

The Cultivation Strategy of “Craftsman Spirit” Sustainable Talents in Art and Design under the Background of Digital Intelligence

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Abstract:

“Craftsman spirit” is the national wisdom that has gradually formed in the development of science in ancient China. There are four people called “Shi, agriculture and industry” in ancient China, and the “work” refers to the craftsman, originally referring to people with craft expertise. (Four occupations, n.d.) The spirit that matches it is generally understood as a pursuit of craftsmen for professional and technical excellence and the advocacy of perfection. The handicraft industry in ancient times was mostly classified into the categories of art and design, as they are today. The country vigorously advocates the development of “craftsman spirit”, and art design majors are undoubtedly the most able to directly inherit this spirit from the industry content and development needs. Young students at colleges and universities are a new force in the future development of Chinese manufacturing and national development. (Skilled labor drawing more young people, 2022) In the wave of digitalization, cultivating new art design talent also requires a continuous “craftsman spirit” as a booster. The purpose of this study is to continuously inject vitality into the “craftsman spirit” in the training of art and design talents under intelligent education in the digital age, trying to find operational talent training strategies, so as to provide reference and reference for the transformation of Chinese art and design undergraduate majors to adapt to national needs.

Keywords:

Digital Intelligence Era, Art and Design, Craftsman Spirit, Sustainable Talent Training

1. Introduction

Talent is an important indicator of a country’s comprehensive national strength. Without a large team of high-quality talents, the goal of building a moderately prosperous society in all respects and the Chinese dream of the great rejuvenation of

the Chinese nation cannot be successfully realized. [1] Driven by the wave of digital intelligence, the art and design industry is undergoing unprecedented changes, presenting new challenges and requirements for the training of art and design professionals. The deep integration of traditional techniques and digital technologies not only gives rise to new design patterns and forms of creative expression but also underscores the urgency of inheriting and promoting the “craftsman spirit” amid the influence of technological rationality. At present, the rapid development of information technology is reshaping the ecological pattern of the art and design industry at an unprecedented rate. The deep integration of traditional art design methods and digital technology not only gives rise to new design patterns and creative expression forms but also puts forward new requirements and challenges for the training of art design professionals. [2]

Against this backdrop, the cultivation of art and design professionals is facing a serious imbalance between technical ability and humanistic spirit. On the one hand, the rapid advancement of digital intelligence technology requires that art and design talent have solid digital skills and innovation capabilities to adapt to the design needs of the new era. On the other hand, the craftsman spirit, as one of the core values in the field of art and design, emphasizes the spiritual quality of excellence and the pursuit of excellence, qualities that are particularly precious and urgently need to be inherited and promoted amid the wave of technological change. Against the backdrop of the digital intelligence era, realizing the dual cultivation of technical ability and humanistic spirit has become a key urgent issue in art and design professional education. In the construction of the curriculum system, this study aims to break down traditional disciplinary barriers, integrate technical modules such as virtual reality and artificial intelligence with traditional design techniques, and form a trinity teaching framework of “technology empowering, artistic expression, and ethical consideration”. At the same time, through the design of multi-level practical teaching links, students’ project application ability and interdisciplinary collaboration ability are strengthened, and a dynamic evaluation system with a craftsman spirit as the core orientation is established to realize the continuous improvement of talent training quality.

2. The Evolution of Art and Design Education in the Background of Digital Intelligence

This section should contain sufficient details so that methods can be appropriately cited and readers can assess whether the materials and methods justify the conclusions or not. It can be divided into subsections if several other methods need to be described. You need explain how you studied the topic, identify the procedures you followed, and structure this information as logically as possible.

2.1. Opportunities and challenges faced by art education in the digital age

In the era of digital intelligence, through the deep integration of digitalization, networking, and intelligence, the operational mode of higher education across various fields is profoundly reshaped. In the field of art and design, this change is reflected in the comprehensive innovation of design tools, thinking paradigms, and production processes. The popularity of digital modeling software, artificial intelligence-aided design systems, and virtual reality technology enables designers to overcome the physical limitations of traditional manual creation and achieve exponential improvements in design efficiency. Parametric design tools can automatically generate hundreds of scheme variants, and machine learning algorithms can predict

user preferences by analyzing massive case data. This technology not only expands the boundaries of design possibilities but also requires practitioners to integrate interdisciplinary knowledge. [3]

From the perspective of industry ecology, the arrival of the era of digital intelligence has accelerated the deep integration of art and design with the digital economy and digital society. The emergence of new formats, such as smart wearable devices, interactive space design, and digital twin cities, requires designers to have both aesthetic literacy and technical sensitivity. [4] This demand for composite ability has led to a significant expansion of talent development in higher education. Within the pattern of coexistence between opportunities and challenges, the transformation of digital intelligence has opened a new interpretive dimension for the inheritance of the “craftsman spirit”. The pursuit of fineness in traditional processes complements the precise control ability of digital intelligent tools. The high-precision rendering of complex surfaces by 3D printing technology and the processing of micrometre-level details by digital engraving software require practitioners to maintain a deep understanding of material properties and master the digital thinking of parametric modeling. The cultivation of a craftsman spirit empowered by this technology requires education managers to build a “quantum leadership” paradigm and to realize the organic unity of traditional skill inheritance and technological innovation through the design of an interdisciplinary curriculum system and the construction of a training platform that combines virtual and real elements.

2.2. Connotation and value of “craftsman spirit” in art and design majors

As a core value in human civilization, “craftsman spirit” centers on respect for one’s profession, dedication to one’s craft, and pursuit of innovation. It signifies the move from simply identifying as a craftsman to embodying qualities such as perfection, refinement, and the integration of skills and knowledge. “Craftsman spirit” forms a value system of morality, utility, and well-being, culminating in a profession seen as a blessing and uniting values of goodness, beauty, and art realized through both morality and practice. [5] In art design, this spirit appears in the careful shaping of ideas and the deep pursuit of cultural meaning. Designers must start by respecting mentors, build skills with a spirit of excellence, and fulfill creative missions through dedication, fostering breakthroughs in artistic expression through steady, knowledge-driven innovation.

In art and design education, the value of the “craftsman spirit” is clear. First, designers must pursue quality by combining technical precision with artistic aesthetics and the idea of “integrating Tao and technology.” This ensures their works meet functional needs and carry cultural value. Second, industry innovation requires designers to focus on both welfare and well-being, keeping human care at the center as digital technology evolves, and avoiding the loss of artistry due to over reliance on technology. Third, talent training depends on a foundation of virtue. The craftsman spirit requires educators to build a training system that fosters both skills and ethics, so students master modern tools and uphold professional standards. The number of art graduates in higher education nationwide is increasing. From 2020 to 2023, the number of ordinary undergraduate art students rose from 397,000 to 449,000, and the number of vocational art graduates also exceeded 174,000.

The craftsman spirit in the new era needs to embrace modern transformation driven by science and technology. [6] It not only emphasizes the “use” of new technologies

to improve efficiency, but also adheres to the concept of “welfare and livelihood” to ensure the social value of design. In digital art creation, a craftsman spirit requires designers to maintain control over details with the aid of algorithms while preserving the subtle consciousness of the manual era in the virtual space. This modern interpretation of “the unity of road and technology” is becoming an important support for the sustainable development of art and design. Against the backdrop of the ethnic group’s rejuvenation strategy, the promotion of the craftsman spirit has greater global significance. The literature has clearly stated that to achieve the goals of economic transformation, upgrading, and sustainable development, it is urgent to cultivate art and design talent with a craftsman spirit. Their works should not only conform to market laws but also convey cultural confidence and ultimately serve as an artistic means to realize the “Chinese Dream”.

3. Design of Digital Talent Training Strategy

3.1. New occupation of cultivation target

To build a multi-dimensional ability talent training system of “traditional foundation, technology empowerment, innovation breakthrough, and humanistic guidance”, and cultivate compound talents with both skill depth, technology breadth, and humanistic temperature through the goal-oriented education path. First, students are required to master the core techniques and the cultural essence of traditional art design, and to strengthen the inheritance and training of traditional skills. The students should achieve a professional level of elaboration and refinement in the aspects of artifact production, technological processes, and aesthetic expression, so that the craftsman spirit of “striving for perfection” can be carried forward in the inheritance of skills. It is necessary to integrate the concentration, patience, and persistent pursuit of the craftsman spirit into daily teaching through the traditional craft curriculum system, master studio practice, and intangible cultural heritage project study, so as to cultivate students’ reverence for traditional skills and the responsibility of inheritance. Secondly, in the context of accelerating the iteration of digital intelligence and chemical tools, the integrated application capabilities of modern technical means are being built. The goal of talent training needs to go beyond the single dimension of traditional skills and incorporate technical means such as digital design, virtual simulation, and artificial intelligence-aided design into core competence training. By setting up interdisciplinary course modules and establishing a practical platform that combines virtuality and reality, students are guided to maintain the “originality” essence of the craftsman spirit in the application of technology, and the organic unity of technological innovation and humanistic care is realized. Third, the modern transformation of the craftsman spirit requires talent training to break through stylized thinking patterns and cultivate the ability to sustainably develop innovative thinking. While adhering to the essence of craftsmanship, the potential of creative transformation and innovative development should be stimulated. The goal setting should emphasize the training of critical thinking, the expansion of cross-cultural vision, and the cultivation of cross-border collaboration ability, encourage students to find the breakthrough point of design innovation in the dialogue between tradition and modernity, and transform the pioneering consciousness of craftsman spirit into the endogenous driving force for continuous progress in the field of art and design. Fourthly, in the context of artificial intelligence’s impact on human creativity, the value of the leading role of humanistic literacy should be further deepened. The goal of talent training should prioritize the cultivation of a humanistic spirit at the strategic

level. Through the curriculum system of aesthetic theory, cultural philosophy, ethics, and morality, students' deep cognition of the nature of art and their initiative to take social responsibility should be cultivated. In this way, the humanistic care dimension of craftsman spirit can be highlighted, so that talents always adhere to the "people-oriented" design concept in the application of technology and avoid the alienation of tool rationality. The realization of this compound training goal requires educators to regard the inheritance and innovation of the craftsman spirit as a dynamic balancing act. Through the reconstruction of the curriculum system, the optimization of evaluation standards, and the innovation of the school-enterprise collaboration mechanism, a sustainable talent-training ecology of "knowledge-technology-virtue" is built. The ultimate goal is to shape art and design talents who can not only maintain cultural roots in the field of traditional skills, but also lead the innovation direction in the wave of digital intelligence, and always uphold humanistic and ethical values, so as to provide sustainable development solutions with both technical competitiveness and cultural vitality for society. This goal-setting not only meets The Times' compound needs for art and design talent, but also injects cultural genes and spiritual impetus for sustainable development into professional education through the modern interpretation of the craftsman spirit.

3.2. Reconstruction of the curriculum system

A modular curriculum architecture driven by a dual core of "technology + humanities" was constructed. The technical dimension course covers the frontier fields such as programming foundation, intelligent interaction design, and big data analysis, and cultivates students' ability to use digital tools to solve complex design problems. In the humanistic dimension, courses such as art history theory, sociological research, and cross-cultural communication are designed to enhance students' understanding of the social value and cultural connotations behind design. The two types of courses are integrated organically through cross-elective courses and joint projects, such as integrating sociological analysis of user experience into intelligent product design courses, or emphasizing the deconstruction and reconstruction of cultural symbols in digital media art creation. Dual core curriculum module Settings not only strengthened students' technical application abilities but also, through an interdisciplinary perspective, raised technical innovation to its humanistic value and professionalism, eventually forming several intellectualized technical abilities and, in the spirit of a craftsman, a cultivation mode for in-depth interdisciplinary talents. The technical dimension course covers the frontier fields such as programming foundation, intelligent interaction design, and big data analysis, and cultivates students' ability to use digital tools to solve complex design problems. In the humanistic dimension, courses such as art history, philosophy, aesthetics, and cross-cultural communication are designed to enhance students' understanding of the social value and cultural connotations behind design. Two classes of courses are through the cross, joint project implementation form of organic integration; for example, in the intelligent household design course, integrating sociological analysis of user experience, or in the public art class, emphasizing cultural symbols of deconstruction and reconstruction. The setting of dual-core course modules not only strengthens students' technical application ability, but also cultivates their professional quality of adhering to humanistic values in technological innovation through an interdisciplinary perspective, and finally forms a compound talent cultivation model that not only has the ability to control digital intelligence technology, but also can carry out in-depth creation with a craftsman spirit.

3.3. Practical teaching link design

To break out of the “comfort circle”, the course’s practice should focus on the operation of digital tools and the training in design methods. Through the application of a virtual simulation platform and intelligent design software, and the establishment of a school-enterprise collaborative education mechanism, the practical teaching resources are expanded to help students master the necessary tool skills in the era of digital intelligence. The project practice needs to introduce real enterprise cases and industry needs, and is carried out around practical topics such as digital twin city and harmony rural construction. Students are encouraged to collaboratively complete the whole process design in interdisciplinary teams, and their systems-thinking in problem analysis and solution is cultivated. The graduation design link should require students to combine professional, cutting-edge technology, propose innovative design schemes for social culture or industrial pain points, and ensure the quality of the results through the joint evaluation mechanism of experts inside and outside the school, thereby realizing the deep integration of theoretical knowledge and practical ability. At the same time, special events such as digital design competitions and intelligent interactive visual design development competitions are regularly held to stimulate students’ enthusiasm for technology exploration and innovation consciousness. Design competitions focus on cutting-edge fields such as artificial intelligence-aided design and the application of sustainable materials, and guide students in improving their professional skills by solving practical problems.

3.4. Establishment of the digital evaluation system

Breaking through the limitations of traditional single-dimensional evaluation, an index framework was constructed from three core dimensions—knowledge mastery, skill application, and professional quality—and a multidimensional evaluation model with an industry-oriented focus was developed. In the knowledge dimension, it includes not only the assessment of professional hard knowledge, such as art design theory and mathematical technology foundation, but also the evaluation index of interdisciplinary knowledge integration ability. The skill dimension focuses on the application of digital design tools, innovative practice, and the integration and application of traditional crafts and modern technologies, and specifically sets up practical assessment items for the core characteristics of the craftsman spirit. The dimension of professionalism quantifies students’ internalization of professionalism and excellence in a craftsman spirit through indicators such as professional ethics, teamwork, and continuous learning awareness. All indicators were subjected to expert consultation and empirical test by the Delphi method to ensure their scientificity and operability. In the vertical dimension, three key nodes were set up: admission adaptability evaluation, semester developmental evaluation, and graduation comprehensive evaluation, and students’ ability development trajectory was tracked through longitudinal comparative analysis. In the horizontal dimension, the phased special evaluation was designed according to the characteristics of the course module, the skill standard evaluation for the digital modeling curriculum was developed, and a blind review mechanism involving industry experts was introduced into the graduation design.

4. To Clarify the Process and Effectiveness of the Application of Digital Intelligence Resources in Art and Design Majors

The effective application of numerical intelligence resources in art and design majors should be based on systematic planning and scientific implementation, and avoid “old wine in new bottles”. In terms of the construction and optimization of teaching platforms, colleges and universities have gradually built intelligent teaching systems that integrate curriculum management, resource retrieval, and practice simulation. Such platforms enable flexible configuration of teaching resources through modular design, support cross-time and cross-space collaboration and real-time feedback between teachers and students, and effectively overcome the physical limitations of traditional teaching scenarios. By upgrading the traditional virtual reality workshop, the creation technology can construct an immersive design workshop that enables students to plan and simulate materials in three-dimensional space, significantly improving the accuracy and efficiency of practical operations. At the same time, the platform continues to introduce cutting-edge data and case bases in the industry, forming a dynamic update mechanism that ensures the teaching content keeps pace with industry needs.

Through digital resources, the multi-dimensional integration and intelligent reorganization of teaching materials are promoted. By extracting features and analyzing patterns from massive design cases using artificial intelligence, a personalized learning path recommendation is generated to help students quickly master professional skills and design processes. At the same time, in the disciplines of environmental and product design, the application of digital twin technology visualizes the complex design process and provides a scientific basis for decision-making in teaching through changes in multidimensional parameters, such as interactive experience.

Efforts should be made to build a “double-qualified” teacher training system. The teacher evaluation system should add indicators of practical teaching ability, incorporate technology development outcomes and enterprise project experience into the professional title evaluation standards, and encourage teachers to continue improving their integration of theory and practice. In addition, it is necessary to strengthen teachers’ digital technology literacy training and regularly carry out special training, such as intelligent design software and data analysis tools, so as to ensure that the teaching team can effectively guide students to use digital intelligence tools for artistic creation.

5. Conclusions

In the algorithm-led design process, the “craftsman spirit” preserves the design subject’s humanistic value judgment. It also effectively addresses practical problems, such as homogenization and emotional deficit, in the application of digital tools. This is achieved by integrating creative thinking and technical rationality. The current education system faces structural contradictions, such as an emphasis on technology over the humanities and on efficiency over connotation. To address this, this study constructs a “three-dimensional in one” training framework. This framework is a three-dimensional training path based on digital skills. It centers on humanistic quality and uses innovative practice as the driving force. The reconstruction of the curriculum system, innovation of the project-based teaching mode, and reform of the evaluation mechanism all support this approach. Through these efforts, the organic unification of

technical ability and humanistic spirit is achieved. With the rapid iteration of emerging technologies like generative AI and brain-computer interfaces, the meaning of “craftsman spirit” must be continually and dynamically adjusted. Future research will focus on building a technology ethics education system, remolding spiritual value in human-machine collaborative creation, and exploring new frontiers. It will also seek to establish a new cultivation ecology of the craftsman spirit for the intelligent age.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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