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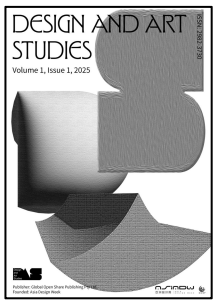

Case Studies

Exploring the Integration of Teaching Practice and Innovation-Entrepreneurship Competitions in Art and Design Education under the "Internet Plus" Perspective

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Abstract

This case study article explores the transformation of art and design education in Chinese universities under the "Internet Plus" initiative. Through a series of representative cases from institutions such as Zhejiang University of Technology, East China Normal University, and Guangdong University of Technology, the study examines how blended learning models, flipped classrooms, immersive VR environments, and industry-university collaboration have been implemented to enhance teaching effectiveness. The integration of innovation-entrepreneurship competitions into curricula has also emerged as a strategic approach to foster creativity, problem-solving skills, and real-world readiness among students. This paper provides practical insights into how digital technologies and competition-driven pedagogy can be effectively embedded in art and design programs. The findings offer valuable reference points for educators and institutions aiming to update their instructional strategies in response to the evolving demands of the digital era.

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1. Introduction

"Internet Plus" is the result of the long-term evolution and application of Internet-based thinking. It has, to a significant extent, contributed to socioeconomic development and the cultivation of many innovative talents in art and design disciplines (Cui, 2019). As a product of the deep integration between information and communication technology (ICT) and traditional industries, "Internet Plus" has profoundly influenced educational philosophies and instructional models in higher education. As a discipline aimed at fostering creative and application-oriented talents, art and design education in universities must align closely with the evolving trends of "Internet Plus" by reforming its curriculum content, instructional methods, and talent development systems. Numerous educational resources and knowledge frameworks have been integrated into Internet platforms, leveraging multimedia technologies to optimize resource sharing and expand the reach of knowledge dissemination. This integration has promoted the diversification, precision, and collaboration of teaching processes, enhancing both the effectiveness and quality of classroom instruction. It has also broadened the communication channels between universities and the Internet, offering faculty members more efficient teaching tools and providing students with more effective and flexible learning environments (Qi, 2018). As an essential field within higher education, art and design must continue to embrace innovation in response to the rapid

development of the “Internet Plus” era. Only through continual advancement in teaching practices can institutions cultivate a new generation of outstanding professionals in art and design (Liu, 2019).

2. Current Teaching Practices and Case Analysis under the “Internet Plus” Perspective

The advent of "Internet Plus" technologies has injected new vitality into art and design education in universities, driving continuous innovation in teaching methods, enriching course content, and transforming students’ learning models toward more autonomous, collaborative, and project-oriented approaches. Based on reform practices observed in leading universities, the following four key areas can be summarized:

2.1. Building a Blended Teaching System Integrating Online and Offline Modes

Universities across China are actively adopting information technologies such as MOOCs (Massive Open Online Courses), SPOCs (Small Private Online Courses), mini-programs, and virtual simulation platforms to develop deeply integrated blended teaching models. For instance, East China Normal University has implemented a “Rain Classroom + Practical Workshop” model in its Visual Communication Design course. This model combines online micro-learning for pre-class preparation with offline project-based practice, thereby enhancing the relevance of student learning and strengthening their hands-on capabilities.

2.2. Promoting “Flipped Classroom 2.0” to Stimulate Active Learning

Zhejiang University of Technology has introduced a “Flipped Classroom 2.0” model, which emphasizes a teaching design that integrates “online content generation + in-class deep interaction.” This approach establishes a closed-loop learning process of “preparation – practice – reflection.” The model highlights student-centered participation in knowledge construction and project-based problem solving, effectively enhancing critical thinking and practical abilities within design-oriented courses (Figure 1) (Chen & Yang, 2020).

Figure 1. Course project collaborations over the past three years between the Interface Interaction Design course at Zhejiang University of Technology and the Alibaba and Ant Design Committees.

2.3. Integrating Virtual Reality Technology to Create Immersive Learning Environments

Against the backdrop of integrating design and technology, Guangdong University of Technology has introduced virtual reality (VR) technology into its Interaction Design course to create a multisensory immersive teaching environment. Through simulated operations and virtual space construction, students enhance their creative thinking and diversify their expressive media, thereby expanding the learning boundaries of art and design. Equipped with VR headsets and handheld controllers, students immerse themselves in virtual interactive scenarios, participating fully in the entire process of spatial construction, interactive design, and experience testing within a simulated indoor environment (Figure 2)

Figure 2. Hardware setup and interaction process during classroom practical training.

2.4. Strengthening Industry-Education Integration through a Triadic Teaching Approach

The School of Art at Northeast Forestry University has developed a triadic course system consisting of "online learning – offline training – enterprise project participation." In the Packaging Design course, students not only acquire theoretical knowledge through smart learning platforms but also engage in prototyping within training labs and participate in feedback sessions involving real enterprise projects. This closed-loop teaching approach reinforces the integration of industry and education, emphasizes project-based learning, and enables authentic performance assessment.

The above cases demonstrate that under the "Internet Plus" framework, art and design education not only improves the accessibility of teaching resources and the flexibility of instructional methods but also places greater emphasis on personalized student development and the cultivation of creative thinking. Empowered by technology, course content continues to align with industry frontiers, and course structures exhibit a closed-loop model of "theory – practice – project," effectively promoting the continuous enhancement of educational quality in higher art and design education.

3. Innovations and Transformations in Educational Approaches

In recent years, the state has promulgated a series of policies to support innovative education, such as the "Outline of the National Medium- and Long-Term Educational Reform and Development Plan (2010 - 2020)" and the "Outline of the National Strategy for Innovation-Driven Development," which explicitly puts forward the need to improve the quality of education and cultivate high-quality and complex innovative talents in line with the needs of society (Qi, 2018). Higher education systems are undergoing a profound transformation from traditional teaching methods to digitalized, platform-based, and intelligent modes.

3.1. Interactive Teaching

Under the "Internet Plus" framework, educational approaches exhibit notable characteristics of interactivity and collaboration. Through methods such as live online streaming, virtual classrooms, and flipped classrooms, the frequency and depth of interactions between instructors and students have significantly increased. Utilizing platforms like MOOCs, SPOCs, WeChat learning groups, and cloud-based work critiques, a full-cycle interactive learning process is realized, encompassing pre-class preparation, in-class discussions, and post-class guidance. This comprehensive engagement greatly stimulates students' initiative and creativity, making the teaching process more participatory and immersive.

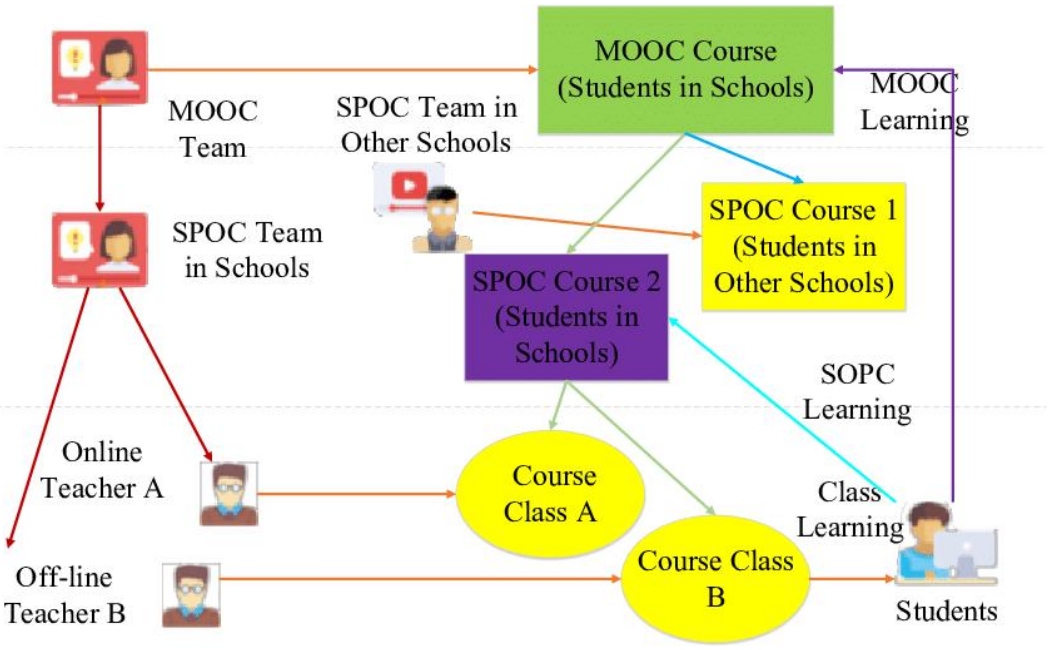

Figure 3. Integration of MOOC, SPOC, and Blended Classroom Teaching Methods.

3.2. Open Teaching

With the widespread adoption of Internet technologies and educational platforms, art and design education is moving toward an "open sharing" model, enabling the integration and circulation of educational resources across departments, institutions, and regions. For educators, the "Internet Plus" teaching model facilitates a shift from traditional teaching philosophies to updated and upgraded instructional practices, focusing on students' actual needs and

implementing guided, student-centered teaching (Li, 2020). University instructors can leverage online platforms to introduce high-quality domestic and international teaching resources, while students can participate in various design communities, online exhibitions, and creative workshops via the Internet. This fosters cross-cultural and cross-platform learning exchanges, broadening students' professional perspectives and practical skills.

3.3. Student-Centered Learning

Under the "Internet Plus" educational framework, the traditional dominant role of teachers is gradually being transformed, emphasizing the central position of students in the teaching process. Teachers act as facilitators of university students' learning activities and bear the responsibility of cultivating students' autonomous learning abilities (Zhang, 2019). For students in the field of art studies, the ability to innovate can be particularly emphasized in terms of creativity of thought, approach, and thinking. Teaching is no longer a simple transmission of knowledge but is designed to be personalized and diversified based on students' interests, abilities, and needs. In the field of art and design, students engage in authentic design projects through problem-based, project-driven, and collaborative task approaches, exploring knowledge, developing skills, and producing outcomes through hands-on practice. Additionally, the application of data analytics and learning behavior tracking technologies enables teachers to implement precise instruction, dynamic interventions, and personalized tutoring according to students' learning progress, thereby improving teaching efficiency and learning outcomes. The practice of "learning through competitions and innovation-assisted education" further reinforces the student-centered educational philosophy, making the learning process more autonomous and innovative.

3.4. Integrated Teaching Approaches

Teaching methods have achieved integration across multiple domains, formats, and platforms. On one hand, course content continually incorporates emerging technologies, new media, and innovative concepts, such as virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and big data, gradually embedding them into the curriculum. On the other hand, instructional methods have expanded beyond traditional classroom lectures to include online seminars, practical training projects, industry collaborations, and online exhibitions, constructing a comprehensive, full-scenario learning experience chain. This integrated educational approach not only optimizes the teaching process but also enriches students' learning touchpoints and pathways, effectively realizing a holistic "technology–art–business" cultivation model. In response to practical teaching needs, university art and design programs apply "Internet Plus" technologies for immersive VR and AR experiential teaching, which can reform certain traditional educational practices, establish more advanced modern educational facilities, and transform classroom instruction and related pedagogical behaviors. This promotes the renewal of teaching methods and tools, effectively integrates social information technology resources, addresses scheduling conflicts in teaching hours, fully mobilizes students' active roles, and comprehensively improves learning outcomes (Wang, 2018).

4. Transformation of Educational Philosophy and Content in Art and Design

4.1. Reshaping Educational Philosophy

In terms of school-running ideas, colleges and universities should attach importance to innovation, formulate a brand-new curriculum system, ensure that basic courses are optimized, professional courses are diversified and practical activities are strengthened (Sun et al., 2021). The education ecosystem under the backdrop of Internet technology transformation is characterized by diverse providers, multiple supply modes, and the coordinated mobilization of societal educational resources (Lin et al., 2020). The "Internet Plus" paradigm emphasizes resource sharing, open collaboration, and personalized development, offering broader opportunities and platforms for art and design education. Guided by this philosophy, art and design teaching increasingly focuses on autonomous inquiry, practice orientation, and the cultivation of creative thinking. It highlights multi-stakeholder interactions and interdisciplinary cooperation, breaking down disciplinary barriers and the limitations of physical classrooms. This creates a more open, flexible, and creative learning environment for students. When applying "Internet Plus" thinking to teaching, educators are encouraged to employ diverse pedagogical approaches and provide students with a variety of artistic learning resources to enhance classroom interaction efficiency and stimulate students' learning interest (Qi, 2018).

4.2. Digitalization and Platform Development Trends of Educational Resources

With the rapid advancement of information technology and continuous optimization of teaching platforms, educational resources for university art and design programs are accelerating toward digitalization and platformization. On one hand, teaching content is gradually being transformed digitally, extending from traditional textbooks to multimedia courseware, online instructional videos, and interactive design software. On the other hand, various educational platforms provide efficient and abundant support for teaching activities. MOOC platforms such as NetEase Cloud Classroom and XuetangX offer numerous design-related course resources. Software teaching for 3D modeling, animation production, UI/UX design, and more is delivered through real-time online demonstrations. Additionally,

AI-powered image generation and digital canvas tools have become essential means for experimental teaching in design.

4.2.1. AI Image Generation Platforms

Illustrations are sourced from blogs or platform articles such as Uizard, CobeisFresh, and UX Design Institute (Figure 3).

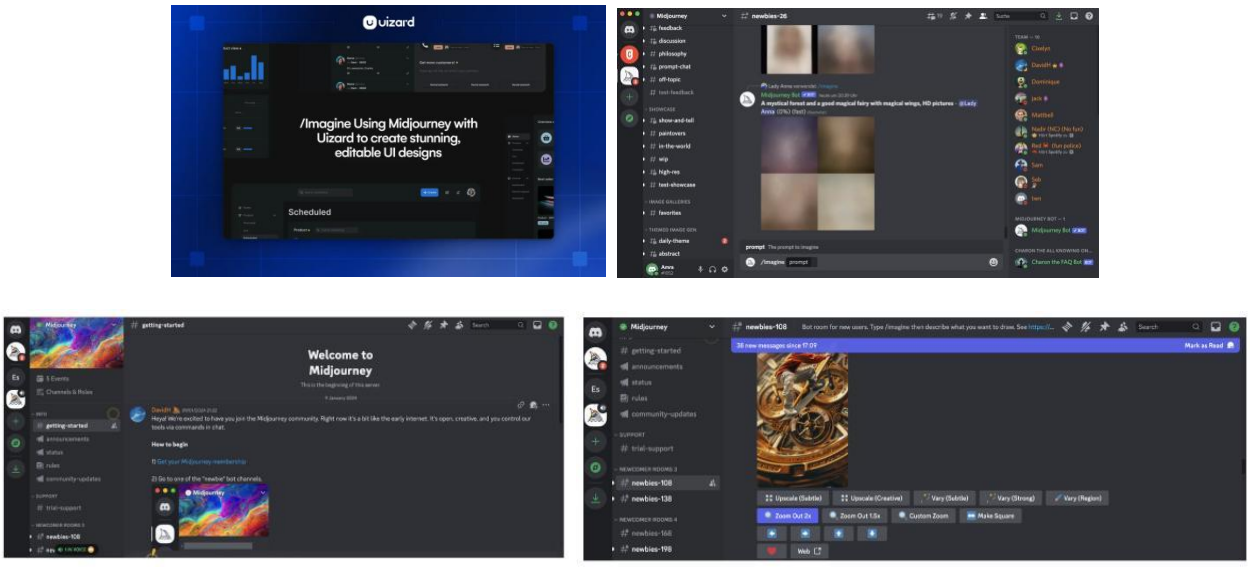

Figure 4. Practical Application Scenarios of Midjourney in Interface Generation Practice.

4.2.2. Generative AI-Assisted Creative Training

The study "Application of Generative Artificial Intelligence Technology in Art and Design Course Teaching" indicates that AI technologies such as style transfer and image generation can be applied to teaching activities including paper-cut pattern design, poster creation, and color scheme generation. These applications significantly enhance students' creative inspiration and design efficiency (Yuan & Zhao, 2025).

Figure 5. Images in the style of Johannes Vermeer created by the AI system DALL·E 2.

The digitalization and platformization of educational resources have not only improved the efficiency of resource accessibility but also effectively promoted resource sharing and restructuring among educators. Teachers can conduct real-time demonstrations, critique student works, and provide collaborative guidance through online platforms, while students can pursue personalized elective courses and in-depth learning based on their interests and professional directions. This transformation advances teaching from a unidirectional knowledge transmission model to one of resource integration and collaborative capacity building, laying a solid technical and resource foundation for the "comp etition-innovation integration" teaching model.

4.3. Diversified Integration of Curriculum Content

Under the "Internet Plus" framework, art and design education is exhibiting a development trend characterized by the deep integration of technology, art, and business. Guided by this new trend, university art and design curricula are continuously expanding their content boundaries by incorporating emerging technologies such as digital modeling, interactive experiences, artificial intelligence, and virtual reality into design teaching, while also adding business-related modules including brand management, user research, and product planning. The teaching model is gradually shifting

toward dynamic instruction characterized by project-driven learning, cross-disciplinary collaboration, and real-world scenario simulation, which strengthens students' practical skills and comprehensive design abilities. Through the "art + technology + business" integration pathway, students not only systematically acquire design knowledge but also gain an understanding of technological feasibility and market dynamics, enabling them to better complete the entire process from creative conception to product realization. This diversified and integrated educational approach has become a key direction and driving force for current university reforms promoting the integration of competitions and innovation in teaching.

The final data set included only journal articles and conference proceedings. Initially, we extracted 1,139 keywords from 501 publications. We post-processed the keywords by replacing similar words with the same meaning (e.g., mapping keywords contest, contests, international student competition, and competitions to the keyword competition) or merging keywords into broader concepts (e.g., merging machine learning and deep learning into artificial intelligence). We used VOSViewer (Van Eck & Waltman, 2010) to identify the keywords that occurred more than four times and how frequently they co-occurred in the publications (Jameson & Brookfield, 2024).

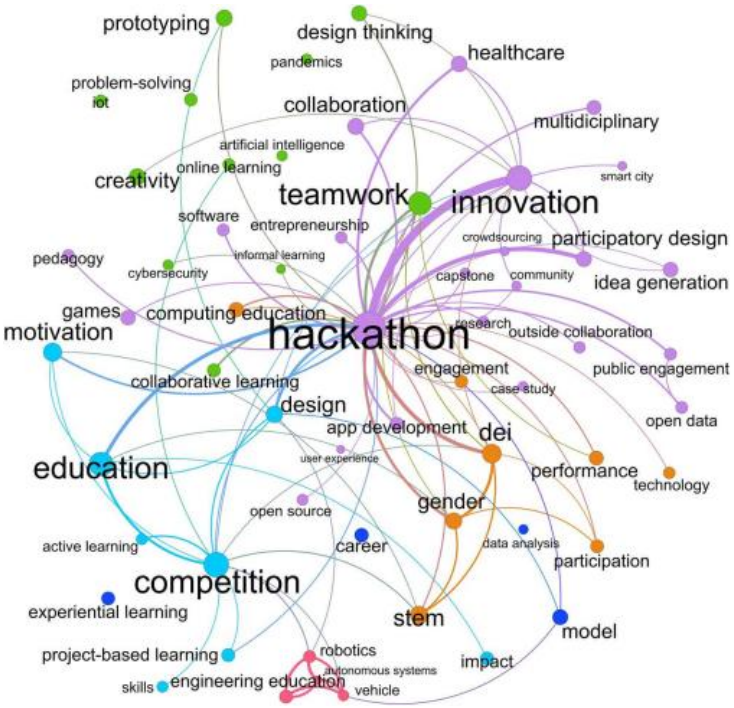

Figure 6. Cluster Density Plot of the Extracted Keywords.

5. Teaching Model of Integration between Competitions and Innovation

Under the "Internet Plus" framework, art and design education in universities is gradually shifting toward a balanced emphasis on practice-oriented teaching and the cultivation of innovative capabilities. The integration of teaching practice with competitions and innovation – entrepreneurship activities is not only a practical demand for educational reform but also a crucial pathway to enhance the quality of talent cultivation.To further promote the scientific construction and effective operation of the "competition-innovation integration" teaching model, systematic improvements are needed across multiple dimensions, including institutional policies, curriculum design, platform development, university–industry collaboration, faculty development, and evaluation mechanisms.

5.1. Improving the Institutional System and Strengthening Policy Support

In the context of the Internet era, achieving a leap-forward development in industry-education integration for cultivating art and design talents requires not only government provision of policies supporting such integration but also the active promotion of an "Internet Plus" educational environment. This dual effort aims to meet the demand for jointly cultivating application-oriented design talents by universities and enterprises, ensuring that educational outcomes, research commercialization, and enterprise technological production can be maximized (Wang & Yao, 2019). Institutions and policies form the foundation for the sustainable development of the competition-innovation integration model. Universities need to develop specific implementation plans that incorporate innovation, entrepreneurship, and competition activities into teaching schedules, credit systems, and talent cultivation programs to guarantee institutionalization and normalization of these practices. Mechanisms linking teaching outcomes with course assessments, graduation projects, and innovation credits should be improved to stimulate student engagement.

Educational authorities should promote the inclusion of art and design disciplines in initiatives such as "New Engineering" and "New Liberal Arts" construction, fostering the integration of interdisciplinary teaching resources.

5.2. Optimizing the Curriculum System and Building Diverse Practical Platforms

Focusing on the goal of competency development, a tiered and progressive curriculum system of "foundation – expansion – application" is established. Foundational courses strengthen basic art skills and design thinking, expansion courses cover cutting-edge topics such as digital design and user experience, and application courses center on project-driven learning and competition guidance. Creative workshops, virtual laboratories, and off-campus practice bases are constructed to form a multidimensional practical system encompassing "classroom – platform – society."

5.3. Deepening Industry-Education Integration and Improving University–Enterprise Collaboration Mechanisms

Strengthening strategic cooperation with enterprises is essential to building a co-constructed, collaboratively developed talent cultivation system. Enterprises should be involved throughout the entire teaching process, including project initiation, competition topic design, industry mentorship, and outcome transformation, thereby enhancing the practical relevance of instruction. Enterprises are encouraged to provide support in terms of funding, technology, and facilities, contributing to the establishment of regionally distinctive industry-education integrated communities. This ensures a deeper alignment between talent cultivation and actual industry needs.

5.4. Strengthening Faculty Development and Promoting Interdisciplinary Teacher Growth

It is essential to cultivate a diversified teaching team that combines professional expertise, practical experience, and innovative capabilities. Through in-house training, industry immersion, and domestic and international academic exchanges, universities can enhance teachers' competence in project-based instruction. Forming interdisciplinary teaching teams enables the integration of art, technology, and business, thereby improving the overall synergy in curriculum design and instructional guidance. Teachers are encouraged to adopt case-based teaching methods to stimulate student engagement and foster teamwork awareness. By guiding students through a cycle of "practice – theoretical learning – further practice," they can help enhance students' creativity (Liu, 2019). Educators should shift away from the traditional "transmission–reception" model and transform into designers, facilitators, and mentors in the learning process. Rather than merely delivering knowledge, teachers should serve as guides for students, adopting a supportive and service-oriented teaching attitude. This transformation from a teacher-centered to a learner-centered model is key to building a flexible and personalized educational environment (Zhang, 2019).

5.5. Establishing a Scientific Evaluation Mechanism to Ensure Teaching Quality

In the era of "Internet Plus," university students are no longer merely passive recipients of knowledge; they can also become creators and sharers of knowledge throughout the learning process (Huang, 2021). College students' innovation and entrepreneurship education are the key to accelerating the construction of an innovative country and one of the core components of a strong higher education country (Yan et al., 2018). It is essential to construct a multidimensional evaluation system that encompasses teaching processes and outcomes, individual and team performance, as well as both coursework and competition activities. Student evaluations should focus on knowledge acquisition, project execution, teamwork, creative expression, and the transformation of results. Teacher evaluations should incorporate project supervision, competition achievements, and contributions to curriculum reform, thereby establishing a performance-oriented incentive mechanism that values both instruction and practical application.

6. Conclusion

The integration of the Internet with art and design education under the "Internet Plus" model promotes the sharing of educational resources, enhances proactivity in teaching methods, and enriches the diversity of instructional media in higher education art and design programs (Yu, 2018). The fusion of practical teaching with competitions and innovation activities in art and design education reflects a new trend that emphasizes innovation-driven and application-oriented development.Universities must adapt to the evolving educational landscape by refining their curriculum systems, building diverse practical platforms, strengthening industry-education integration and faculty development, and establishing scientific evaluation mechanisms. These efforts will promote deeper integration of teaching with competitions and innovation–entrepreneurship, achieving an organic unity between theory and practice.By continuously optimizing the teaching model of "learning through competition and fostering learning through innovation," institutions can significantly enhance students' creativity and comprehensive abilities, cultivate high-quality art and design talents that meet the needs of the new era, and contribute to the high-quality development of art and design education in China.

Data Availability Statement

Data generated during this study are included in this published article.

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Conflicts of Interest

The authors declare no competing interests.

Author's Contributions

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