

# Research on Art and Design Education in the Context of New Liberal Arts

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**Abstract:** *Background:* The rapid advancement of science and technology has led to the establishment of higher and more demanding standards for composite talents in the market. This has been the most important trend in the field of art and design. It is essential to make a clear connection between the new liberal arts, grand design, and art and design discipline to enhance professional development and cultivating innovative talents. *Purpose:* This paper explores new paths for interdisciplinary integration research in art and design education by adopting the perspective of "big design", focusing on both the characteristics and development of disciplines. It also focuses on addressing the problems and satisfying needs in order to establish a new mode of cross-innovation in art and design education. *Methods:* Through literature review and case study methodology, this paper systematically analyzes the disciplinary characteristics and development path of art and design education and proposes reform ideas within the context of the new liberal arts. *Results:* Art and design education within the context of the new liberal arts should emphasize the combination of tradition and innovation, achieving effective integration of art and design with other disciplines through crossover and interdisciplinary methods. An educational curriculum system should be established guided by the "big design" perspective to cultivate versatile talents with interdisciplinary thinking and innovative abilities. *Conclusion:* 1. Art and design education within the framework of new liberal arts should prioritize multidimensional interdisciplinary integration. 2. Art and design education should incorporate advanced technologies and humanities in an extensive approach. 3. Art and design education should not only preserve and promote traditional Chinese culture but also broaden students' global perspectives.

**Keywords:** New liberal arts; Art design; Innovation path; Design education

## 1. Introduction

### 1.1 Research Background

The term "liberal arts" refers to the combined field of "humanities and social sciences" (or "philosophy and social sciences"). The humanities primarily study human concepts, spirits, emotions, and values, while the social sciences focus on various social phenomena and their development laws. According to China's Catalogue of Undergraduate Programmes in Colleges and Universities, besides science, engineering, agriculture, and medicine, disciplines such as philosophy, economics, law, education, literature, history, management, and art are included in the category of "liberal arts."

The concept of New Liberal Arts was first proposed by Hiram College in the United States in 2017. It refers to the reorganization of disciplines and the intersection of arts and sciences within the traditional liberal arts, integrating new technologies into curricula such as philosophy, literature, and language to provide comprehensive interdisciplinary learning (Liu, 2021). The discipline of art and design is a crucial component of the liberal arts system, representing the most intuitive manifestation of economic, livelihood, and cultural development. Due to its "intermediary" characteristics,

art and design has become a comprehensive cross-discipline linking the economy, science and technology, communication, society, and other fields. As science and technology progress, the market demands higher standards for talent, making versatile talents the most important trend. In this context, it is beneficial to establish a clear connection between New Liberal Arts, big design, and art and design disciplines. This will promote the reform of design education and teaching focused on "big design" thinking. It is a positive response to the development and reconstruction of design disciplines within the framework of New Liberal Arts. This approach is essential for consolidating the profession and cultivating innovative talents.

### 1.2 Research Purpose

The purpose of this study is to explore the paths and methods for promoting the interdisciplinary integration of art and design education through the perspective of "big design". Within the context of the New Liberal Arts, it analyzes the current state of the art and design discipline and the need for transformation. It explores the importance and role of interdisciplinary integration in enhancing the quality of art and design education and innovation capacity and proposes practical reforms for curricula and teaching methodologies to promote the in-depth integration of art and design with other disciplines.

### 1.3 Research Content

This paper focuses on the characteristics and development path of the art and design discipline, analyzing its fundamental traits and development trajectory within the framework of the New Liberal Arts education. Through the lens of "big design," it suggests interdisciplinary integration strategies for art and design education. It explores the integration of new technologies such as artificial intelligence and information technology into art and design education, examining their effects on teaching outcomes and students' innovation capabilities. Furthermore, it proposes specific reform measures for current art and design education challenges, addressing curriculum structure, teaching methodologies, and talent development approaches.

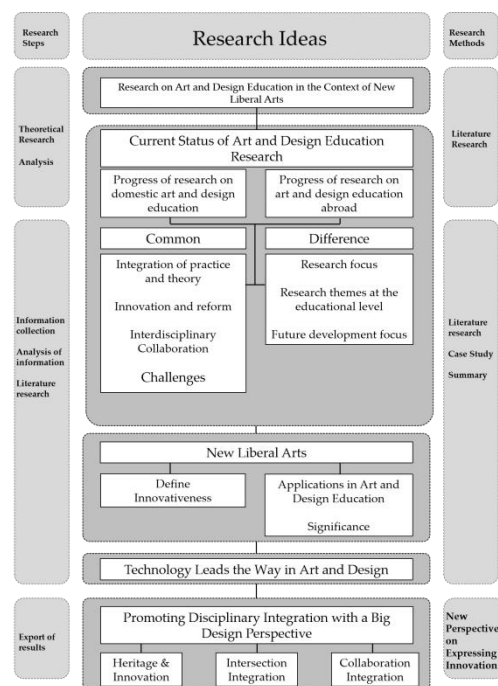


Figure 1: Frame diagram

### 1.4 Research Methods

This study employs a combination of literature review and case study analyses. Firstly, we examine the historical development and current state of art and design education by systematically reviewing relevant research literature from both domestic and international sources. We then summarize trends in educational reform within the New Liberal Arts framework. Secondly, we explore specific practices and the impacts of integrating art and design with other disciplines through in-depth analyses of typical domestic and international cases. Finally, based on theoretical analyses and case study findings, this study brings up practical reform proposals to guide the future development of art and design education.

## 2. Literature Review

Research in the field of art and design education in China has identified a wide range of trends. From 2005 to 2009, China's art and design education experienced significant development. This was achieved through the implementation of pedagogical reforms and clear educational objectives with colleges and universities focused on cultivating high-quality design talents(Cao,2003). This was in response to the demands of the information society on scientific and cultural literacy, creative thinking, and professional skills(Lv,2005). Research has simultaneously focused on reforming and innovating the traditional design education model. This has involved integrating practical experience and professional objectives into the curricula(Ju,2006). This serves as the theoretical basis for developing a systematic and rational curriculum(Lv,2009).

Between 2010 and 2014, research in art and design education focused on reviewing its developmental history, examining the current state, and forecasting future trends in quality education. It emphasized the significance of fostering innovative thinking and cultivating application-oriented talents. Reforms in practical teaching became a focal point of research(Wang,2010). Despite the gradual increase in the proportion of practical courses in art and design, further reforms are necessary to transcend traditional constraints and address challenges posed by market demands and the information age(Zhang,2011).

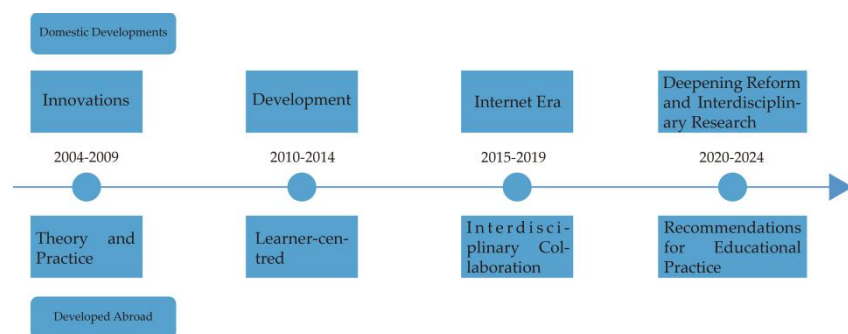


Figure 2: Development

The field of art and design underwent significant transformations between 2015 and 2019. Using the experiences learned from modern Western art and design education, the Internet era brought new opportunities for art and design education(Tan,2016). It integrates insights from the cultural and creative industries and the evolving trends of new media, implementing enhancement measures(Yan,2015). However, balancing traditional culture with modern design education, optimizing the education system, and reconciling developmental needs with the educational model have become pressing challenges(Song,2018).

Since 2020, art and design education research has focused on deepening reforms, innovatively applying traditional culture, and integrating science and technology with art(Wang,2015). Exploring interdisciplinary research methods and expanding horizons

have been crucial in advancing art and design education(Wang&Yi,2021). During this process, the deep integration of traditional culture into art and design education has revitalized modern design and fostered innovative development(Cao&Li,2022). However, the rapid development of artificial intelligence technology poses unprecedented technological challenges to art and design education in colleges and universities. It is crucial to actively explore paths for educational transformation and emphasize the role of humanistic heritage in fostering innovative thinking.

Table 1: Summary of Commonalities

Common	Domestic Research (2005-present)	Research Abroad (2005-present)
Integration of Practice and Theory	Both emphasize the close integration of theory and practice. In China, the curriculum focuses on integration with practice and professional goals, while abroad it emphasizes the integration of practical and research skills.	
Innovation and Reform	Both of them have put forward corresponding innovative strategies for the traditional teaching mode. China focuses on the integration of traditional culture and modern design, while foreign countries explore the "fuzzy border" between design and technology.	
Interdisciplinary Cooperation	Interdisciplinary research methods and collaboration are seen as important developments in art and design education at home and abroad. Interdisciplinary research methods are explored at home, and the importance of interdisciplinary collaboration and technology-enhanced learning is emphasized abroad.	
Challenges	Both face the challenge of the needs of the times. Domestically, there is a need to adapt to market demand and the requirements of the information age while resolving the conflict between traditional cultural heritage and innovation; abroad, there is the challenge of fostering creativity and individuality, and the need to establish recommendations for educational practices suited to one's own goals and abilities.	
Application of New Media and Technologies	The importance of new media and technology in art and design education is generally recognized by scholars at home and abroad. Domestic attention is paid to the transformational development and the application of artificial intelligence technology in the context of new media, while foreign attention is paid to digital media art and design education and technology-enhanced learning.	

Foreign research in art and design education is relatively more advanced compared to China. From 2005 to 2009, foreign research focused on practice-based research and the history of design theory, examining the convergence of art, design, and technology(Freitas,2007;Kim,2006). Subsequently, from 2010 to 2014, education systems emphasized learner-centered pedagogies to address the challenge of fostering creativity and individuality(Sekeroglu,2012;Ingalls,2013). From 2015 to 2019, the emphasis in education shifted to grounded theory and design criticism, emphasizing interdisciplinary collaboration and technology-enhanced learning(Healy,2016;Compton,2016;Madeleine,2018). From 2020 to the present, design education abroad has undergone profound changes, drawing inspiration from fields such as medicine, law, and business(Meyer&Norman,2020). Schools should develop suitable proposals for design and educational practices based on their goals and capabilities, striving to realize the value of design in contemporary society(Alyabieva et al,2021). Meanwhile, digital media art and design education emphasizes the exploration of creative thinking and maintains a focus on integrating practical and research skills(Zhu,2020).

Domestically and internationally, the research field of art and design education places a strong emphasis on close integration of theory and practice, fostering interdisciplinary collaboration, as well as innovatively applying technology to meet contemporary demands and stimulate artistic innovation. Domestically, research primarily centers on three topics: the need for art and design education in an information society; the integration of traditional culture with modern design; and the

impact of technological advancements on art and design education. This research has progressed from initial teaching reforms to more profound educational transformations. Conversely, research conducted abroad focuses on practice-oriented research, the historical evolution of design theory, and the exploration of learner-centered teaching methods. Building on successful experiences from other fields, foreign research emphasizes deep interdisciplinary collaboration and the cultivation of creativity, striving to nurture design talents with enhanced innovative thinking and practical skills. While specific challenges and research priorities in art and design education differ between domestic and international contexts, both are committed to advancing art and design education through ongoing reform and innovation, while also contributing to society's prosperity and progress.

Table 2: Summary of Differences

Difference	Domestic Research (2005-present)	Research Abroad (2005-present)
Research Focus	Domestic research has focused more on the needs of the information society, the integration of traditional culture and innovation, and the integration and development of science and technology.	In other countries, more attention is paid to practice-based research, the history of design theory, learner-centered pedagogy, and inspiration from other fields (e.g., medicine, law, business).
Research themes at the educational level	The phases are more significant, ranging from pedagogical reforms, quality education, and changes in the era of Internet, to deepening reforms and the integration of science and technology.	Each phase focuses on practice-based research, creativity education, rooted theory and design criticism, and the realization of the value of design in contemporary society, respectively.
Future Development Focus	Emphasis is placed on the promotion of continuous progress in art and design education and the exploration of new development spaces, with a focus on the role of humanistic underpinnings in innovation.	Emphasis is placed on the value of design education in contemporary society, inspired by other fields, resulting in a comprehensive proposal for educational practice.

### 3. New Liberal Arts Concepts

Internationally, in 2017, Hiram College in the United States pioneered the concept of "new liberal arts". It aims to reorganize traditional liberal arts disciplines, blend arts and sciences, and integrate new technologies into the curricula of philosophy, literature, language, and other fields. Domestically, the establishment of "four new" disciplines—new liberal arts, new engineering, new agriculture, and new medicine—represents a strategic shift in China's higher education, transitioning from scale expansion to high-quality development. Director Wu Yan of the Ministry of Education's Higher Education Department emphasized the imperative for innovative development in higher education. The comprehensive promotion of "new engineering, new medicine, new agriculture, and new humanities" construction, as well as the launch of the "Six Excellence and One Top" Plan 2.0, will establish a world-class undergraduate education system with Chinese characteristics across all disciplines. This initiative will significantly bolster the development of a robust higher education system and contribute to China's educational modernization by 2035(Zhou, 2021).

The distinctive aspect of the new liberal arts, in contrast to professional education, lies in its inclination towards "pushing the envelope". Traditional liberal arts are "new" in terms of their pursuit of "innovation and change". In the "natural sciences", "newness" is characterized by "upholding principles while innovating". Hence, the essence of the new liberal arts lies in the establishment and advancement of "general knowledge" within the arts. This criterion should gauge the success of constructing art and design disciplines

within the new liberal arts: their ability to bridge disciplines and foster a new system of interdisciplinary or even transdisciplinary education.

The development of the New Liberal Arts represents a systematic and innovative endeavor, encompassing talent development, disciplinary structure, and academic research. Thus, the new liberal arts focus on addressing problems, with interdisciplinary integrated research as its paradigm and knowledge integration as its objective. According to Repko, "Interdisciplinary research involves addressing questions, solving problems, or tackling issues that are too vast and intricate for any single discipline to adequately address; it leverages disciplines to integrate insights and build a more comprehensive understanding." (Repko, 2016)

#### **4. Technology Leads the Way in Art and Design**

The history of design is intricately linked with the progress of science and technology. Today, artificial intelligence (AI) has profoundly reshaped art and design practices, integrating them more deeply with scientific and technological innovations. Ongoing advancements in AI technology are transforming art creation through algorithms, reshaping human perceptions and interpretations of art and design, enriching public artistic experiences, and setting new trends in the field. Modern design history is synonymous with global development, with material technologies in modern design holding particular significance (Zhu, 2024). Currently, exploring novel synthetic materials and innovative applications of traditional industrial materials remains a burgeoning frontier in scientific and technological research and development, particularly within industrial products, apparel, environmental, and architectural design. The advent of new materials has greatly influenced the innovation and processes of modern art and design. Noteworthy examples in manufacturing include the widespread adoption of cast iron for furniture, the utilization of bentwood in crafting armchairs and benches, and the revolutionary impact of plastics and fibers, which have reshaped the design landscape and disrupted traditional manufacturing practices. Before the information age, the notion of computers significantly enhancing efficiency and design impact in the graphic design realm was unimaginable. Digital technology has profoundly influenced this field by accelerating layout design and image processing speeds, expanding designers' market opportunities. On February 15th of this year, OpenAI unveiled Sora, an artificial intelligence video model capable of producing cost-effective videos, encompassing tasks such as photo editing, special effects, and video editing. This development poses a direct threat to the film and television industry, prompting concerns about the erosion of reality.

In recent years, significant advancements in artificial intelligence (AI) technology have revolutionized artistic creativity. Tools such as ChatGPT, Midjourney, and Stable Diffusion have notably reduced barriers to creative expression. There is a growing trend toward utilizing AI for innovative artistic endeavors that challenge traditional boundaries and offer unique, distinctive styles of expression. The Mutant School Bus, conceived by architect Shail Patel of Indian origin, exemplifies this trend by integrating art, technology, and innovation through the AI design tool Midjourney. This inflatable, multi-story school bus provides a safe and comfortable transport and learning environment, with its structure engineered using state-of-the-art algorithms that harmonize artistic vision with functionality. Beyond the conventional school bus design, its dynamic vertical form not only echoes but also enhances the architectural landscape of urban settings. This innovative blend of educational, urban, and transport infrastructure promises enriched learning and exploration opportunities in future urban environments.



Figure 4: Shail Patel's "Mutant School Bus."

Source: <https://www.donnamail.com/article/view/id/79906>

The Internet economy has transformed aspects of daily life such as clothing, food, and travel, significantly influencing our approach to design in the era of information technology. In art and design, the principle of subtraction serves as a crucial test of a designer's creativity and skill. Figures like architect Mies van der Rohe and Apple's Steve Jobs have long advocated the "less is more" design philosophy. For example, Tesla's innovative autopilot technology (FSD), battery management system (BMS), and over-the-air download technology (OTA) are shaping the future of automotive technology, influencing both exterior and interior car design. A car's exterior styling serves as its public face, conveying the vehicle's brand value and corporate philosophy to the world. The minimalist design of the Model Y is a testament to the collaborative efforts of designers and engineers. In today's automotive industry, the Model Y exemplifies this concept by promoting aesthetics, environmental sustainability, and energy efficiency. Tesla's market dominance and distinct brand value in the realm of new energy vehicles underscore the pivotal role of science and technology in its success.



Figure 5: Model Y

Source: <https://www.tesla.cn/modely>

Art and design are important to the public, as they contribute to the improvement of people's livelihoods and the formation of a country's image. Moreover, art and design fulfill their function by considering all facets of society. Leveraging science and technology, designers forge enduring connections with new materials and technologies, drawing inspiration to innovate and rejuvenate products. Through production processes, designers establish market connections that broaden reach and increase sales. Artists and designers communicate their aesthetics and interests to consumers and the marketplace. Technology plays a pivotal role in shaping the evolution of art and design, providing insights into both its history and future. Design permeates our surroundings, positively responding to products, consumption patterns, society, and the environment. These interactions foster the evolution of art and design, contributing to the conditions and momentum for sustainable development.

## 5. Promoting Disciplinary Integration with a Grand Designs Perspective

The establishment and expansion of the grand design concept aim to foster interdisciplinary thinking through comprehensive education, cultivating innovative thought among art and design talents while advancing ecological and sustainable development in design education. Broadly speaking, art and design constitute a cross-industry, interdisciplinary, and comprehensive discipline. If society and enterprises are likened to hardware, design serves as essential software across nearly every industry, particularly in today's economy and society.

### 5.1 Heritage and Innovation

While art and design disciplines progress through innovation, their knowledge production remains cumulative, with a mission of succession. This is exemplified by the traditional "masters leading apprentices" method, especially notable in preserving folk skills like ceramics, hand-knitting, carving, and embroidery. Innovation can be viewed as a form of re-creation rooted in inheritance, integrating traditional knowledge and fostering a humanistic spirit through the preservation of exceptional traditional culture. Traditional liberal arts emphasize "uselessness", prioritizing spiritual critique and reflection over material practicality and functionality. They focus on theoretical humanities and aesthetics, often sidelining practical field and participatory research, and fail to effectively integrate qualitative and quantitative research. Therefore, guided by the grand design concept, whether in inheritance or innovation, innovation thrives within the framework of respecting fundamental pedagogical principles in art and design disciplines. Integration and linkage extend from the liberal arts to other disciplines, exploring their ambiguous boundaries and interdisciplinary content. This approach fosters genuine interaction between art and design disciplines and related fields, enhancing their efficiency and integration.

The cultivation of talent in art and design disciplines must not only uphold the foundational knowledge of art and the progressive approach to talent development but also take the lead as pioneers in the new liberal arts. It should prioritize fostering cross-border thinking in art and design education, guiding students to integrate foundational art and design knowledge while embracing diverse perspectives across cultures, disciplines, technologies, regions, and boundaries. This approach aims to establish a comprehensive talent training program that integrates disciplines, creating a new model for cultivating artistic talents within the framework of cross-disciplinary integration in the liberal arts(Xia, 2020).

High-quality design education inevitably integrates specialized art and cutting-edge technology education. A century ago, Bauhaus exemplified effective practices by advocating the integration of art and technology. This integration not only meets the core demands of art and design disciplines but also facilitates inheritance and innovation. Embracing both heritage and innovation, fostering differentiated, diverse, and emotionally resonant art creation while harnessing standardized cutting-edge science and technology will advance fields such as artificial intelligence, smart wearable design, robotics, media art, and smart city design with artistic vision and appeal. Art and design disciplines, within the context of the new liberal arts, should reaffirm their foundations and pioneer new pathways in inheritance and innovation. They should forge new knowledge paradigms that facilitate interdisciplinary integration of humanities, arts, science, and technology, ultimately establishing a new paradigm of "bidirectional interoperability between humanities and science and technology" for the future. This approach will serve as a guide for China's higher art institutions as they explore and construct an autonomous and continually evolving path for Chinese art education.





Figure 5: China Art Education and Training Industry Market Year-on-Year Growth Rate Scale and Forecast, 2014-2023

Source: <https://www.iimedia.cn/c1061/92444.html>

## 5.2 Intersection and Integration

Collaboration and integration serve as crucial bridges between art and other disciplines. The Institute of Science and Art, established by the Central Academy of Fine Arts in Huairou Science City, provides an excellent platform and practical space for fostering cross-disciplinary collaboration between art, science, and technology. The institute will establish 12 research centers and 17 multidimensional experimental centers to explore how design can contribute to societal advancement through "promoting social progress"(Song,2020). Concurrently, the future College of the Central Academy of Fine Arts in Qingdao aims to establish an open-ring university focused on ocean culture and economy, emphasizing future disciplines in industrial technology, materials science, and marine ecological research. Within the context of the big design paradigm, the design discipline facilitates deeper, broader, and more thorough interdisciplinary collaboration, forging closer and more frequent cross-border integration between art and various industries. This presents new challenges for reforming design education, including defining and balancing the roles of composite talents versus specialized professionals. Moreover, it opens expansive avenues for the development of art and design disciplines, highlighting their pervasive and unique role in guiding culture and art in modern society.

## 5.3 Collaboration and Integration

The core purpose of education and teaching is "knowledge production and human cultivation", a principle that applies to fields of art and design. Like other fields, art and design should advance through incremental knowledge production and reconstruction, rather than mere replication or reorganization of existing knowledge. To maximize the unique characteristics and potential of art and design, it is necessary to implement collaborative integration and strategic resource planning. Art and design education should include literature, history, philosophy, economics, management, law, and the intersections of art, industry, and technology, fostering a broad educational foundation. The goal is to integrate art and design within the framework of big design, as collaboration drives action. This is fundamental to the advancement of the new liberal arts in art and design disciplines. Within this framework, interdisciplinary research and the cultivation of composite talents are pivotal, blending abstract, holistic, dialectical, and creative thinking across multiple disciplines. This integration aims not only to synthesize diverse perspectives, information, methods, and theories but also to foster creative breakthroughs and a comprehensive understanding. For instance, the

Eindhoven School of Design in the Netherlands has pioneered "GEO-DESIGN", addressing human-centric issues like identity, food, public and private ownership, communication, and activities through collaborative integration. Similarly, recipients of Japan's prestigious GOOD DESIGN AWARD have tackled global social challenges such as malnutrition, women's rights, and water scarcity through innovative art and design solutions.

The "intermediary" role of art and design arises from its professional characteristics within the discipline, influenced by its pervasive presence in the modern social division of labor. This positioning also reflects the intricate nature of artistic phenomena and the diverse perspectives required for their study. Art researchers must navigate these complexities by prioritizing problem-solving guided by the grand design concept. They engage actively with diverse voices, employ various theories and methods, and conduct interdisciplinary research spanning art forms, media, disciplines, and fields. Such integration fosters a "grand integration of knowledge" across different art forms and between art, humanities, and science and technology, eroding traditional disciplinary boundaries and reshaping a humanistic ethos centered on truth, goodness, and beauty.

## 6. Conclusion

Researching the current state, development, and prospects of the art and design discipline within the context of new liberal arts is crucial for guiding the future development of China's art and design education. Embracing the big design concept as the guiding principle, we aim to align with social and economic development while focusing on talent cultivation. This involves reinforcing the social service function inherent in art and design and establishing a new educational approach that integrates knowledge production, talent development, and social responsibility. While designers need not be scientists, they must understand and apply science and technology effectively (Lin, 2021). Thus, a new generation of designers is being nurtured to integrate art with technology, engage effectively in the market and society, and demonstrate outstanding commitment to environmental protection, eco-friendliness, and social responsibility.

The educational approach that often emphasizes surface elements over deeper aspects is referred to as the bottom-up logic of content organization in art and design education. This approach presents a current challenge in the field. Examining the structure of course content in art and design education serves as the initial step toward exploring the future development of diversified education (Tang, 2023). The concepts of inheritance and innovation, crossover and fusion, collaboration, and integration are not pursued independently but rather achieved through the collection and sharing of ideas under the concept of grand design. Studying how the field of art and design evolves within the framework of the new liberal arts demands careful integration and alignment that adheres to the laws of disciplinary development rather than a random and arbitrary juxtaposition and combination. It is crucial to think about how the fields of art and design disciplines have changed over time, their rational identification within the context of new liberal arts development, their evolving responsibilities and missions, as well as innovations in educational concepts for new liberal arts and the cultivation strategy of composite talents in art and design. Currently, art and design education lacks awareness of the modern industrial and post-industrial eras, as well as aesthetic and synchronic education, knowledge structure, international perspective, and modes of thinking with contemporary art. The core of constructing new liberal arts lies in the advancement of art and design. Central to this construction is the cultivation of composite talents, which are comprehensive and characterized by multidisciplinary, integration, and the ability to demonstrate proficiency across various fields. In art and design disciplines, training in composite talent thinking involves knowledge integration, skill synthesis, and a holistic approach. This is achieved through interdisciplinary education that breaks down barriers between fields and balances the relationship

between composite and specialized talents. As a result, a new paradigm of cross-disciplinary innovation is achieved in art and design education.

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