

Analysis of the Teaching Practice Path of “Specialization-Innovation Integration” in the Furniture Design Course

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Abstract:

This article begins with the necessity of conducting specialized innovation and entrepreneurship education in contemporary colleges and universities. It analyzes the guidance of macro-level policies and directives, the driving force of employment pressure on college students, as well as the attributes and characteristics of the Furniture Design course. Based on this analysis, the article explores the approaches and models for implementing “specialization-innovation integration” education in the Furniture Design course, and discusses the logic and framework for combining this education with professional competitions and teaching projects. The aim is to provide some ideas and methods for deepening the reform of innovation and entrepreneurship education in specialized teaching, and for promoting course teaching to better meet the development needs of the times.

Keywords:

Innovation and Entrepreneurship, Integration of Specialization and Innovation, Furniture Design, Dual-Education

1. Introduction

In the tide of innovation and entrepreneurship, professional education in colleges and universities is facing transformation and challenges. As a key supporting course in the realm of design innovation, the Furniture Design course is not only a platform for imparting professional knowledge and skills but also a crucial link in cultivating students’ innovative and entrepreneurial spirit. The so-called “integration of specialization and innovation” refers to the organic combination of professional knowledge education with innovation and entrepreneurship education, stimulating students’ innovative thinking and entrepreneurial awareness through curriculum reform and teaching model innovation. The implementation of “specialization-innovation integration” in the Furniture Design course has certain necessity, while the applicable methods and approaches also possess multi-dimensional aspects worth exploring.

2. The Necessity of “Specialization-Innovation Integration” Education in Innovation and Entrepreneurship

The advocacy of educational policies and guidelines is actively guiding the reform and development of the higher education system. Meanwhile, the increasing employment pressure on college students and the transformation of professional education in universities are imperceptibly promoting the exploration and implementation of innovation and entrepreneurship education.

(1) The Advocacy of Educational Policies and Guidelines and the Driving Force of Current Employment Pressure on College Students

Nowadays, as the economy transitions from a phase of rapid growth to a stage of high-quality development, innovation and entrepreneurship have become key drivers of economic growth. The state has also proposed the development concept of “Mass Entrepreneurship and Innovation,” elevating innovation and entrepreneurship to a strategic height [1], with the intention of promoting high-quality economic development through innovation and entrepreneurship. At the same time, relevant documents have clearly stated that higher education must deepen the reform of innovation and entrepreneurship education, aiming to cultivate more high-quality talents with innovative spirit and entrepreneurial ability through systematic policy support and reform measures. Universities are integrating innovation and entrepreneurship education throughout the entire process of talent cultivation, establishing a new type of talent cultivation model oriented toward innovation and entrepreneurship [2]. Innovation and entrepreneurship education can help students transform their intellectual resources into economic capital, promote the conversion of scientific and technological achievements into practical productive forces, and undertake the important mission of supplying high-quality innovative and entrepreneurial talents for the national innovation-driven development strategy.

In recent years, the pace of sustained economic growth has been somewhat slow, while the number of college graduates has continued to expand. This is accompanied by intensified market competition, industrial restructuring, prominent structural contradictions in employment, as well as changes in employment concepts and market demands. The number of jobs in traditional industries has decreased due to technological progress and transformation and upgrading. Emerging industries—such as the internet, artificial intelligence (AI) in the technology sector, new energy, and green technology—are creating new job opportunities. However, these emerging industries also impose higher demands on the skills and knowledge of talents. These new positions require college graduates not only to possess solid professional knowledge but also to have innovative thinking, interdisciplinary abilities, and the capacity for rapid learning and adaptation to new technologies. In reality, most graduates compete for a limited number of high-quality positions. To a certain extent, this supply-demand mismatch makes it more challenging for graduates to find employment.

Given the national development strategy and the actual employment pressure faced by college graduates, new demands are placed on the professional education and teaching process in higher education. There is a need to deeply understand the market's demand standards for professionals in various disciplines. In addition to emphasizing the improvement of students' knowledge and cultural literacy, attention must also be paid to the scientific integration of innovation and entrepreneurship with professional education, systematically planning and carrying out teaching activities.

Cultivating college students' innovation and entrepreneurship capabilities, assisting them in resolving employment difficulties, and making efforts at the educational level to help solve the severe social employment problem for the nation are essential.

(2) The Foundation and Conditions of the Furniture Design Course for Innovation and Entrepreneurship Education

As an application-oriented course, Furniture Design is both a component of interior design and an element of industrial product design. It can be integrated with interior design or treated as an independent design discipline. On the basis of acquiring certain knowledge and skills, students can pursue employment or start their own businesses in the interior design and furniture industries. However, the traditional classroom teaching model—focused primarily on theory and supplemented by practice—fails to adequately train and guide students in practical application skills, nor does it fully tap into the course's potential for employment and entrepreneurship. Innovation and entrepreneurship require not only theoretical knowledge but also practical experience and problem-solving abilities [3]. To a certain extent, the traditional teaching model constrains the development and renewal of the course, creating an urgent need for breakthroughs and innovations in curriculum teaching reform. Systematically integrating professional learning with innovation and entrepreneurship education in the Furniture Design course is an inevitable trend in curriculum teaching reform.

The Furniture Design course possesses certain foundations and conditions for innovation and entrepreneurship education, both in terms of its course attributes and its teaching implementation. As a front-line teacher of the Furniture Design course, there is a clear awareness of the drawbacks of the traditional classroom, a strong demand for curriculum teaching reform, and active efforts to seek ways and methods to achieve it. A relatively broad understanding of specialization-innovation integration has also been developed. The corresponding conditions can be summarized in the following three aspects: First, practical exploration. Teachers have been consciously exploring innovative and entrepreneurial teaching practices in the Furniture Design course, particularly in the areas of children's furniture, age-friendly and wellness furniture for the elderly, and personalized, artistic furniture design, where certain achievements have been made. In addition, teachers pay close attention to various student innovation and entrepreneurship competitions, having accumulated extensive experience in organizing events such as the "Challenge Cup", "Chuang Qing Chun," and the National College Student Advertising Art Competition. Second, hardware facilities. Most university art and design colleges have a certain educational foundation, having established model-making laboratories, studios, and other professional laboratories for environmental design. They possess a considerable number of high-configuration computer workstations, as well as various equipment, tools, and instruments such as drill presses, scroll saws, band saws, miter saws, lathes, and plate saws. These supporting studios and experimental operation rooms provide the hardware and spatial foundations for furniture design scheme presentation, material selection experiments, structural exploration experiments, process implementation experiments, and the completion of physical furniture models. Third, enterprise support. As a highly practical discipline, environmental design—with its "art-commodity" development orientation—has established a certain number of cooperative units in teaching development. These provide the conditions for utilizing the advantageous resources and practice platforms of school-enterprise cooperation, carrying out multi-channel, multi-form in-depth cooperation, and achieving dual-education through school-enterprise collaboration. There are certain advantages in

cultivating students' ability to use design thinking methods and means to carry out design, inspiring and training students' innovative spirit and entrepreneurial awareness, and fostering innovation and entrepreneurship capabilities grounded in professional knowledge.

The teaching of the Furniture Design course enables students to understand multiple relationships—between humans and objects, between two-dimensional and three-dimensional forms, between form and structure, and between materials and processing—through the implementation of the furniture design process. Furniture design and production themselves involve technical support from areas such as artistic aesthetics, engineering materials, engineering mechanics analysis, and process model manufacturing, making it a typical interdisciplinary discipline [4]. In the realm of “specialization-innovation integration” education, it possesses the foundations of application-oriented attributes and the characteristics of an interdisciplinary field.

3. Analysis of the Implementation Pathways for “Specialization-Innovation Integration” Education in the Furniture Design Course

The implementation pathways for “specialization-innovation integration” education in the Furniture Design course constitute an important component of curriculum teaching reform. These pathways should be derived both from the attributes and characteristics of the course and from its objectives and forms of achievement. In design-related competitions, furniture design offers diverse forms of participation and presentation of results. At the same time, the core objectives of the course can give rise to multiple teaching projects that meet current social needs. Therefore, this section focuses on exploring the implementation pathways through professional competitions and teaching projects.

(1) Integrating Professional Competitions into Teaching to Promote Teaching, Learning, and Innovation

The specialization-innovation integration teaching reform of the Furniture Design course can be implemented through various competition activities within the field of furniture design. The ultimate goal of all types of art competitions is to cultivate students' skills and creative abilities [5]. Through the interconnected and mutually reinforcing teaching model of “promoting teaching through competitions, promoting learning through competitions, and promoting innovation through competitions,” students can acquire professional knowledge while also developing innovative spirit and entrepreneurial capabilities. These qualities and abilities can then be applied to their future career selection, employment, and entrepreneurship endeavors [6].

At the level of promoting teaching through competitions: In the process of guiding students to participate in competitions, teachers analyze the thematic requirements of various competitions to gain an in-depth understanding of the latest demands and cutting-edge trends in the furniture design industry. They then feed this information back into daily teaching, timely updating and optimizing teaching content to make it more aligned with reality and more forward-looking and practical, thereby avoiding a disconnect between teaching content and industry development. Specific methods can be implemented through project-based teaching. Teachers use competition themes as project tasks, requiring students to complete them in groups. The process of participating in competitions requires students to apply theoretical knowledge to actual design. At this point, teachers can timely improve their teaching methods,

enhance the effectiveness of practical teaching through competition guidance, and improve students' hands-on abilities, teamwork skills, communication skills, and problem-solving abilities. Moreover, the review and feedback after competitions can help teachers understand students' learning outcomes and existing problems, further improving teaching methods and content. At the same time, participating in competition guidance prompts teachers to continuously learn and master new knowledge and skills, helping to enhance their professional competence and teaching standards. Increased interaction with teachers from other universities and industry experts exposes them to different teaching concepts and methods, broadening their horizons and promoting the improvement of their own teaching abilities.

"Promoting learning through competitions" is a new teaching model driven by subject competitions [7]. In activities that promote learning through competitions, various types of design competitions provide students with a platform to showcase themselves. Compared with regular coursework, competitions are more challenging and engaging, stimulating students' learning interest and initiative. Students become more proactive in learning relevant knowledge and skills, transforming passive learning into active learning. Furniture design involves multiple disciplines such as art, materials, and engineering. The process of completing competition tasks prompts students to comprehensively apply multidisciplinary knowledge in their learning, enabling the integration of interdisciplinary knowledge and contributing to the improvement of comprehensive knowledge and abilities. To complete a furniture design competition, students must conduct in-depth user research, understand market trends, apply design software, develop and refine design schemes, create physical models, and complete a series of other tasks, submitting their work within a specified timeframe. This process requires students to apply their professional knowledge and engage in a series of in-depth learning and practical activities such as research, design, and production. It helps cultivate their innovative thinking, practical abilities, teamwork skills, time management skills, and other comprehensive qualities. Furthermore, the processes and requirements of competitions are similar to those of real-world project operations. By participating in competitions, students can gain early exposure to the workplace environment and job requirements, learn from and motivate each other in collaboration, improve their communication and teamwork skills, cultivate professional awareness and a sense of responsibility, and enhance their employment competitiveness.

"Promoting innovation through competitions" is conducive to advancing classroom teaching reform and enhancing talent competitiveness [8]. Participating in competitions directly confronts students with challenges and competition. This teaching method encourages students to break free from traditional thinking patterns, boldly innovate, and explore novel design concepts and solutions. Innovative ideas may be embodied in the function, form, or materials of furniture, or in innovations in design methods and processes. To a certain extent, this injects new vitality into the development of the furniture industry and helps cultivate students' design thinking and creativity.

Participation in competitions increases students' opportunities to interact with industry professionals, understand market demands and industry standards, and helps improve their design skills and market adaptability. Outstanding competition entries, which often have high market potential and application value, may be transformed into actual products and brought to market through collaboration with enterprises or student-led startups, achieving the conversion of creativity into commercial value and

promoting innovative development in the furniture design industry. Furthermore, excellent competition results and achievements, when made public, create role models within the student learning community. Through “promoting innovation through competitions,” a strong atmosphere of innovation is fostered on campus. This helps stimulate more students’ enthusiasm and creativity for innovation and helps attract more resources to be invested in innovative research and talent development in the field of furniture design, driving the entire industry’s innovation and progress.

(2) Conducting Innovation and Entrepreneurship Teaching through Teaching Project Training

In the implementation of innovation and entrepreneurship education in the Furniture Design course, targeted teaching projects are used to cultivate students’ innovative and entrepreneurial thinking and practical abilities. Through this teaching and training model, students not only learn the fundamental theoretical knowledge and skills of furniture design but also develop their innovative thinking and problem-solving abilities by participating in real projects, such as designing and prototyping furniture, conducting market research, and analyzing user needs.

Using innovation and entrepreneurship topics as problem-oriented guides, students are encouraged to choose topics based on their interests or knowledge foundation and to develop innovative furniture design schemes and produce physical furniture. Topic selection for the Furniture Design course teaching projects can focus on the following aspects: First, adhering to the sustainable ecological development strategy and the goals of carbon peak and carbon neutrality, guiding students to explore and innovate in the practice of ecological, green, and environmentally friendly materials and production processes in the furniture field. Second, exploring the characteristics of the living habits of residents in small apartments during the era of urbanization, guiding students to innovate in the design of multi-form, multi-functional furniture categories. Third, combining the characteristics of people’s lifestyles and habits, seeking innovative furniture designs that lead and shape lifestyles for the era. Fourth, analyzing the special needs of special populations in using furniture, carrying out innovative furniture design for specific user groups (children, the elderly, etc.). Fifth, paying attention to the diversity of people’s spiritual needs in the era, guiding students to use their innovation and entrepreneurship awareness to apply for furniture design patents and establish high-value furniture styles or brands. Based on the above core topic ideas, the types of teaching projects that can be carried out include: furniture design based on the principle of green sustainability; furniture design based on intelligent needs; furniture design based on multi-functional needs; furniture design based on the needs of human-pet co-use; furniture design based on the needs of the elderly; furniture design based on the needs of children; furniture design from the perspective of women’s needs; furniture design for primary and secondary school students’ nap needs; furniture design based on biomimetic forms; furniture design based on shared use, and so on. Below, we select a few project topics that have broad resonance for interpretation.

The logic and framework for the selection categories of innovation and entrepreneurship topics and the implementation of innovation and entrepreneurship projects are illustrated in the Figure 1 below:

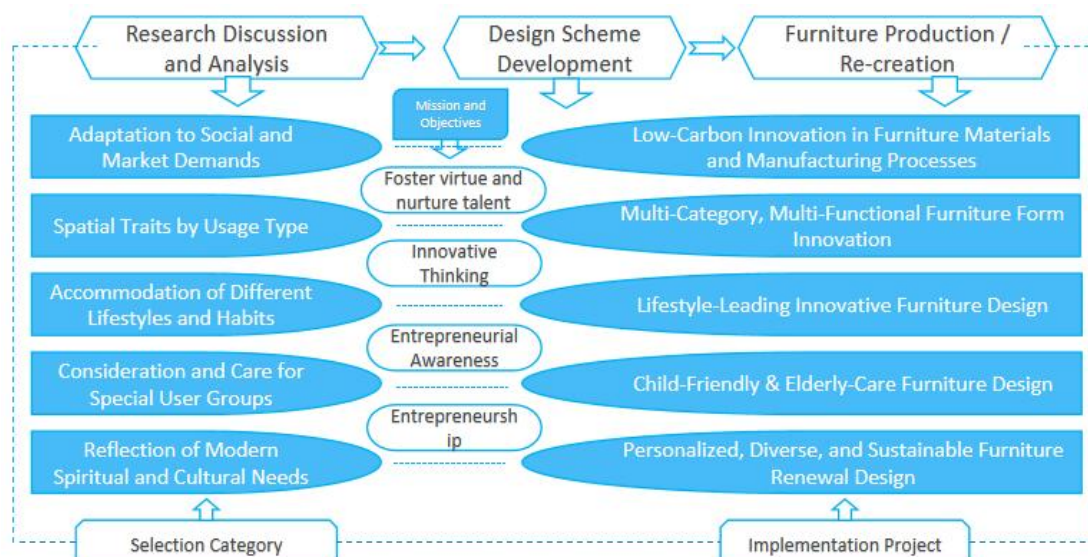


Figure 1. Logical Framework for the Selection Categories of Innovation and Entrepreneurship Topics and the Implementation of Projects in the Furniture Design Course.

Based on the above core topic ideas, the types of teaching projects that can be carried out include: furniture design based on the principle of green sustainability; furniture design based on intelligent needs; furniture design based on multi-functional needs; furniture design based on the needs of human-pet co-use; furniture design based on the needs of the elderly; furniture design based on the needs of children; furniture design from the perspective of women's needs; furniture design for primary and secondary school students' nap needs; furniture design based on biomimetic forms; furniture design based on shared use, and so on. Below, we select a few project topics that have broad resonance for interpretation.

Furniture design based on the principle of green sustainability has as its core requirements the environmental requirements for material selection in furniture design and low-carbon, energy-saving design. For this project topic, in terms of material selection, students are guided through learning methods such as literature review and case analysis to understand and explore renewable, recyclable, and non-polluting environmentally friendly materials, prioritizing the use of bamboo, wood, natural fiber fabrics, etc., to reduce negative impacts on the environment. In the design and production process, full consideration is also given to reducing energy consumption, optimizing furniture structural design to reduce material usage and transportation energy consumption, and other energy-saving treatments. Full consideration is given to factors such as furniture style, materials, function, and production techniques in the green furniture design process, minimizing the use of substances harmful to the human body, so that green furniture truly achieves aesthetics, health, and practicality [9]. Students are also encouraged to minimize resource waste and environmental pollution at every stage as much as possible, considering extending furniture lifespan and improving product recyclability and reusability.

Furniture design based on multi-functional needs is arguably a project topic with many demands in the current era. Multi-functional furniture primarily considers the ability to meet the needs of different spaces and scenarios, saving space, flexibly switching furniture functions, and effectively maximizing space utilization. Starting from the diversity of modern life, multi-functional furniture design for small apartments meets multiple needs such as living, working, and leisure. For example, a

sofa bed can be used as a sofa during the day and unfolded as a bed at night; a dining table can be foldable or extendable, adjusting its size according to the number of diners; a single stool can be stretched into a bench; a single table can be adjusted and combined into a stool and a small table; a chair can be rearranged into a low step stool, and so on. Students are guided to ingeniously combine different functions in their furniture designs, creatively integrating functions to create novel and unique furniture forms, thereby adapting to the functional needs of users in multiple life scenarios and improving the practicality and functionality of the furniture.

Furniture design based on the needs of human-pet co-use is receiving increasing attention in contemporary home life. This type of furniture is designed for families with cats, dogs, or other pets, under the premise of the need for interaction between owners and pets. Human-pet shared furniture needs to meet the common needs of both humans and pets, determine the product's functions, and design the product's form according to the principle that form follows function [10]. This project primarily guides students to pay special attention to safety, comfort, and ease of cleaning in furniture design. In terms of safety, the furniture must be safe for both people and pets, avoiding design elements such as sharp edges or fragile parts that could harm pets, while also ensuring the furniture's stability to prevent it from being easily knocked over by pets. In terms of comfort, consideration is given not only to the comfort of human users but also to the activity and rest needs of pets. For example, setting up a dedicated pet rest area beside a sofa or bed, using soft, comfortable materials so pets can also enjoy a pleasant time. In terms of ease of cleaning, considering that pets may soil the furniture, furniture design should comprehensively evaluate and select easy-to-clean surface materials and structures, facilitating later wiping, cleaning, and maintenance.

Furniture design based on the needs of the elderly is a topic chosen because China is gradually entering an aging era, with the elderly becoming an important group in society. Furniture serves as a key element in the living environment of the elderly. The physiological characteristics of the elderly determine that age-friendly furniture must possess basic adaptive functions, while emotional design, through the optimization of design elements such as form, materials, and functions, conveys emotional care while ensuring physiological adaptation [11]. This project primarily guides students to consider the characteristics of the elderly, such as mobility difficulties or the need for mobility assistance, and to deeply consider convenience, safety, and stability in furniture design, ensuring stable structures and good support, effectively reducing activity difficulty, and being safe and convenient. Based on the physical characteristics and physiological and psychological needs of the elderly, students design ergonomic furniture that meets the needs of this group. For example, chairs should have stable armrests and sufficient support for the elderly to grasp and lean on; beds should have an appropriate height to facilitate sitting, lying, and getting up; seats should have an appropriate seat height and backrest angle to reduce pressure on the elderly's lower back and back. Additionally, in terms of auxiliary functions, attention is paid to design details such as how to set pull rings or slots on the edge of a dining table to assist the elderly in standing up and sitting down, how to set slots or ring hooks on dining chairs to hang canes, how to set up adjustable clothing racks inside wardrobes to facilitate access to clothes, and whether to leave space under the bathroom sink for wheelchair access to facilitate safe entry and bathing.

The above furniture design teaching projects are supported by ideas such as expanding innovative thinking, exploring innovative capabilities, and accumulating

entrepreneurial awareness. Students are encouraged to break free from traditional frameworks, bravely try new design concepts and materials, develop a deep understanding of and attention to user needs, expand their design thinking, and carry out innovative furniture designs. The goal is to design furniture that is more comfortable, convenient, environmentally friendly, and personalized, better aligning with the needs of the era and meeting current usage demands, thereby cultivating students' entrepreneurial spirit and practical exploration abilities, and supplying talents with innovative awareness and practical experience to the future furniture design industry.

The teaching process follows educational laws, progressing from research and analysis to the creation of furniture design drawings, and then to the production of physical furniture based on those drawings. The teaching of innovation and entrepreneurship knowledge is integrated throughout the entire course, while the implementation of innovation and entrepreneurship tasks takes place during the stage of presenting teaching outcomes. Guidance is provided in furniture design positioning and conceptual shifts, effectively carrying out the "specialization-innovation integration" teaching of the Furniture Design course.

4. Conclusions

The in-depth advancement of innovation and entrepreneurship education in colleges and universities is not only a response to the national innovation-driven development strategy but also an important measure for promoting high-quality economic development and realizing the transformation of scientific and technological achievements. The implementation of "specialization-innovation integration" education in the Furniture Design course is both an inherent demand of environmental design professional teaching and an inevitable direction for curriculum reform. Based on traditional education, it reflects on current social realities and the development of educational connotations. Through the reform pathways of innovation and entrepreneurship education, it guides students to develop deep-seated professional learning habits; enhances students' motivation and vitality for innovation and entrepreneurship; cultivates their awareness and consciousness of innovation and entrepreneurship; thereby improving the comprehensive qualities, practical abilities, and social adaptability of talents cultivated through professional education. The explicit goal is the exploration of teaching reform, while the implicit goal is the effectiveness of talent cultivation.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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