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Research on the Collaborative Education Path of Integrating the Spirit of Craftsmanship into Solid Model Making of Red Buildings and Ideological and Political Education

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Abstract: *In the new era, college ideological and political education is confronted with the practical challenge of "being deeply rooted in the mind and heart", and traditional theoretical indoctrination can hardly fully mobilize students' emotional participation and practical experience. This paper systematically discusses the internal logic and practical path of collaborative education between red building model making and ideological and political education. By analyzing the intermediary function of solid model making in the dual goals of "skill teaching" and "value guidance", a three-stage progressive education model of "red cognition ·casting soul · craftsmanship practice · strengthening skills · value internalization · establishing heart" is constructed. The study puts forward four implementation paths: curriculum-embedded teaching, theme-driven practice, project-based inquiry learning, and exhibition-competition boosted transformation. Based on the reality of Nanyang Normal University, a collaborative education program with local characteristics is formed, providing theoretical support and practical reference for the in-depth integration of ideological and political education in courses and professional practice in colleges and universities.*

Keywords: *college student organizations; education paths; mechanism innovation*

1. Introduction

The report to the 20th National Congress of the Communist Party of China emphasizes "making good use of red resources" and "promoting the spirit of work, struggle, dedication, creation, diligence and frugality". At present, college ideological and political education is faced with the difficulty of "being deeply rooted in the mind and heart", and the traditional theoretical indoctrination method can hardly fully mobilize students' emotional participation and practical experience[1]. Meanwhile, practical teaching for architecture and design majors often focuses on skill training and pays insufficient attention to value guidance. How to organically integrate regional red cultural resources with professional practical teaching, temper the spirit of craftsmanship and inherit red genes in solid model making has become an urgent educational issue to be solved[2].

The core essence of the spirit of craftsmanship can be summarized as "striving for excellence, being meticulous, being dedicated and persistent, and pursuing excellence". In the field of education, the cultivation of the spirit of craftsmanship is not only a requirement for vocational skill training, but also an important way to cultivate a sound personality. In the repeated polishing of model making, students gradually develop a rigorous and meticulous working attitude, a persistent will quality, and a professional spirit of pursuing perfection—these are precisely the basic qualities that builders and successors of socialism in the new era should possess. When the "object" of model making is endowed with red cultural connotation, skill training transcends mere skill acquisition and sublimates into a practical way of spiritual inheritance[3].

Red buildings refer to commemorative buildings, former sites and landmark buildings related to the revolutionary activities, important historical events and heroic deeds of the Communist Party of China. Such buildings have triple ideological and political values: first, historical witness value—red buildings are "frozen party history", and each building carries specific historical events and character stories; second, emotional resonance value—compared with abstract theoretical narration, concrete architectural space can arouse students' intuitive feelings and emotional identity; third, spiritual symbol

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value—the form, material and spatial layout of red buildings often contain specific spiritual connotations, such as the simplicity and tenacity of Yan'an cave dwellings and the solemnity of the Monument to the People's Heroes[4].

The cultivation of the spirit of craftsmanship and the inheritance of red culture are prone to formalism and sloganization without practical carriers. Solid model making precisely provides such an "intermediary": it transforms abstract spirits into operable tasks, and distant "other" history into personal "self" practice. In the process of model making, students need to complete a series of tasks including data consultation, drawing, material selection, proportion calculation, structure construction, and detail depiction. In this process, the tempering of the spirit of craftsmanship and the internalization of red culture occur simultaneously, achieving the educational effect of "unity of knowledge and action"[5].

2. Practical Dilemmas of Collaborative Education Between Solid Model Making of Red Buildings and Ideological and Political Education

2.1 Practical Effectiveness of Curriculum System Integration Needs to Be Improved

In the current practice of red building culture education in colleges and universities, there is an obvious fault between resource excavation and teaching transformation. On the one hand, the systematic sorting of red building cultural resources is insufficient; most colleges and universities only stay at the level of visits and investigations, and fail to deeply extract the historical stories, spiritual connotations and era values behind the buildings. On the other hand, the ability to transform red building culture into teaching resources is lacking, and there is a shortage of curriculum design ability to organically integrate architectural structure knowledge, production process and ideological and political elements[6].

At present, there is a separation tendency in the setting of teaching objectives between professional courses and ideological and political courses. Some ideological and political elements in courses are only superficially integrated, and a value guidance mechanism running through the whole teaching process has not yet been formed. In courses related to architectural model making, teachers often pay more attention to students' technical specifications and finished product effects, and insufficiently excavate the cultural connotation and spiritual value carried by the models. There is a fault in content connection in the teaching implementation, the professional case library construction lacks in-depth development of ideological and political dimensions, and the value transmission function of practical links has not been fully activated.

2.2 Insufficient Systematic Integration of Practical Teaching Carriers

Red building model making involves material selection, tool use, historical research, artistic expression and other links, but most colleges and universities currently lack systematic practical teaching carrier design. Problems such as limited opening hours of laboratory equipment, insufficient allocation of instructors, and unclear education orientation of school-enterprise cooperation projects are common. In the production process, students often "emphasize results over process", pursuing the "likeness" of works while ignoring the spiritual experience and value reflection in the production process[7].

As an important form of practical teaching, the ideological and political education function of solid model making is restricted by the design of the teaching system. There are three main problems at present: first, there is a separation tendency in curriculum goal setting, and the phenomenon of "two skins" between professional skill training and ideological and political literacy cultivation is prominent; the scoring criteria of model making focus on process precision while ignoring spiritual cultivation; second, there is a fault in the connection of teaching content, and there is no effective transition between theoretical courses such as architectural history and structure principles and model making practice, making it difficult for students to understand the cultural code behind the buildings in production; third, the value transmission function of practical links is weakened. Most instructors have professional backgrounds and lack the ability to naturally integrate ideological and political elements into process guidance, leading to the widespread phenomenon of "labeling" preaching[8].

In addition, the education orientation in school-enterprise cooperation is not clear enough. Some cooperative enterprises only regard students as cheap labor and ignore value guidance in the model

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making process; the cultural inheritance clauses in industry-university-research agreements are vague, and a social responsibility transmission mechanism has not been established. These problems not only affect the comprehensiveness of talent training, but also lead to the structural weakening of the ideological guidance function of practical teaching.

2.3 Compound Ability of Teaching Staff Needs to Be Improved

Collaborative education requires strong support from a "dual-qualification" teaching team, but the current adaptation deviation of the teaching staff structure is mainly reflected in three dimensions. First, the age gradient of instructors presents a "middle collapse" feature: young teachers lack practical experience, and senior teachers lack new technology application ability, resulting in poor connection between teaching inheritance and innovation. Second, there is a mismatch between disciplinary background composition and project needs; teachers of architecture, history, Marxist theory and other disciplines work independently, lacking an interdisciplinary collaborative guidance mechanism, making it difficult to achieve the in-depth integration of "skills + culture + ideology and politics". Third, there is an obvious divide in practical experience accumulation: engineering and technology teachers have rich model making experience but weak ideological and political education ability, while ideological and political course teachers have solid theoretical skills but insufficient practical guidance ability. This difference is particularly prominent in collaborative education[9].

It is precisely due to this structural imbalance that there is a systematic deviation between the ability model of the guidance team and the education requirements. The simplification of disciplinary background restricts interdisciplinary talent training, and insufficient practical experience reduces the effectiveness of case teaching. These problems not only affect the implementation depth of ideological and political education in courses, but also hinder the efficiency of the industry-university-research collaborative education mechanism, making it difficult for projects to fully align with the strategic needs of talent training in the new era.

The integrated teaching of the spirit of craftsmanship and red culture puts forward "dual-qualification" requirements for teachers—they should not only have solid professional skills and engineering practice ability, but also have the ability of red culture research and ideological and political course design. At present, some professional teachers do not have a deep enough understanding of red culture, and ideological and political course teachers lack understanding of the architectural model making process. A collaborative lesson preparation and joint guidance mechanism between the two has not yet been established, leading to the phenomenon of "two skins" in teaching implementation[10].

3. Construction of Collaborative Education Path for Integrating the Spirit of Craftsmanship into Red Building Model Making

3.1 Constructing a "Professional + Ideological and Political" Modular Teaching

First, implement modular curriculum restructuring. We shall reconstruct the curriculum system in accordance with the triple principles of "ideological and political core module—professional integration module—practical innovation module". The ideological and political core module focuses on the basic principles of Marxism and regional red culture in Nanyang, and develops characteristic courses such as "The Spirit of the Canal Head and Its Contemporary Value" and "Party History Memory in Red Buildings". The professional integration module requires architecture and design majors to draw an ideological and political element map for courses, and set a "red building special" unit in courses such as Architectural Model Making and Environmental Design. The practical innovation module integrates internal and external school resources to develop practical projects such as red building surveying and mapping, model making workshops, and rural revitalization research.

Second, establish an element association map. We systematically sort out the ideological and political mapping points in the red building model making course, and form a four-dimensional element map of "goal—content—method—evaluation". Specifically, we mark "the spirit of craftsmanship of striving for excellence" in the wooden structure model making link, and "patriotism and cultural confidence" in the architectural historical background research link, so as to realize the organic unity of skill training and value guidance[11].

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3.2 Creating an Education Chain of "Cognition—Practice—Internalization"

To improve the resource integration mechanism, it is necessary to build a "double-cycle" resource sharing system, taking inter-school collaboration and school-enterprise linkage as driving wheels to solve the problems of resource mismatch and insufficient collaboration. University educational resources are like running water; only by establishing smooth circulation channels can we nourish the entire education ecosystem.

First, establish a "three-stage progressive" practical teaching model. The first stage is "red cognition · casting soul"—through special lectures, on-site visits, literature study and other ways, students can understand the historical background and spiritual connotation of red buildings. Nanyang and its surrounding areas are rich in red building resources, such as the Zhugou Revolutionary Memorial Hall in Queshan ("Little Yan'an"), the Tongbai Revolutionary Memorial Hall, and the Memorial Hall of the "Unofficial Lei Feng Group" in Dengzhou, which can be used as field research bases for practical teaching. The second stage is "craftsmanship practice · strengthening skills"—students complete production tasks such as drawing, material selection, structure construction and detail depiction, and temper the spirit of craftsmanship in repeated polishing. The third stage is "value internalization · establishing heart"—through achievement display, experience exchange, mutual evaluation and discussion, students reflect and express their insights in practice, realizing the value transformation from "external input" to "internal generation".

Second, develop a "curriculum supermarket" sharing platform. We incorporate high-quality model making courses of five universities into the cross-school elective system, and implement a credit bank accumulation system. We establish a shared scheduling center for experimental equipment, implement networked reservation management for large equipment such as laser cutting machines and 3D printers, and improve resource utilization efficiency[12].

3.3 Cultivating a "Dual-Qualification" Teaching Team

To innovate the teacher training mode, it is necessary to build a "three-dimensional" training system, and organically integrate teachers' professional growth with the improvement of education ability. Teachers' development is like the growth of trees; it not only needs nutrient transportation from deep roots, but also timely pruning and shaping to cultivate into pillars of education.

First, establish a dual-qualification teacher certification and training system. We formulate the Measures for the Certification and Management of Dual-Qualification Teachers in Nanyang Normal University, and set certification standards from three dimensions: enterprise practice experience, teaching innovation achievements, and technology transformation ability. We implement the "3+2" advanced training plan: new teachers complete basic teaching skills training in the first three years, and obtain practical qualifications through enterprise temporary posts and project research and development in the next two years. We encourage professional teachers to conduct field investigations at red building sites and transform field investigation results into teaching cases.

Second, build a long-term mechanism for two-way school-enterprise mobility. We establish cooperative relations with local architectural design institutes, model making enterprises and red memorial halls, clarify that enterprise technical backbones shall teach at school for no less than 32 class hours per year on average, and professional teachers shall practice in enterprises for no less than 6 months accumulatively every five years. We set up teacher practice bases in red memorial halls to carry out "task-driven" training, and promote teachers to transform industry standards and red cultural elements into teaching cases.

Third, form an interdisciplinary collaborative guidance team.We break down disciplinary barriers such as architecture, history and Marxist theory, and form a "four-in-one" guidance team composed of professional course teachers, ideological and political course teachers, memorial hall researchers and intangible cultural heritage inheritors. We establish a regular teaching and research mechanism to carry out collective lesson preparation around model making projects, so as to realize the organic integration of professional knowledge teaching, process skill guidance, historical and cultural interpretation, and value concept guidance. We develop a collaborative guidance manual to clarify the division of responsibilities and collaboration processes of various instructors, and form a joint education force.

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4. Conclusion

This study reveals the internal law of collaborative education between solid model making of red buildings integrated with the spirit of craftsmanship and ideological and political education, and confirms the key role of institutional innovation and mechanism optimization in solving collaborative dilemmas. The paths proposed at the practical level, such as modular curriculum system, practical teaching chain, dual-qualification teacher training and diversified evaluation mechanism, can directly guide the teaching reform practice in colleges and universities, and improve the adaptability of talent training and cultural inheritance.

Practice has proved that when students hold a carving knife, face wood, and restore a red building little by little, they are not only "making models", but also "cultivating their hearts"—cultivating a craftsman's heart of striving for excellence and a patriotic heart of family and country. This is precisely the deep value of the project "Research on Integrating the Spirit of Craftsmanship into Solid Model Making of Red Buildings and Ideological and Political Education". Based on local red resources, Nanyang Normal University has constructed a collaborative education model with regional characteristics, which will provide strong support for optimizing the education system and promoting the connection between the education chain and the industrial chain. In the future, we should further deepen the application of digital technology, expand the construction of red building culture gene bank, improve the cross-regional collaborative education mechanism, promote the formation of a red culture education brand with regional characteristics, and make greater contributions to cultivating a new generation of young people who can shoulder the mission of national rejuvenation.

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