

Artificial Intelligence Empowerment: Transformation and Breakthrough of Art and Design Talent Training

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ABSTRACT

With the advent of the digital age, artificial intelligence, as a disruptive and general-purpose technology, is gradually being applied to all kinds of in social life. Its deep integration with the cultural and creative industries has given birth to new business models in the cultural and artistic design industries, and further reshaped the talent demand structure artistic design. However, at the same time, the current talent training model for artistic design has not yet completed its digital transformation based on AI empowerment, resulting in a disconnect between market demand for artistic design talent and the current education and training model, affecting and delaying the high-quality development of the artistic design industry. Therefore, artistic design education needs to a balance between AI empowerment and humanistic adherence, to harness the efficiency improvement and form innovation brought by generative AI, while strengthening the core advantages of humans in emotional resonance, cultural, and value judgment.

KEYWORDS

Artificial intelligence; Art design; talent training; Transformation; Breakthrough

1 Introduction

In today's era of deep integration between the digital economy and intelligent technologies, artificial intelligence, as a major driving force in cultivating and developing digital productive forces, is transforming the underlying logic of the art and design industry through a new combinational paradigm of "data, computing power, and algorithms," and giving rise to new forms of business in the art and design sector. In this process, artificial intelligence is not only reshaping the factors of production and operating mechanisms of the art industry, thereby promoting an exponential increase in productivity, but also generating new demands for art and design professionals equipped with digital literacy. At present, however, the existing art education system is disconnected from the new demands of the AI-based art and design industry, and this has become an important factor constraining innovation and development in the sector. This is reflected in the fact that current training models remain labor-intensive and centered on the industrial-era emphasis on "tool-operating skills," whereas artificial intelligence is rapidly driving all industries toward an era of human-machine collaboration, cross-sector integration, and co-creation and sharing^[1]. This requires professionals in art and design-related fields to possess composite competencies including "human-machine collaborative creativity," "dynamic technological adaptability," and "cultural-algorithmic defensiveness." Against this background, this paper focuses on AI-based contexts and explores innovative pathways for art and design education, with the aim of providing talent support for the transformation of the art and design industry toward a digitally intelligent economy.

2 Innovative Applications of Artificial Intelligence in the Field of Art and Design

In 2019, National leader stated in his congratulatory letter to the International Conference on Artificial Intelligence and Education: "Artificial intelligence is an important driving force leading a new round of scientific and technological revolution and industrial transformation. It is profoundly changing people's modes of production, life, and learning, and promoting human society toward an intelligent era of human-machine collaboration, cross-sector integration, and co-creation and sharing"^[2]. At present, AI technology is not only accelerating industrial restructuring and economic transformation, but also playing a significant role in talent cultivation and educational reform. Its application in the field of art and design has profoundly changed production methods and production factors in the art industry, thereby fostering new forms of business in the art and design sector.

2.1 Characteristics and Advantages of Artificial Intelligence

Artificial intelligence is an intelligent technology centered on human intelligence and decision-making, supported by algorithms, advanced computing power, and big data, and capable of autonomously generating content according to user requirements. It can help humans identify patterns and improve decision-making, and is gradually being applied across all areas of society. Specifically in education, AI is driving a shift toward a "student-centered" model. By integrating brain science, such as neurofeedback technologies, with affective computing, which recognizes learning emotions, it helps build a more humanized intelligent educational ecosystem, making education a personalized support system for lifelong growth.

2.2 The Deployment of Artificial Intelligence in Art and Design-Related Fields

In art and design-related fields, artificial intelligence enables the rapid generation of visual solutions, 3D models, dynamic effects, and other forms through multimodal inputs such as text and images. This expands the space of design possibilities, accelerates trial-and-error processes, and breaks through the technical limitations traditionally emphasized in art and design creation, thereby reshaping the entire process of “inspiration–creation–iteration.” Software such as Midjourney allows designers to interact with AI in real time and quickly generate sketches, 3D models, or dynamic visual effects based on textual or sketch prompts, significantly shortening the creative cycle. In this sense, the deployment of artificial intelligence in art and design-related fields marks a collision between technical rationality and humanistic spirit, pushing art from being “exclusive to elites” toward “mass co-creation.”

3 New Demands and New Requirements for Art and Design Talent in the Age of Artificial Intelligence

As a catalyst reshaping the underlying logic of the creative and cultural industries, artificial intelligence is injecting new momentum into high-quality economic development empowered by culture, while also creating new demands and requirements for talent in the art and design industry.

3.1 New Talent Demands Arising from Industrial Transformation in Art and Design

Artificial intelligence is driving changes in the creative and cultural industries and placing new demands on the core competencies of art and design professionals. In other words, the industry now needs new-quality talent capable of using AI and other emerging technologies to generate new knowledge, independently directing creativity and value judgment, building ecosystems of human-machine collaboration, and cultivating an interdisciplinary integration of “AI + art,” thus transforming from single-skill executors into technologically and humanistically competent leaders.

First, there is a need for interdisciplinary integrative talent. In art and design-related fields, such talent refers to professionals who systematically integrate artistic and cultural knowledge, technical tools, and knowledge from other disciplines, reorganize multidimensional knowledge structures, and solve practical problems in art and design, thereby driving coordinated innovation among culture, business, and technology. In doing so, they break the traditional paradigm of art as an isolated domain and become the new type of talent required by the art and design industry. The essence of such interdisciplinary talent lies in combining the roles of cultural decoder, technological refiner, and system architect. They are no longer confined to a single skill, but instead reconstruct knowledge networks and establish a dynamic balance among cultural inheritance, technological ethics, and commercial value, thus promoting the industrial ecosystem from specialization toward cross-boundary co-creation.

Second, there is growing demand for technologically integrated talent. As AI drives the digital and intelligent transformation of industry, art and design increasingly require professionals who can integrate skills across domains. Such talent possesses interdisciplinary knowledge structures and can combine frontier technologies with art and design, solve complex problems through technological innovation, and drive industrial change as composite practitioners. The core of this type of talent lies in breaking through technological barriers and disciplinary boundaries and realizing the organic integration of “professional insight–innovative thinking–technical tools,” thereby promoting the transformation of the art and design field toward a model of human-machine co-creation.

Third, there is a demand for strategic and ethically aware artistic talent. The deep intertwining of artificial intelligence, sustainable transformation, and cultural diversification has brought unprecedented complexity to the art and design industry. Traditional talent systems centered solely on aesthetics can no longer meet current industry needs. Strategic thinking and ethical awareness have become new benchmarks of competitiveness. Some studies have pointed out that AI systems contain biases and may involve unethical data collection and use^[3]. This means that art and design professionals must maintain the capacity to critically evaluate artificial intelligence.

3.2 New Requirements That Artificial Intelligence Poses for Art and Design Education

Education should respond to the demands of the times and cultivate talent needed by the nation. As AI changes the production modes of the art and design industry and transforms talent demands, art and design education should accelerate innovation in its training models and cultivate enduring innovative talent that matches the needs of the digitally intelligent art and design industry. Joseph E. Aoun proposed that, in the age of artificial intelligence, education should cultivate students’ data literacy, technological literacy, and human literacy. That is, students need data literacy to manage large streams of data, technological literacy to understand how machines work, and human literacy—humanity, communication, and design—so that they can collaborate with intelligent machines in the future labor market.

First, students need data literacy to manage large data streams and to understand and use big data effectively. If we do not understand the context of big data, conclusions drawn from it are often misleading^[4]. Therefore, art and design talent in the AI era should possess data literacy that enables them to perceive the “tapestry” of interrelated information within fragmented datasets and to rapidly acquire, filter, integrate, and utilize information. In this sense, data literacy not only provides art and design professionals with tools for reading digital records, but also helps reveal how big data sources are

constructed.

Second, students need technological literacy to understand how machines work. Today, many students know which applications to use and which websites to access, but they do not understand the operating principles behind touch screens and related technologies. To understand the structure and functions of the digitally intelligent art and design industry, technological literacy is essential. In design education, such literacy is first reflected in mastery of relevant scientific and technological principles. This requires not only basic scientific knowledge, but also command of frontier technologies related to one's discipline. This kind of literacy should not remain at the theoretical or academic level; rather, it should be connected with practical application so that abstract technological knowledge can be translated into concrete teaching content and students' understanding of disciplinary knowledge can be enhanced.

Third, students need human literacy. As a necessary element of social development, human literacy gives us the ability to communicate and cooperate with others and to explore the elegance and beauty of human nature [4]. In teamwork, it becomes increasingly important to know how to get along with others, brainstorm collectively, negotiate, and make group decisions. "Only by fully respecting and accommodating people in different situations and with different identities can we learn, collaborate, and fully tap the potential of our own creativity" [5]. Therefore, design education must cultivate students' human literacy so that they can collaborate with intelligent machines in the future labor market.

4 Dilemmas in the Talent Training Model for Art and Design-Related Fields in the Age of Artificial Intelligence

With the comprehensive and in-depth development of artificial intelligence, systematic transformation of talent training models in art and design-related fields has become an urgent task. However, China's digital and intelligent educational transformation is still in its early stages. Problems remain in digitally intelligent cultivation systems, governance mechanisms, theoretical frameworks, and teachers' digital-intelligence awareness, all of which affect the process of cultivating digitally intelligent talent.

4.1 A Digitally Intelligent Training System Has Yet to Be Established

In recent years, China has actively explored new forms of talent cultivation. However, a training model better suited to the digital-intelligent era has not yet been established. Talent cultivation in the age of artificial intelligence must go beyond mere tool application and build a complete closed loop of "professional insight–innovative thinking–technical tools." Yet at present, training models still mainly rely on industrial-era approaches such as centralized lectures and face-to-face instruction. This is reflected, first, in the fact that training content often focuses on the transmission of theoretical knowledge, while there are relatively few scenarios in which digital technologies are used to transform art and design talent cultivation. Second, training technologies themselves remain relatively underdeveloped. Applications such as diversified digital-intelligence training platforms for students, intelligent learning diagnostics, and smart classrooms are still in the initial stages.

4.2 Governance Mechanisms for Digitally Intelligent Training Remain Incomplete

The governance of digitally intelligent training is an important environmental condition for the development of digital-intelligent education. Since such training is still at an early stage, many governance problems persist. For example, the level of data-driven governance remains low, as relevant school departments have not fully embraced data governance concepts, nor have they established multi-source and accurate management databases. In addition, data security mechanisms in art and design are inadequate, and institutions at different levels generally lack specialized departments for digital-intelligence governance.

4.3 A Distinctively Chinese Theory of Digitally Intelligent Training Has Yet to Be Constructed

Overall, China has not yet established a concept of digitally intelligent training grounded in traditional Chinese culture, educational philosophy, and national conditions. As a result, most practices are technologically driven but lack cultural adaptability and contextual relevance. Furthermore, there is a clear gap between theoretical research and practical implementation. Cooperation between academia and practitioners is insufficient, which makes it difficult to translate theoretical achievements into practical talent cultivation for art and design students.

4.4 Teachers' Awareness of Digital Intelligence Is Relatively Weak

At present, human society has entered an intelligent era characterized by human-machine collaboration, cognitive augmentation, and the integration of virtual and real spaces, and all sectors of society are undergoing profound changes [6]. However, teachers, who are responsible for cultivating interdisciplinary talent, still show an evident lag in awareness of educational digital intelligence. In their teaching practice, deficiencies in digital-intelligence skills, emotional resistance, and information silos mean that educational models still remain in standardized physical teaching spaces and fail to meet the needs of digitally intelligent spaces marked by temporal-spatial fluidity, diversified data, and personalized pathways.

5 Paradigm Transformation of Talent Cultivation in Art and Design-Related Fields in the AI Context

5.1 Supporting Human-Machine Symbiosis Through Humanistic Foundations: Building an Educational Value Concept of Human-Machine Coexistence

Adhering to the principle that “human beings are the foundation” is the basic principle for reconstructing a collaborative educational value system between human wisdom and intelligent carriers^[7]. First of all, it should be made clear that, as artificial intelligence becomes deeply involved in education, the educational concept of “people-oriented, building human-machine symbiosis” must go beyond the limitations of traditional technology-oriented education and establish a new type of art and design education system. Such value reconstruction is neither blind worship of new technologies nor passive defense against them. Rather, it seeks to preserve the humanistic essence of art and design education while fully unleashing the empowering potential of digital-intelligent technologies. Therefore, how to balance AI-enabled education with the principle of human-centeredness is of particular importance.

5.2 Promoting Educational Model Innovation Through Humanistic Norms: The Three-Dimensional Evolution of T-Shaped Talent

Artificial intelligence has reconfigured the value coordinates of the art and design field, and traditional T-shaped talent is facing the dual challenge of deconstruction and reconstruction in the digital age. Contemporary art and design education urgently needs to build a three-dimensional evolutionary model of “humanities – technology – business,” thereby forming a dynamically adaptive and iterative competence structure. Among these, the humanities constitute the foundation of art education and guide value orientation. In the process of educating art and design talent, students’ cultural literacy should be gradually cultivated so that they develop reverence for culture. Humanistic norms should serve as a value-anchoring mechanism to effectively prevent technological competence from sliding into instrumental alienation. Meanwhile, the cultivation of technological literacy should shift from the level of tool operation to the level of algorithmic cognition. Concretely, this may involve mastering spatial control techniques in generative software such as Stable Diffusion, rather than merely inputting prompts to produce desired images.

5.3 Infusing Humanistic Elements into the Curriculum System: Creating a New Paradigm of Industry-Education Integration

As artificial intelligence reconstructs the ecology of art education, the curriculum system is facing the dual crisis of cultural hollowing-out and industrial disconnection. Reconstructing the curriculum system with humanistic elements as the key is giving rise to a new paradigm of industry-education integration characterized by “cultural decoding – value transformation – ecological co-construction,” enabling talent cultivation in art and design-related fields to move beyond mere skills transmission toward the continuation and regeneration of professional cultural genes.

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