development, integrating "upstream advanced technology enterprises - studios - downstream leading backbone enterprises", and researching and constructing a "training, research and application" practical training base that meets the requirements of cultivating new technology application talents; Based on the needs of enterprises, integrate "R&D projects - teaching projects - entrepreneurship and entrepreneurship projects", and research and construct a new technology application practical teaching project system; Based on economic win-win, integrating "upstream technology research and development backbone platform teachers downstream technology application backbone", and researching and forming a "three teacher" teaching team required for cultivating new technology application talents based on the modern apprenticeship model. Based on this, based on the integration of industry and education, we will research and construct a new technology application talent training system based on the "Three-Three integration" studio model, improve the depth of industry education integration, provide new talent training ideas for vocational education, provide new technology application talents that meet the development and upgrading needs of industry enterprises for the fashion industry, industry and enterprises, and provide intellectual support for the transformation and upgrading of traditional fashion industry, in order to achieve the goal of serving regional economic new formats and models.

2. Research Content and Objectives

2.1. Construction of "Three-Three Integration" Studio

Different from the thinking of school enterprise

cooperation, the main thread of the integration of industry and education is the "economic model - integration of industry and education - education model". That is, from the perspective of the current Chinese characteristic market economy model, analyze the arrangement of the main body, form, and system of education in the education model under the background of industry and education integration; On the other hand, the intelligent transformation of traditional industry enterprises has a fundamental impact on the work mode of technical and skilled talents, mainly manifested in the de division of labor in the work process, the de stratification of talent structure, the high-end operation of skills, the research of work methods, and the integration of services and production. Intelligent design systems inevitably require new technology application talents to be highly composite professional technical and skilled talents. Therefore, based on the integration of industry and education, we need to transform the school enterprise cooperation model and focus solely on collaborating with downstream leading enterprises for training. We need to build a production education integration model that relies on Wenzhou Design Institute, integrates upstream advanced technology enterprises with downstream backbone enterprises, forms a technology alliance with upstream enterprises, and partners with downstream enterprises to form a community that promotes the economic development of traditional industry enterprises. We also need to form a consortium for cultivating

talents in the application of new technologies in fashion products, as shown in Figure 1.

The implementation of the 1+1+1 training model for the cultivation of talents in the application of new technologies in design and intelligent manufacturing means that in the first academic year, students complete the learning of professional basic knowledge and basic skill training according to routine teaching. The second academic year is the transitional stage, where students enter the studio through two-way selection. In their spare time, under the guidance of a guidance team led by senior students and supplemented by teachers, students learn the basic knowledge of design and intelligent manufacturing new technologies and train in the application of basic skills. In the third academic year, students are fully trained in new technology application skills in the studio. In the fifth semester, R&D backbone and professional teachers mainly lead students to carry out R&D projects according to the modern apprenticeship model, rapidly improving their professional skills in new technology application; In the sixth semester, we will rely on the technical service projects provided by the studio to downstream backbone enterprises, led by professional teachers and technical backbone, to train in application research and development projects and entrepreneurship projects, cultivate comprehensive skills in new technology application, and complete the transformation of product research and development technical talents.

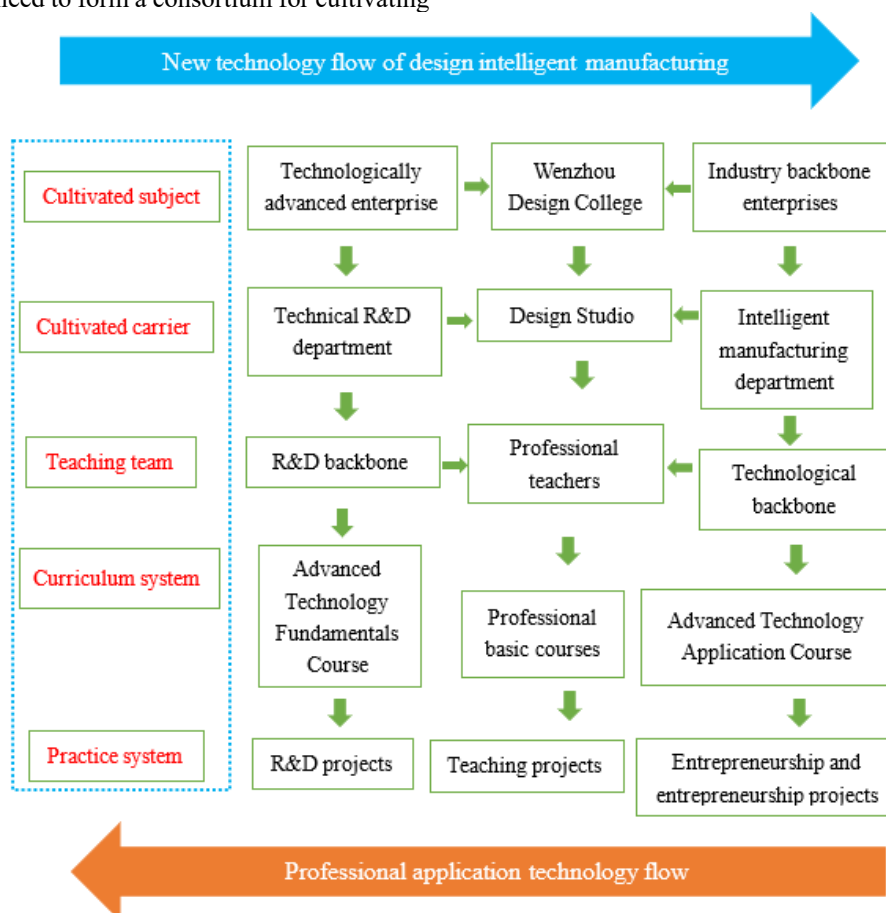


Figure 1. The New Technology Application Talent Training System of the "Three-Three Integration" Studio Model

2.2. Construction of "Training, Research, and Application" Practical Training Base

Taking universities as the main body, integrating advanced technology enterprises and industry backbone enterprises in

the upstream of the industrial chain, forming the main body for cultivating new technology application talents. Relying on scientific research platforms such as professional studios and Wenzhou Furniture R&D Center, integrating the technology R&D departments of upstream enterprises with the product

R&D and intelligent manufacturing departments of backbone enterprises, forming a training carrier for new technology application talents. Based on the design intelligent manufacturing technology flow and professional product application technology flow, the application R&D team of studios and upstream enterprises are integrated to cultivate new technology application talents, providing implementation personnel for the promotion and application of new technologies, and solving the problem of lack of human resources; Downstream, the application research and development team of the studio integrates with the product technology team of downstream enterprises, combining design and manufacturing technology with product structure technology, completing the transformation of new technology application talents to product research and development technology talents, providing intellectual support for the implementation of new technologies, and solving technical resource problems.

Effectively utilize the advanced intelligent manufacturing facilities of upstream enterprises, reasonably integrate advanced intelligent manufacturing technology and digital design technology, and build an integrated industry education integration training base for Zhejiang Province in the characteristic fashion town of Ouhai District. Guided by advanced technologies such as intelligent manufacturing technology and digital design technology that are mature in the industry, suitable for the fashion industry, and urgently needed by regional enterprises, we will develop a high-level intelligent manufacturing training carrier that integrates intelligent manufacturing and intelligent design. This will lay the foundation for cultivating fashion product design intelligent manufacturing composite talents that can meet the transformation needs of enterprises in Ouhai District's fashion characteristic town.

2.3. Construction of Practical Teaching System

Based on the development of new school enterprise cooperation and innovation teams, teaching resources such as courses and textbooks are developed, modern apprenticeship system is carried out, and a scientific and reasonable teaching and practical system is constructed to achieve the integration of curriculum standards with enterprise standards, teaching and work processes, and course content with typical work tasks of enterprises.

Guided by the application of new technologies, closely corresponding to the development of regional pillar industry enterprises, responding to the high-end intelligent needs of traditional industry enterprises, integrating intelligent technologies urgently needed for regional industry development, integrating big data, intelligence, and information technology knowledge and skills, constructing diversified and high-quality course teaching resources, with studios as the main body and professional technical basic skill training as the core, designing and constructing basic teaching projects; The studio collaborates with upstream enterprise R&D departments to design and construct R&D projects with advanced technology application skills training as the core; The studio collaborates with the product research and development departments of backbone enterprises, relies on technical service projects, excavates entrepreneurial and entrepreneurial projects, constructs a hierarchical and progressive new technology application practical teaching system, and realizes personalized training of fashion product

design and intelligent manufacturing composite talents for regional industrial transformation.

2.4. Construction of the "Three Teachers" Teaching Team

Based on the economic development needs of industry enterprises, using advanced technology application research and development, application promotion technology service projects as carriers, platform teachers as links, integrating upstream technology research and development backbone and downstream technology application backbone, forming a three-teacher teaching team, and carrying out modern apprenticeship training for students entering the studio. In the first stage (i.e. the third and fourth semesters), platform teachers are the core, training apprentices in basic skills and introducing them to the beginners; In the second stage (i.e. the fifth semester), platform teachers will collaborate with upstream enterprise R&D backbone to establish economic ties for promoting new technologies and train apprentices in new technology application professional skills; In the third stage (i.e. the sixth semester), platform teachers will collaborate with backbone enterprise product technology backbone, rely on technical service projects, establish economic ties for enterprise application output value, train apprentices in new technology application comprehensive skills, and achieve a win-win situation for platform teachers, upstream technology research and development backbone, downstream technology application backbone, and apprentices, ultimately achieving talent cultivation benefits.

3. Conclusion

Taking the furniture design and manufacturing major in vocational colleges as a case study, starting from the perspectives of practical course system, teaching project system, studio operation mechanism, evaluation and assessment mechanism, this paper constructs a practical teaching system that meets the needs of the "Three-Three integration" studio model in vocational furniture design and manufacturing major, explores a new talent training model for vocational colleges, and improves the level of talent training in school enterprise cooperation.

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