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Reform of Innovation and Entrepreneurship Education in Design Programs at Application-Oriented Universities under the Background of New Liberal Arts Construction——Based on the Construction and Practice of a "Linking" Education and Teaching System

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Abstract:

Against the backdrop of the deep integration of the New Liberal Arts initiative and innovation and entrepreneurship education, design programs at application-oriented universities face challenges such as a disconnection between educational objectives and industry needs, outdated teaching methods, and insufficient practical platforms. Taking the reform practices of the School of Art and Design at Kunming University as an example, this paper proposes the construction of a "Linking" education and teaching system for application-oriented undergraduate design programs. By aligning educational goals with industry demands, integrating resources and co-building platforms, empowering teaching with information technology, and fostering collaboration between internal and external faculty, the system aims to bridge the gap between talent cultivation and market needs. Practice has shown that this system significantly enhances students' innovation and entrepreneurship capabilities and promotes curriculum development as well as the transformation of teaching outcomes.

Keywords:

Application-Oriented Undergraduate Education; Innovation and Entrepreneurship Education in Design; "Linking" Education and Teaching System

1 Introduction

1.1 Research Background and Problem Identification

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Currently, China's higher education is in a critical period of connotative development and deepening reform. The vigorous emergence of the "New Liberal Arts" construction and the further advancement of the national "Mass Entrepreneurship and Innovation" strategy together constitute the two core engines driving the transformation of talent cultivation models in application-oriented undergraduate institutions. The New Liberal Arts initiative aims to break down traditional disciplinary barriers, promote the integration of humanities and social sciences with information technology, and even with STEM and medical fields, emphasizing value guidance, knowledge innovation, and empowerment for the times. This presents a new era-specific proposition for design education, which inherently encompasses humanistic concern, artistic aesthetics, and technical practice. Simultaneously, since the promulgation of the "Implementation Opinions on Deepening Innovation and Entrepreneurship Education Reform in Higher Education Institutions" (State Council Document [2015] No. 36), innovation and entrepreneurship education has evolved from an "experimental field" in university reform to a "main battlefield" that must be intensively cultivated, with the goal of providing solid talent and intellectual support for building an innovative nation.

Within this macro context, design, as an indispensable part of the innovation-driven development strategy, is transforming from its traditional "beautification" function into a strategic role that drives industrial upgrading, leads lifestyles, and inherits and innovates culture. The digital economy has given rise to emerging fields such as user experience design, service design, and digital twin design, requiring design talents not only to "know how to design" but also to possess interdisciplinary knowledge integration capabilities, business insight, technological understanding, and social responsibility. However, examining the current design education in many application-oriented undergraduate institutions, a significant "disconnect" exists between the traditional educational model and these contemporary demands. A common phenomenon of "three emphases and three neglects" prevails in education and teaching: emphasizing skill impartation over innovative thinking cultivation; emphasizing classroom performance over entrepreneurial practice incubation; emphasizing internal evaluation over industry and market validation. This directly leads to practical difficulties such as a disconnection between talent cultivation and industry needs, insufficient student innovation and entrepreneurship capabilities, and low conversion rates of educational outcomes.

The School of Fine Arts and Art Design at Kunming University, as an application-oriented school rooted in Yunnan and serving the local region, has deeply realized through long-term practice that solving the aforementioned problems cannot rely on fragmented, partial adjustments. Instead, it necessitates a systematic and structural educational reform. The core lies in constructing a new teaching system that can effectively link the key elements both inside and outside the educational system. Therefore, this research focuses on the construction of a "Linking" education and teaching system for application-oriented undergraduate design programs. It aims to explore how effective "linking" across multiple dimensions such as objectives, platforms, methods, and faculty can bridge the "last mile" of talent cultivation, providing a referential and operable practical paradigm for the reform of design innovation and entrepreneurship education under the background of the New Liberal Arts construction.

1.2 Literature Review and Research Commentary

Scholars domestically and internationally have explored topics related to this research from different dimensions, providing important theoretical references and practical insights for this study.

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Firstly, regarding research on the integration of New Liberal Arts and design education. Domestic scholars generally believe that the New Liberal Arts present a historic opportunity for design education. Scholars such as Kuang Wenbo (2023) and Xu Xin (2024) point out that the essence of the New Liberal Arts is interdisciplinary integration and the blending of arts and sciences. Design studies should actively integrate into cutting-edge fields like digital humanities and social computing to build interdisciplinary curriculum systems. In international research, viewpoints such as Buchanan's (2019) concept of "design thinking as a new liberal art" also emphasize the core value of design in integrating different knowledge systems. These studies provide a macro transformation direction for this research but mostly focus on conceptual elaboration and top-level design, with insufficient discussion on specific pathways for effective implementation in the micro-teaching practices of application-oriented undergraduate education.

Secondly, research on design innovation and entrepreneurship education. Existing research mainly focuses on teaching model innovation and practical platform construction. For example, Xu Xiaofeng (2022) proposed a "project-driven" teaching model, and Xu Xibin (2023) demonstrated the role of the "studio system" in cultivating innovative practical abilities. These studies affirm the key position of practice in teaching. However, much research simplistically equates "innovation" and "entrepreneurship" with participating in competitions or starting businesses, failing to deeply reveal their intrinsic logical connection with the cultivation of design professional capabilities and the construction of regional industrial ecosystems. There is a lack of systematic solutions for organically embedding innovation and entrepreneurship education into the entire process of talent cultivation.

Thirdly, research on "Linking" education and related concepts. "Linking" as an educational concept is closely related to concepts such as "industry-education integration," "collaborative education," and "ecosystem theory." Domestically, research such as Xu Tao's (2021) study on the construction of industry-education integration communities and Jiang Hui's (2022) exploration of the operational mechanisms of industrial colleges touch upon the core of "linking." Internationally, Engeström's (2018) activity theory emphasizes the interactive relationships between individuals, communities, and mediating tools, providing a theoretical lens for analyzing the "linking" mechanism. However, existing research tends to focus either on macro-level mechanism construction or on single university-enterprise cooperation models. They fail to form a clear and distinguishable teaching system model with "linking" as the core thread running through all aspects of talent cultivation, especially specialized and refined research targeting the specific discipline of design is even scarcer.

In comprehensive review, existing research has laid a solid foundation for this topic, but there is also obvious room for exploration: First, research often appears "fragmented" or "blocky," lacking an overarching core concept to systematically connect objectives, content, methods, platforms, and evaluation. Second, there is a lack of targeted empirical research cases on how to effectively integrate limited resources and achieve quality and efficiency improvements in design innovation and entrepreneurship education within the specific context of application-oriented undergraduate institutions in western ethnic regions.

Therefore, based on the reform practice of Kunming University, this study will explicitly propose and systematically construct a "Linking" education and teaching system for application-oriented undergraduate design programs, striving to theoretically enrich and deepen cross-research on industry-education integration

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and innovation and entrepreneurship education, and practically provide a set of verified, complete solutions for design education reform in similar institutions.

1.3 Research Approach and Methods

This study follows the action research logic of "problem orientation - theoretical construction - practical verification - reflection and improvement," aiming to explore and refine the "Linking" education and teaching system through the two-way interaction of theory and practice.

1.Research Approach

Firstly, through reviewing relevant domestic and international literature and analyzing practical challenges, the core research questions and theoretical foundation are clarified. Subsequently, using the School of Art and Design at Kunming University as the research site, the construction philosophy, core dimensions, and operational mechanisms of the "Linking" education and teaching system are systematically elaborated, forming an operational theoretical model. Furthermore, by systematically collecting, organizing, and analyzing various data and outcomes generated during the system's practical operation, its effectiveness is objectively evaluated, and its limitations are reflected upon. Finally, research conclusions are summarized, and recommendations for promotion along with future prospects are proposed.

2.Research Methods

To ensure the scientific rigor and reliability of the research, this study comprehensively employed multiple research methods, striving to achieve effective mutual validation at both theoretical and practical levels. Firstly, the literature research method was adopted to systematically review policy documents and academic publications concerning New Liberal Arts construction, innovation and entrepreneurship education, industry-education integration, and design education reform from both domestic and international sources. This established a solid theoretical framework and clarified the academic context for the study.Secondly, the case study method was utilized, taking the reform practices of the School of Fine Arts and Art Design at Kunming University as an in-depth analysis subject. Through a comprehensive examination of its reform background, specific implementation process, key measures, and final outcomes, the study deeply revealed the internal logic, operational mechanisms, and core implementation points of constructing the "Linking" education and teaching system.Thirdly, action research was introduced. Based on the unique position of the researchers as both designers and participants of the reform, the study followed the cyclical process of "planning-acting-observing-reflecting" in practice. This enabled continuous iterative optimization of the system construction plan, ensuring close interweaving and dynamic adjustment between theoretical research and teaching practice.Finally, an outcomes analysis method was employed. This involved conducting quantitative statistics and qualitative analysis of the explicit achievements accumulated during the reform practice, such as provincial teaching achievement awards, first-class course projects, high-level competition awards, student design works, and university-enterprise cooperation projects. These served as key evidence for testing the practical effectiveness of the "Linking" system.Through the coordinated application of the above research approaches and methods, the conclusions of this study are established upon a solid theoretical foundation and substantial empirical evidence.

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2 Core Concepts and Theoretical Foundation

Any in-depth educational and teaching reform practice must be established upon clear conceptual definitions and a solid theoretical foundation. This chapter will systematically explain the connotations and extensions of the three core concepts—"New Liberal Arts Construction," "Design Innovation and Entrepreneurship Education," and the "'Linking' Education and Teaching System"—and outline the theoretical foundations supporting this research, thereby providing scholarly support for the subsequent construction and practical analysis of the "Linking" system.

2.1 The Connotation of New Liberal Arts Construction and Its Impact on Design Education

As a significant strategic deployment for higher education reform in China's new era, the core essence of New Liberal Arts Construction lies in promoting the deep intersection and integration of humanities and social sciences with modern information technology, and even with disciplines such as science, engineering, agriculture, and medicine. It aims to break through traditional disciplinary barriers, reconstruct knowledge systems, and innovate research methods to respond to the complex challenges brought by the technological revolution, industrial transformation, and social change. Initiated by the Ministry of Education in 2019, the "Six Excellences and One Top-notch" Plan 2.0 explicitly states that New Liberal Arts Construction should "lead the direction, support development, and create the future," emphasizing value guidance, knowledge innovation, and empowerment for the times. Its fundamental characteristics can be summarized as "integrative, innovative, developmental, and strategic." It requires liberal arts education to no longer be a closed transmission of knowledge but an open, cross-boundary, comprehensive educational form capable of responding to and leading solutions for real-world problems.

For design education, New Liberal Arts Construction brings revolutionary influence and reshaping. Design itself is an interdisciplinary field spanning art, technology, humanities, and society. The concept of New Liberal Arts provides an unprecedented historical opportunity and theoretical legitimacy for its deepening development. Firstly, it promotes a shift in design education from a "formal aesthetics" orientation to a "problem-solving" and "value creation" orientation. Design is no longer merely about the appearance of products but concerns service experiences, business models, cultural heritage, and social well-being. This requires design talents to possess broader humanistic perspectives, deeper cultural understanding, and more systematic social insight. Secondly, it accelerates the digital and intelligent transformation of design methods and processes. New technologies such as big data, artificial intelligence, and virtual reality are no longer just external tools for the design field but are internalized as core components of design thinking and the creative process, giving rise to emerging frontier areas like user experience design, service design, social innovation design, and digital twin design. Finally, the fundamental task of "fostering virtue and nurturing talents" emphasized by the New Liberal Arts requires design education to strengthen the ideological and political dimension of curricula, organically integrating national sentiment, cultural confidence, social responsibility, and professional ethics into the entire process of professional teaching, thereby cultivating designers with both moral

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integrity and professional ability. Therefore, design education under the background of the New Liberal Arts is essentially evolving towards a comprehensive educational paradigm characterized by interdisciplinarity, ethical emphasis, strong practicality, and deep digital integration. This provides a macro-level necessity and urgency for constructing the "Linking" education and teaching system.

2.2 The Essence and Characteristics of Innovation and Entrepreneurship Education in Design at Application-Oriented Undergraduate Universities

The core mission of application-oriented undergraduate universities is to cultivate high-quality application-oriented talents who face regional economic and social development, possess a solid theoretical foundation, strong practical abilities, and outstanding innovative spirit. Within this positioning, the essence of design innovation and entrepreneurship education is by no means merely encouraging students to start businesses. Rather, it is a comprehensive educational philosophy and model that takes "design innovation" as the core driving force and "entrepreneurial practice" as the path for ability transformation. Its goal is to stimulate students' innovative thinking through systematic educational processes and cultivate the comprehensive qualities and key abilities required to transform design creativity into market value or social value.

Compared to academic talent cultivation, design innovation and entrepreneurship education in application-oriented undergraduate programs exhibits distinct characteristics: First, strong industry relevance. Its educational content and evaluation standards must be closely aligned with the practical needs and development trends in fields such as the cultural and creative industries and digital content industries. The talent cultivation process requires deep industry participation. Second, compound practicality of abilities. It requires students not only to master professional design skills but also to possess cross-disciplinary abilities such as market analysis, project management, teamwork, resource integration, and even business planning. These abilities can only be effectively cultivated in real or highly simulated practical situations. Third, dual value orientation. It pursues both economic value, encouraging the driving of consumption upgrading and service to the real economy through design innovation, and social and cultural values, emphasizing the empowerment of rural revitalization, community building, and the revitalization of intangible cultural heritage through design, thereby serving people's needs for a better life and social sustainable development. Therefore, design innovation and entrepreneurship education in application-oriented undergraduate programs is a complex system integrating professional education, general education, and career education. Its successful implementation relies on a new educational ecosystem that effectively connects the inside and outside of campus, teaching and industry, and learning and creation.

2.3 Theoretical Construction of the "Linking" Education and Teaching System

The "Linking" Education and Teaching System is the core concept and theoretical innovation of this research. It refers to, within the context of innovation and entrepreneurship education for design majors at application-oriented undergraduate institutions, guided by systems theory and an ecosystem perspective, and centered on promoting students' holistic development and capability leap, purposefully and plannedly constructing and optimizing the effective connections, interactions, and synergistic relationships between elements within the educational system, and between the educational system and external industrial and social systems, thereby forming an organic, open, and dynamic educational structure. This system aims to resolve

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the common phenomena of "fragmentation" and "isolation" prevalent in traditional education models. The construction of the "Linking" system primarily revolves around four core dimensions, with their theoretical connotations as follows:

1.Objective Linking: Precise Alignment between Educational Supply and Industry Needs. Its theory originates from "Demand-Oriented Education" and "Competency-Based Education." This link emphasizes that the setting of talent cultivation objectives is not created in isolation but stems from the continuous tracking and analysis of industry standards and job competency models. Through the dynamic adjustment of talent cultivation schemes, it ensures the seamless connection between the knowledge, abilities, and qualities possessed by graduates and the requirements of their future professional fields.

2.Platform Linking: Diversified Convergence of Teaching Resources and Social Capital. Its theoretical basis is the "Collaborative Education Theory" and "Ecosystem Theory." This link is committed to breaking down the school walls by building practice platforms involving multiple stakeholders from "government, industry, university, research, and application" (e.g., industry colleges, collaborative innovation centers, internship bases). It integrates dispersed social resources (e.g., technology, projects, funds, mentors) into a shared infrastructure supporting students' innovation and entrepreneurship practice, achieving optimal resource allocation and maximized efficiency.

3.Method Linking: Path Innovation for Knowledge Impartation and Ability Construction. Its theoretical support is "Constructivist Learning Theory" and "Situated Learning Theory." This link emphasizes that teaching methods must shift from the traditional teacher-centered, textbook-centered approach to a student-centered, project-centered one. By widely adopting teaching methods such as project-based learning, case teaching, design competitions, and virtual simulation, and deeply integrating information technology into the entire teaching process, it creates learning environments for students that approximate real professional situations, guiding them to actively construct knowledge and hone their abilities in the process of solving complex problems.

4.Faculty Linking: Collaborative Cultivation by Internal Mentors and Industry Experts. Its theoretical basis is the concept of building a "Dual-Qualified Teaching Team." This link aims to build a teaching community composed of both internal academic mentors and enterprise industry mentors. By establishing effective cooperation mechanisms and management norms, it realizes the complementary advantages and synergistic efforts of the two types of faculty in areas such as curriculum development, classroom teaching, project guidance, graduation design, and academic evaluation, jointly undertaking the responsibility of cultivating high-quality application-oriented talents.

In summary, the "Linking" education and teaching system is a systematic reform framework that takes "linking" as the core methodology and aims to resolve the disconnection between the educational system and the external environment. It is not a single teaching method innovation but a reconstruction of the educational ecology based on holism, relevance, and dynamism, providing clear theoretical guidance and an action framework for the reform practice of application-oriented design innovation and entrepreneurship education under the background of the New Liberal Arts.

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3 Practical Dilemmas and Reform Motivations in Design Innovation and Entrepreneurship Education: A Case Study of Kunming University

Any successful educational reform stems from a clear recognition and profound reflection on practical dilemmas. In the process of exploring and advancing design innovation and entrepreneurship education, the School of Fine Arts and Art Design at Kunming University has deeply felt the significant tension between the traditional talent cultivation model and the demands of the new era. This chapter will systematically analyze the three core dilemmas currently faced by design innovation and entrepreneurship education in application-oriented undergraduate universities, based on the specific practices of the School, to clarify the urgency and internal motivation for constructing the "Linking" education and teaching system.

3.1 Structural Mismatch between Educational Supply and Industry Demand

The ultimate goal of cultivating application-oriented talents is to serve social development and industrial upgrading. However, under the traditional teaching model, a significant structural mismatch exists between the "supply" of design education and the "demand" of the industry market. This mismatch is first reflected in the disconnection between curriculum content and job competency requirements. For a long time, the curriculum system for design majors has primarily revolved around fixed skill modules (e.g., foundational modeling, software operation, specialized design), with long update cycles, failing to respond sensitively to the rapidly iterating industry trends and the demands of emerging fields such as user experience design, service design, and data visualization. Consequently, although students master traditional design techniques proficiently, they exhibit obvious shortcomings in compound abilities such as market analysis, user research, product planning, project management, and cross-disciplinary communication when facing real commercial projects.

Secondly, this mismatch is reflected in the inconsistency between the evaluation standards for talent cultivation and market acceptance criteria. Academic evaluation within universities often focuses on the artistry and technical completion of works, whereas the industry pays more attention to the feasibility of design solutions, cost control, market acceptance, and commercial value. This discrepancy in evaluation systems makes it difficult for students to establish a complete understanding of the "design-product-commodity" value chain. Their works often remain at the "concept" level, struggling to transform into market-recognized "products" or operational "services." Pre-reform research at Kunming University found that many graduates required a lengthy "re-training" period after entering companies to adapt to actual job requirements, undoubtedly confirming the gap between educational supply and industry demand. Therefore, breaking down the barriers between campus and industry and achieving precise linking of educational objectives with industry needs became the primary motivation for reform.

3.2 Lagging Teaching Methods and Lack of Digital-Intelligent Practical Training Scenarios

In today's world where digitalization and intelligentization are sweeping all industries, the working methods and creative tools in the design industry are undergoing revolutionary changes. However, the teaching methods for design majors in many application-oriented universities have failed to update simultaneously, showing significant lag. On the one hand, teaching methods still predominantly feature teacher lecturing and

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student imitation. Project-driven and inquiry-based learning have not yet become the norm. Although computer-aided design has been introduced, teaching often remains at the level of software tool usage, failing to deeply integrate cutting-edge technologies such as big data analysis, AI generation, and Virtual Reality/Augmented Reality (VR/AR) as catalysts for innovation into the teaching of design thinking and processes. This creates a generational gap between students' technical horizons and the requirements of their future workplaces.

On the other hand, and more critically, there is a severe lack of "digital-intelligent practical training scenarios" that support students in high-level innovation and entrepreneurship practice. Design innovation, especially innovation geared towards the digital economy, requires repeated iteration and validation in highly simulated environments. However, traditional studios and computer labs are ill-equipped to simulate complex user interaction scenarios, product usage contexts, or business operation environments. Students lack opportunities for bold trial, error, and innovation in low-cost, low-risk virtual spaces. Although some universities have built laboratories, the equipment is often isolated and systems closed, failing to form a comprehensive practical training platform that supports interdisciplinary collaboration and data-driven decision-making. Kunming University faced similar challenges in its initial practice stages, where some student creative ideas stalled at the conceptual phase due to a lack of necessary technical support and experimental environments. Thus, constructing a modern practical training platform that integrates digital technology and intelligent tools and connects the entire chain of "idea-prototype-testing-iteration" became an inevitable choice for stimulating students' innovation potential and enhancing their entrepreneurial capabilities.

3.3 Singular Faculty Structure and Inadequate Integration of Social Resources

A high-quality faculty team is key to the success of innovation and entrepreneurship education. However, design majors in application-oriented undergraduate universities commonly face the problem of a singular faculty structure. Most full-time teachers possess solid academic backgrounds and artistic literacy but generally lack practical experience in front-line corporate design R&D, project management, or self-employment. This leads to difficulties in effectively conveying real-world industry cases, technical standards, and business logic to students during teaching. Guidance for students' innovation and entrepreneurship often "scratches the surface," lacking intensity and depth.

Simultaneously, universities often appear inadequate in integrating high-quality social resources. Although most institutions have signed cooperation agreements with external enterprises, the cooperation models often remain at superficial levels such as student internships and expert lectures, failing to form a sustainable development community characterized by deep integration, risk-sharing, and benefit-sharing among "government, industry, university, and research." Cooperation relationships are noticeably "project-based" and "short-term," lacking stable institutional guarantees and long-term operational mechanisms. The introduction of resources appears "spotty," failing to systematically feed back into core links such as talent cultivation program revision, curriculum system restructuring, and practical teaching reform, thus failing to maximize resource benefits. Before constructing the "One Space, Two Institutions, Five Bases" platform, Kunming University also faced the predicament of "nominal" university-enterprise cooperation and a "disconnect" between resources and teaching. Therefore, building a "dual-qualified" faculty team and establishing a mechanism that can effectively link, absorb, and transform social resources are the organizational guarantee and power source for

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breaking the closed educational loop and achieving an upgrade in the talent cultivation model.

In summary, the mismatch between educational supply and industry demand, the lag in teaching methods and digital-intelligent scenarios, and the inadequacy in faculty structure and social resource integration collectively constitute the three major practical dilemmas restricting the quality improvement of design innovation and entrepreneurship education in application-oriented undergraduate programs. These dilemmas do not exist in isolation but are interrelated and intertwined systemic issues. It is precisely the clear recognition of these deep-seated problems that constitutes the most direct and intense internal motivation for Kunming University's determined reform and exploration in constructing the "Linking" education and teaching system.

4 Construction Pathways of the "Linking" Application-Oriented Undergraduate Design Education and Teaching System

Confronted with the practical dilemmas analyzed in Chapter 3, the School of Fine Arts and Art Design at Kunming University, guided by systems theory, has constructed a "Linking"-centered methodology for the innovation and entrepreneurship education and teaching system for application-oriented undergraduate design programs. This system aims to resolve key bottlenecks in the talent cultivation process through effective linking across four core dimensions, forming an organic, open, and collaborative educational ecology. Its core structure is illustrated in the figure below.

As shown in the figure above, the "Linking" system is a logically rigorous and interlinked closed-loop system. Its specific construction pathways revolve around the following four core dimensions:

4.1 Precise Linking of Educational Objectives and Industry Needs

The primary prerequisite for constructing the "Linking" system is to achieve synchronization between the "supply side" of talent cultivation and the "demand side" of industrial development. To this end, the School has established a dynamic mechanism of "demand insight - objective calibration - program iteration."

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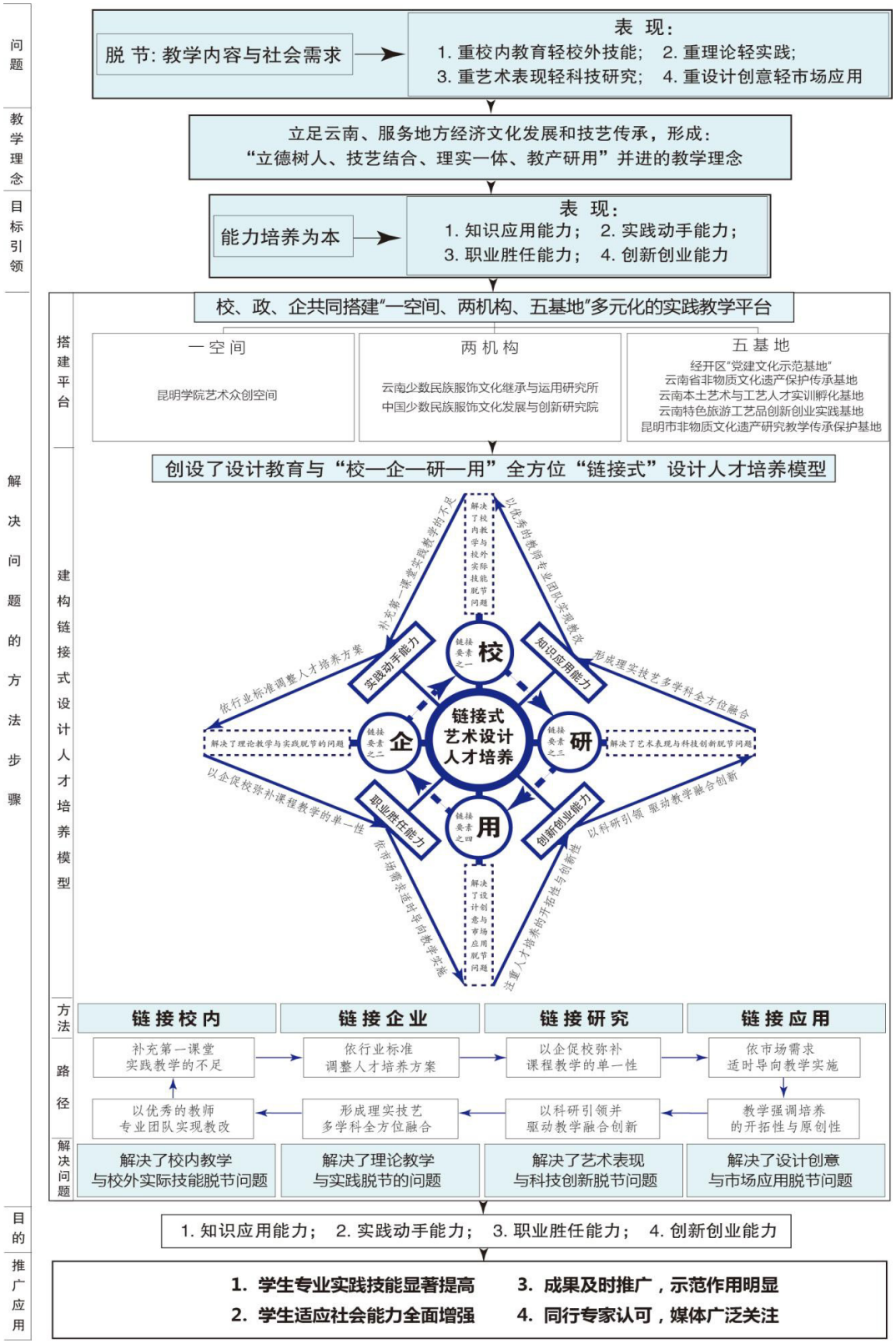


Figure1: "Linking" Design Art Talent Cultivation Model Diagram

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First, establishing a normalized industry demand research mechanism.

The School regularly organizes professional teacher teams to conduct in-depth research at cooperative enterprises such as the China (Yunnan) Pilot Free Trade Zone Kunming Area, Yunnan Chengming Advertising Cultural Industry Park, and Zence Decoration Group. Through questionnaires, in-depth interviews, and job competency analysis meetings, they systematically track the latest formats, technological trends, and changes in talent competency demands in the cultural industry and design service sector. Simultaneously, the School actively introduces industry standards and enterprise certifications (e.g., the "1+X" certificate system), using commonly accepted industry competency norms as important references for formulating talent cultivation objectives.

Second, achieving dynamic calibration and reverse design of talent cultivation objectives.

Based on the research data, the School reformed the traditional "inside-out" curriculum design logic, adopting the "Outcome-Based Education (OBE)" concept for "reverse design." This means first clarifying the professional achievements graduates are expected to attain approximately five years after graduation (graduation requirements), then determining the core competencies they should possess upon graduation (graduation requirement indicator points), and finally decomposing and implementing these competency requirements into specific course objectives and teaching content. For example, in response to the market demand for "full-stack designers," courses such as "User Research and Experience Design" and "Design Project Management" were added to the Visual Communication Design major's talent cultivation plan. Competency points like market insight and business model construction were integrated into core courses like "Graduation Design."

Third, constructing a multi-stakeholder objective demonstration and evaluation mechanism involving "government, industry, university, and research."

The School invites industry experts, enterprise technical backbone staff, and alumni representatives to form a "Professional Construction Committee," directly participating in the demonstration and annual revision of the talent cultivation plan. Through this "multi-stakeholder governance" model, the educational objectives are ensured to remain synchronized with regional economic development and industrial upgrading, achieving a fundamental shift from "passive adaptation" to "active linking" between educational supply and industry demand.

4.2 Multi-dimensional Linking of Teaching Resources and Platforms

To achieve seamless integration between theoretical instruction and practical application, the School is committed to breaking down campus barriers. By establishing diversified and open practical platforms, it effectively integrates high-quality resources from both inside and outside the university, constructing a pathway for students' competency escalation from the "learning environment" to the "practical battlefield."

The core initiative is to build and substantiate a diversified practical teaching platform ecosystem termed "One Space, Two Institutions, Five Bases." "One Space" refers to the "Innovation and Entrepreneurship Incubation and Transformation Studio" open to all students, providing open physical space and basic equipment support. "Two Institutions" denotes the Industrial Research Institute and the Collaborative Innovation Center established jointly with the government and enterprises, responsible for introducing cutting-edge research

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topics and industry-sponsored projects. "Five Bases" are off-campus practical teaching bases set up within renowned enterprises, cultural industry parks, and ethnic craft workshops, providing students with authentic production internships and project practice environments.

On this platform, the School focuses on promoting the linking of two types of key resources:

1.Project Resource Linking:

Actively introducing local government social service projects, real enterprise commercial projects, and authoritative design competitions within the industry (e.g., the "Internet Plus" competition, Future Designer NCDA Awards) into the classroom, implementing "project-based teaching." For instance, students majoring in Visual Communication Design directly participated in the "Jianshui Zitao" brand upgrade design project, following through from market research and cultural extraction to packaging design and marketing promotion, transforming artworks into products and commodities within a real business logic context.

2.Intellectual and Capital Resource Linking:

Through the platform, industry leaders, successful entrepreneurs, and technical experts are invited to serve as industry mentors, hosting "Innovation and Entrepreneurship Forums" and workshops. Simultaneously, "Innovation and Entrepreneurship Seed Funds" are established jointly with parks and enterprises, providing early-stage incubation and investment matching for outstanding student projects with market potential, preliminarily solving the problem of students having "ideas but no funds" for entrepreneurship.

Through the multi-dimensional linking of platforms, students' learning contexts extend from closed classrooms to broader society, and educational resources expand from limited internal resources to an unlimited social network, effectively bridging the gap between "what is learned" and "what is used."

4.3 Deep Integration and Linking of Teaching Methods and Information Technology

To adapt to the learning habits of digital natives and cultivate their future-oriented innovation capabilities, the School vigorously promotes the innovation of teaching methods and their deep integration with information technology, aiming to create smart learning environments and reshape the forms of teaching and learning.

On one hand, the School has systematically advanced the teaching methodology reform characterized by "Project-Driven + Competition-Enabled" approaches. Core professional courses have widely adopted the PBL (Project-Based Learning) methodology, integrating comprehensive real-world or simulated projects throughout the teaching process. Within this framework, students are encouraged to transform course assignments into competition entries and participate in high-level events such as the China "Internet Plus" University Student Innovation and Entrepreneurship Competition and the National College Digital Art Design Competition. This establishes a virtuous cycle of "promoting learning through competition, fostering innovation through competition, and integrating competition with teaching." This approach not only significantly stimulates students' learning motivation but also hones their innovative thinking and teamwork capabilities within high-pressure, high-standard competitive environments.

On the other hand, information technology has been deeply applied to construct a blended teaching model

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of "Smart Teaching + Virtual Simulation". Relying on online teaching platforms such as Chaoxing Learning Platform and Zhihuishu, the School has developed a number of online-offline blended first-class courses, including "Font and Layout Design" and "Logo Design", enabling fully digitalized management of the entire teaching process encompassing pre-class preparation, in-class interaction, and post-class extension. More crucially, to address the practical training needs of majors such as Environmental Design and Digital Media Arts for high-cost, high-risk, or inaccessible scenarios, the School has introduced VR/AR, 3D modeling, and rendering technologies to develop virtual experimental teaching projects like the "Virtual Exhibition Hall of Ethnic Costumes" and "Immersive Business Space Design Simulation". Students can freely conduct design conceptualization, material selection, effect presentation, and solution modification in virtual space, achieving "creation as manufacturing". This effectively overcomes the limitations of traditional practical training regarding space, materials, and safety, significantly enhancing both teaching efficiency and students' technical application abilities.

4.4 Collaborative Linking of Faculty Teams and Social Forces

Teachers are the executors and promoters of educational reform. To address the lack of practical innovation and entrepreneurship experience among internal teachers, the School focuses on building a collaborative mechanism for a "Dual-Qualified" teaching team characterized by "introduction and cultivation combined, mutual empowerment."

First, implementing the "Industry Mentor Special Appointment Program."The School selects a group of experienced designers, project managers, and successful entrepreneurs from cooperative enterprises to serve as part-time industry mentors, deeply participating in talent cultivation through various forms such as fixed teaching hours, special lectures, project guidance, and joint graduation design supervision. They not only bring the latest industry knowledge and practical cases but also instill market awareness, cost awareness, and customer awareness into teaching, allowing students to experience the workplace atmosphere "zero-distance."

Second, establishing the "Teacher Enterprise Workstation" and "Temporary Posting" systems. The School has formulated incentive policies to encourage and support early-career and mid-career faculty members to undertake full-time or part-term placements at relevant enterprises for periods ranging from six months to one year, where they assume actual design tasks or research and development projects. This initiative aims to enhance faculty members' engineering practice capabilities and industry insight, which in turn feed back into teaching and research, thereby addressing the limitation of a monolithic "from-school-to-school" background profile within the faculty.

Third, promoting the "Teaching Community" model.Within the university, breaking down disciplinary barriers and encouraging teachers from different backgrounds such as art, design, computer science, and business to form interdisciplinary teaching teams to jointly develop courses and guide projects. Externally, forming a "1+1" paired guidance model with industry mentors, jointly responsible for guiding student innovation and entrepreneurship projects, disciplinary competitions, and graduation designs. By establishing regular teaching and research activities and benefit-sharing mechanisms, a new situation of collaborative education has been formed where internal academic mentors and external industry mentors "complement each other's advantages, share responsibilities, and share achievements."

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In summary, the "Linking" education and teaching system constructed by Kunming University, through the synergistic efforts of the aforementioned four pathways, has successfully connected isolated educational links into an organic ecosystem. It not only theoretically responds to the inherent requirements of the New Liberal Arts and innovation and entrepreneurship education but also provides a set of effective, replicable, and scalable systematic solutions for the cultivation of application-oriented undergraduate design talents at the practical level.

5 Analysis of Practical Effectiveness and Outcomes of the "Linking" Education and Teaching System

The construction of the "Linking" education and teaching system is not merely theoretical speculation; its value and vitality must ultimately be tested through practical outcomes. Since the comprehensive implementation of this system in the School of Fine Arts and Art Design at Kunming University, it has achieved remarkable results across multiple dimensions, including talent cultivation, curriculum construction, teaching research, and social service. A series of observable, quantifiable landmark outcomes have been formed, fully demonstrating the advanced nature and effectiveness of this reform model.

5.1 Significant Improvement in Talent Cultivation Quality

The ultimate goal of the 'Linking' system is student development. Through multidimensional empowerment in objectives, platforms, methods, and faculty, students' innovation capabilities, practical skills, and comprehensive competencies have achieved leapfrog improvement, which is clearly evidenced by their outstanding performance in various high-level professional competitions and real-world project outcomes.

First, student innovation and practical abilities shine on the competition stage.Driven by the "integration of teaching and competition" mechanism of the "Linking" system, the School utilizes authoritative competitions such as the "Internet Plus" Competition, the "Future Designer" National College Digital Art Design Award (NCDA), and the China Undergraduate Computer Design Competition as important platforms to test teaching outcomes and hone student abilities. According to statistics, since the full implementation of the system, student works have cumulatively won over 100 awards in provincial-level and above professional competitions. These awards cover multiple professional directions such as Visual Communication, Environmental Design, and Fashion and Apparel Design, with both the level and quantity of awards reaching historic highs.

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Figure 2: Student Award Certificates

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These awards are by no means accidental. For example, the student work "Yi Cai Yun Shang" Digital Display and Innovative Design of Ethnic Costume Culture" won a national third-class prize in the National College Digital Art Design Award. This project is a typical product of "Platform Linking" and "Method Linking": students completed their creative conception in the "Innovation and Entrepreneurship Incubation and Transformation Studio," utilized the School's virtual simulation experiment platform for 3D modeling and dynamic display, and, under the guidance of industry mentors, conducted in-depth cultural fieldwork in Yi ethnic communities, ultimately perfectly integrating ethnic culture with modern digital technology. The significance of such awards far exceeds the certificates themselves; it marks the shift in student capabilities from "theoretical discussion" to "practical innovation." Their works not only possess artistic merit but also reflect comprehensive consideration of cultural heritage, technology application, and user needs.

Second, students' comprehensive competencies and professional competitiveness have been significantly enhanced. Through the "Project Integration into Curriculum" and "University-Enterprise Joint Guidance" initiatives, students have entered a "quasi-professional" status ahead of schedule.

Students majoring in Visual Communication Design participated in the brand visual upgrade project for the Yunnan Chengming Advertising Cultural Industry Park from conception to completion. Their design proposals received high recognition from both the park management and enterprise partners for successfully balancing creativity with practical implementation, with some outcomes being directly adopted for application. Similarly, during their internships at Zence Decoration (Group) Co., Ltd., Environmental Design students were directly involved in schematic design, material selection, and client communication for both residential and commercial decoration projects. Their professional competence and practical problem-solving abilities were fully affirmed by corporate mentors.

These experiences have substantially boosted students' professional confidence, communication and collaboration skills, and project management capabilities, enabling them to stand out in the competitive job market. In recent years, the employment rate and the rate of employment in related fields among the college's graduates have shown steady growth. Many students have secured positions in renowned domestic design institutions or successfully launched their own businesses, accomplishing a remarkable transformation from "students" to "designers" and even "entrepreneurs."

5.2 Breakthroughs in Curriculum and Teaching Resource Construction

The effective operation of the "Linking" system necessitates that curriculum content and teaching resources keep pace with the times. Guided by the "Golden Course" standards, the School has promoted in-depth reform and innovation of core courses, achieving a series of breakthrough results in curriculum construction and teaching resource development.

In terms of curriculum construction, core courses have successfully entered the provincial first-class echelon. Among them, the construction outcomes of the courses "Font and Layout Design" and "Logo Design" are the most prominent. Aligned with the construction standards for national first-class courses and curriculum ideology and politics demonstration courses, they deeply integrate the "Linking" concept. In the "Font and Layout Design" course, the teaching team not only imparts basic modeling and typesetting principles but also introduces local characteristic cultural symbols (such as Dongba script, Yi patterns) as design materials,

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achieving organic integration of "Curriculum Ideology and Politics" and professional teaching. Simultaneously, through cooperation with Guangzhou GuanYue Network Technology Co., Ltd., the actual design needs of commercial brands are used as course projects, allowing student works to face direct market testing. This course was successively recognized as a University-level First-class Course and a Curriculum Ideology and Politics Demonstration Course in 2023 and 2024, and was successfully approved as a Yunnan Provincial First-class Undergraduate Course in 2024.



Figure 3: Yunnan Provincial First-class Undergraduate Course Award



Figure 4: Third Prize, Yunnan Division, Third National University Teachers' Teaching Innovation Competition

Abundant outcomes in teaching capability and resource development. The construction of the aforementioned courses has also fed back into the enhancement of teachers' teaching capabilities. The teaching achievements of the "Font and Layout Design" course won the Third Prize in the Yunnan Division of the Third National University Teachers' Teaching Innovation Competition. This award is a direct affirmation of

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the teaching team's continuous innovation in "Method Linking," proving their comprehensive strength in teaching philosophy, course design, and technology application.

Furthermore, the teaching team actively transformed reform practices into theoretical outcomes and teaching resources. During the project implementation period, team members formally published one teaching reform paper focusing on themes such as the "Linking" teaching concept, integration of Curriculum Ideology and Politics, and industry-education integration models. Simultaneously, in collaboration with enterprise technical backbone staff, they developed multiple characteristic textbooks and teaching cases suitable for application-oriented talent cultivation, including paper textbooks, electronic textbooks, and workbook-style textbooks, preliminarily forming a characteristic, three-dimensional teaching resource repository supporting the "Linking" teaching system.

5.3 Expansion of Teaching Research Outcomes and Social Influence

The successful practice of the "Linking" education and teaching system has not only improved the quality of talent cultivation within the School but also generated widespread teaching research effects and positive social influence, forming a virtuous cycle of "teaching benefits teachers as well as students, and serving society."

First, high-level teaching research outcomes have received authoritative recognition. The outcome "Construction and Practice of the 'Linking' Application-Oriented Undergraduate Art and Design Talent Cultivation Model," with this system as its core content, won the Yunnan Provincial Teaching Achievement Award (Second Class) in 2022. The acquisition of this award signifies that the theoretical innovation and practical effectiveness of the "Linking" system have been highly recognized by the higher education community within the province. Its innovative points lie in: systematically constructing a new paradigm for cultivating application-oriented design talents through "Four-Dimensional Linking"; effectively solving the chronic problem of the "disconnect" in industry-education integration; and forming a replicable, scalable design education reform plan for local universities in western China. The acquisition of this high-level award has provided strong momentum and credibility endorsement for the system's continuous deepening and broader dissemination.

Second, strong support from teaching research platforms and projects. During the system construction process, the School successfully applied for and obtained approval for multiple Ministry of Education Industry-University Cooperative Education Projects, including "Research on the Construction of a 'Linking' Application-Oriented Undergraduate Design Education and Teaching System under the 'Four New' Background," "Training for the Improvement of Teaching and Education for Application-Oriented Undergraduate Design Major Teachers," and "Research on the Reform of Innovation and Entrepreneurship Education for Design Majors in Application-Oriented Undergraduate Universities under the Background of New Liberal Arts Construction." The approval of these national-level projects, on the one hand, provided valuable financial and policy support for the reform; on the other hand, it signifies that the School's reform exploration highly aligns with the direction of national higher education reform. Its experience has entered the Vision of the national level and possesses broader demonstration value.

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Figure 5: Yunnan Provincial Teaching Achievement Award (Second Class)

Finally, the university-enterprise cooperation community effectively serves the local economy and culture. The construction of the "Linking" system has transformed the School from a "bystander" to an "active participant" in regional economic development. Through cooperation with Jianshui Chongwen Tongchuang Zitao Culture Co., Ltd., teachers and students jointly designed new shapes and patterns for the National Intangible Cultural Heritage "Jianshui Zitao" that align with modern aesthetics and market demand, helping to revitalize the traditional craft. The cooperation with Yunnan Aostar Industrial Co., Ltd. integrated elements of Yunnan ethnic minority costumes into modern uniform design, enhancing the cultural added value of the products. These initiatives not only directly apply design outcomes to the market but also make substantive contributions to cultural inheritance and innovation, enhancing Yunnan's cultural soft power, achieving a "multi-win" situation for university talent cultivation and serving social development.

6 Conclusion, Reflection, and Outlook

This study, set against the macro-background of the national strategies for New Liberal Arts construction and Innovation and Entrepreneurship education, and guided by the practical dilemmas in cultivating application-oriented undergraduate design talents, systematically constructed and practiced the "Linking" Education and Teaching System. This chapter will provide a systematic summary of the preceding research, condense the core conclusions, offer objective reflections based on the practical process, and finally propose prospects for future development.

6.1 Research Conclusions

Through an in-depth analysis of the reform practices at the School of Fine Arts and Art Design, Kunming University, this study derives the following core conclusions:

First, constructing the "Linking" Education and Teaching System is an effective pathway to resolve the dilemmas of innovation and entrepreneurship education in application-oriented undergraduate design programs. Through the systematic linking of the four core dimensions—objectives, platforms, methods, and faculty—this system successfully breaks down multiple barriers prevalent in the traditional education model, such as the "disconnect between educational supply and industry needs," "isolation of teaching resources from social

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capital," "detachment of teaching methods from digital-intelligent technologies," and "mismatch between faculty capabilities and practical requirements." It integrates originally isolated educational links into an organic, dynamic, and open ecosystem.

Second, the practical effectiveness of the "Linking" system is significant, verifying its scientific nature and feasibility. The practice of this study demonstrates that the system can effectively enhance the quality of talent cultivation. This is concretely reflected in: the marked enhancement of students' innovative thinking, practical abilities, and comprehensive 素 养 , leading to repeated success in various high-level disciplinary competitions; breakthroughs in curriculum construction, successfully fostering several provincial-level first-class courses and Curriculum Ideology and Politics demonstration courses; and abundant teaching research outcomes, including winning the Yunnan Provincial Teaching Achievement Award (Second Class) and obtaining approval for multiple Ministry of Education Industry-University Cooperative Education Projects. These tangible outcomes fully prove that the "Linking" system possesses strong vitality in promoting student growth and success, driving teaching reform, and serving social development.

Third, the key to the system's success lies in achieving a paradigm shift from "single-point reform" to "systematic reconstruction." It is not a partial optimization of a single course or teaching link but a structural reorganization of the entire process and all elements of talent cultivation, guided by systems theory. Its core value lies in establishing an operational mechanism that enables continuous interaction among multiple stakeholders (university, government, industry, enterprise), efficient resource flow, and timely information feedback. This ensures the talent cultivation system can respond sensitively and effectively to changes in the external environment, achieving self-adaptation and self-evolution in education.

6.2 Reflection and Limitations

While summarizing the achievements, this study also soberly recognizes that there are still some aspects requiring improvement and limitations in the construction and implementation process of the "Linking" system.

First, the depth and breadth of system implementation are uneven across different majors. Due to variations in faculty structure, historical accumulation, and foundation for university-enterprise cooperation among different majors, reforms are more profound in majors with better foundations like Visual Communication Design and Environmental Design. In contrast, some emerging majors or traditional craft majors still face significant challenges in platform linking and digital-intelligent transformation. The universality and adaptability of the system need further verification and enhancement.

Second, the long-term collaborative mechanism still requires further consolidation and deepening.Although the School has established cooperative relationships with numerous enterprises, some collaborations still exhibit characteristics of being "project-based" and "relationship-dependent," relying on the push of key individuals. How to establish a more institutionalized, contractual, and benefit-sharing sustainable cooperation model to avoid fluctuations and interruptions in cooperative relationships is a subject requiring continuous exploration in the future.

Finally, the scientific evaluation system is not yet fully developed. The current evaluation of the system's effectiveness mostly relies on explicit indicators such as teaching achievements and competition awards. A

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long-term tracking and value-added evaluation system for students' intrinsic 素养 , such as innovative thinking, entrepreneurial spirit, and career development potential, has not been fully established. This makes it difficult to comprehensively and accurately measure the long-term educational effect of the system.

6.3 Future Outlook

Looking forward, the reform of innovation and entrepreneurship education in application-oriented undergraduate design programs remains a formidable task. Based on the conclusions and reflections of this study, the following prospects for future development are proposed:

First, deepen the empowerment of digital-intelligent technologies to build a new "Smart Linking" ecosystem. The future should further explore the deep application of cutting-edge technologies such as artificial intelligence, big data, and the metaverse within the "Linking" system. For instance, utilizing AI for personalized learning path recommendations, building predictive models for industry talent demand, and developing more immersive virtual simulation training projects, thereby creating a smarter, more precise, and more efficient "Smart Linking" educational paradigm.

Second, expand the system's scope to build a "Regional Innovation Community." The next step should involve promoting the "Linking" system to expand from serving internal university teaching to serving the upgrade of regional cultural industries and social innovation. By more closely linking local cultural and tourism projects, rural revitalization strategies, and urban renewal plans, the School can become an "innovation engine" and "talent think tank" for the regional cultural and creative industries, forming a virtuous cycle where the university and regional development resonate and prosper together.

Third, improve quality assurance and establish a long-term mechanism for "sustainable development." One of the key tasks for future work is to construct a comprehensive evaluation system covering multiple dimensions such as goal achievement, social satisfaction, and student development. Simultaneously, through institutional innovation, it is necessary to clarify the rights, responsibilities, and benefits of all parties (university and enterprise) in collaborative education and establish regular communication and coordination institutions. This will ensure the "Linking" system can continuously optimize through dynamic adjustments and gain endogenous momentum for sustained development.

In summary, the "Linking" application-oriented undergraduate design education and teaching system constructed in this study provides a practice-tested solution for the reform of design innovation and entrepreneurship education under the background of the New Liberal Arts. Although challenges remain ahead, as long as systematic thinking is adhered to, and the deep integration of the education chain, talent chain with the industry chain, and innovation chain is continuously promoted, it will undoubtedly cultivate more high-quality design talents who are worthy of the times, possess solid foundations, high quality, innovative ideas, specialized skills, and strong capabilities, contributing to the construction of socialism with Chinese characteristics for a new era.

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