The Logical Origins and Practical Analysis of Digital Transformation Applications in Aesthetic Education

— Including a Discussion on New Digital Teaching Strategies and Future Scenarios

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Abstract. In the rapidly evolving digital age, the necessity and urgency of integrating digital technology with art education, termed digital aesthetic education, is increasingly prominent. The deep application of generative artificial intelligence in education, transformation of educational subject relationships, establishment of digital teaching systems, upgrades in intelligent resource provision, and changes in informational assessment methods represent new challenges in the digital transformation of education in the new era. This paper discusses the logical origins and practical analysis of the digital transformation application in aesthetic education, alongside new digital teaching strategies and future prospects, focusing on the development direction of art education in the digital era, analyzing the impact of digital technology on art education, and exploring future directions and possibilities for art education.

Keywords: Aesthetic education, Digital transformation, Digital literacy.

1   Introduction

Art education, now a compulsory part of quality education, faces changes with the advent of the digital age, where new media transmission over the internet is replacing traditional methods. The massive influx of information affects our lives, work, and education. Technologies such as cloud computing, big data, blockchain, 5G, virtual reality, and artificial intelligence are deeply integrating with all art mediums, fostering significant changes and innovations in intelligent living, digital culture, and online ecosystems. Over the past 25 years, the integration of digital technologies in education, shaped by both technological advancements and empirical research findings, has fundamentally transformed the learning landscape[1].It underscores the need for the design of educational technologies to be deeply aware of the real challenges faced by educators and the necessity of effectively leveraging these technologies to enhance educational quality and learning outcomes across various educational settings.

With the continuous expansion of big data projects and advancements in pre-training technology and computing hardware, the opportunities and challenges

brought by a new round of technological revolutions are escalating. Since the issuance of the "14th Five-Year Plan for Digital Economy Development" by the State Council in January 2022, China's development direction has increasingly focused on digitalization, emphasizing application-driven, data empowerment strategies to unlock and harness the value and potential of data. This approach also sets expectations for the digital transformation in education, highlighted by the Ministry of Education's commitment to accelerate digital education strategies, creating a Chinese paradigm of in-depth information education in line with Xi Jinping's strategy for building a digital China. The breakthroughs in generative artificial intelligence technologies introduce new dynamics to the digital and intelligent development of education, with China having achieved preliminary development in educational digital transformation. The construction and application of "three links and two platforms" have made significant progress, and the construction phase of the national smart education public service platform is nearing completion. The deep application of generative AI in education, the transformation of educational relationships, the establishment of digital teaching systems, the upgrade in intelligent resource provision, and the reform in informational assessment methods pose new challenges for digital transformation in education today. Leveraging digital technology to enhance and transform aesthetic education through curriculum standards, implementation paths, evaluation methods, and the use of virtual reality technology is an urgent task for art education in China[2]. This paper will explore the deep pathways and reshaping of learning modes in contemporary higher education art education systems, comparing domestic and international digital art education systems and utilizing advanced digital tools and domestic informational education policies.

2 Implications Of Digital Aesthetic Education In The New Era

2.1 Defining the Concept of Digitalization in Modern Educational Technology

The rise of the information age has brought opportunities to education, prompting continuous updates in concepts, theories, and methods within educational teaching. Since the term "educational technology" was first introduced in the 1970s, it has shown robust vitality alongside the growth of information technology, although no unified definition has emerged to this day. According to the "Encyclopedia of Education," educational technology encompasses all technical means and methods used in human educational activities, both tangible (physical forms) like blackboards, chalk, computers, multimedia projectors, and related software, and intangible (intellectual forms) like systemic approaches and learning models. In 1994, the Association for Educational Communications and Technology (AECT) in the U.S. defined educational technology in a publication by Barbara Seels and Rita Richey, reflecting a consensus in the field at the time.

Conceptually, digital governance was initially applied broadly in fields such as economics, society, government, and business. In education, digitalization is seen as a manifestation and means of informatization, related to concepts like digital classrooms, digital educational resources, and digital campuses, though its independent

application in governance is relatively rare. The 20th National Congress highlighted digitalization as a foundation for building a powerful country, elaborating on educational concepts, resources, modes, digital literacy among teachers, and cybersecurity under a digital framework, thus guiding the development of digital education in China. Digitalization has become a powerful tool in educational governance, garnering widespread attention in academia. It was explicitly introduced to educational governance at the "14th China Education Informatization Innovation and Development Forum," laying the foundation for the transition from educational management to governance. School digital governance, as part of digital educational governance, is vital for enhancing governance capabilities and systems, marked by improved information collection, processing, and the scientific and intelligent enhancement of education processes such as curriculum, teaching, management, and evaluation, making educational management and decision-making more rational and effective.

2.2   Dynamic Transformation of Digital Aesthetic Education

In October 2020, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued "Opinions on Fully Strengthening and Improving School Aesthetic Education in the New Era," calling for earnest implementation in all regions and departments. Aesthetic education in the new era aims to cultivate students' aesthetic sensibilities, creative thinking, and cultural literacy through multi-level and multi-field education methods against the current social backdrop. It emphasizes that aesthetic education extends beyond mere art instruction to encompass holistic human development and the shaping of social civilization, advocating for personalized and diversified education that respects students' interests and talents. The integration of art education with other disciplines, fostering students' comprehensive abilities to meet future societal demands, is also stressed. The challenge lies in how the field of aesthetic education can integrate digital technologies, improve teaching methods, and enhance the quality of education, including the development of digital teaching resources, online courses, and the application of digital tools in teaching[3].

2.3   Deep Integration of Aesthetic Education and Digital Media

Since the reform and opening up, China's higher education in fine arts has seen significant development. Recent directives highlight the irreplaceable role of aesthetic education in cultivating sentiment, improving literacy, and fostering intelligence for comprehensive student development. The weakest link in school aesthetic education has been identified as information technology courses, which have been less integrated into the aesthetic education process due to their technical and instrumental nature. The concept of "digital aesthetic education" emerges from the increasing calls for the integration of information technology into aesthetic education over the past decade. Digital aesthetic education requires attention to the avant-garde and technical aspects of digital media, breaking down traditional barriers between art disciplines, and adopting an interdisciplinary approach to meet new demands and patterns of the digi-

tal era. Compared to traditional aesthetic education, digital aesthetic education actively engages with the digital art era, enhancing digital media literacy, appreciation for digital art, and educational guidance on internet use. The advent of big data and cutting-edge technologies like AI, VR, and blockchain in education suggests a deep transformation of educational models, forms, and evaluation methods, towards a more human-centered, open, and sustainable educational ecosystem, supported by big data for personalized teaching, scientific evaluation, refined management, intelligent decision-making, and precise research, thereby contributing significantly to educational equity and quality.

3   Empowering Aesthetic Education with Digital Technology: Three Perspectives

Digital technology, born alongside electronic computers, integrates resources including artificial intelligence, virtual reality, and cloud computing through devices for computation, processing, storage, and restoration. The blend of modern high-function information technology with contemporary educational philosophies and thoughts has led to new educational approaches in digital platforms, utilizing resources like images, text, sound, and video to create digital learning environments. Digital learning is characterized by its transparency, student-centric and problem-oriented approach, creativity, individualization, public access, interdisciplinarity, and inclusivity for all ages.

3.1   Digital Skills Empowering Aesthetic Education Curriculum Standards

In April 2022, the Ministry of Education released the "Compulsory Education Art Curriculum Standards," emphasizing the relationship between art and nature, life, society, and technology, and the incorporation of rich aesthetic elements. It aims to enrich imagination and expression through digital media and unique artistic languages, seeking truth, goodness, and beauty in the art world.

3.2   Implementation Pathways for Art Education through Information Technology

Current art education utilizes digital tools like multimedia, online systems, and virtual classrooms, enhancing teaching methods and outcomes. Art, combining visual and creative aspects, is still in the computer-assisted teaching phase in China. Emphasizing "generativity" in digital education, using digital materials, interactive multimedia teaching, and building art teaching platforms are key. Studies like Min Chengyi's research on digital geometry in art education and Gan Wei and Chen Zengzhao's design of digital music teaching software provide practical references for digital empowerment in aesthetic education.

3.3   Transformative Digital Assessment Concepts and Methodologies

Digital teaching, now a new norm, necessitates suitable teaching effectiveness evaluation methods. Beyond traditional final exams and grades for artistic performance, digital transformation offers new perspectives for education evaluation systems, considering not just scores but also learning tracking, classroom performance, and peer reviews. Techniques like questionnaires, grey statistics, and hierarchical analysis in vocational college teaching evaluations focus on student growth, integrating situational tasks to test holistic literacy, emphasizing personalized expression and emotional communication in digital course standards. These digital assessment systems offer fresh perspectives for updating evaluation philosophies.

4   The Current State of Digital Aesthetic Education Teaching

4.1   Thriving Development of Digital Teaching

The case study based on the Calhoun model behavior research conducted by author this semester at Suzhou Industrial Park No. 2 Experimental Primary School, involved observing a second-grade art unit lesson titled "Fantasies of the Classic of Mountains and Seas." Inspired by a series of animal-related courses followed by monster-related ones, the unit's theme focused on students creating their mythical creatures from the "Classic of Mountains and Seas." The new curriculum emphasizes the integration of arts with other subjects, leveraging the interdisciplinary nature of the "Classic of Mountains and Seas" to foster imagination and create lifelike mythical creatures through various means, not limited to drawing or crafting but extending to literary writing and musical performances.

4.2   Unit Goals and Learning Process

The course set specific unit goals summarized as "learning from nature," "virtue from the heart," and "vivid charm," structured into six lessons with a series of questions and tasks. Starting with observing animals and mythical creatures to deeper introspection about these beings, students prepared to express their mythical creatures. Activities included visiting zoos, VR art exhibitions, making role cards, discussing mythical stories, and creating new versions of the "Classic of Mountains and Seas" through various digital tools like iPads and software for drawing, recording, and evaluation. The final tasks involved creating masks and scripts for performances, embodying the mythical creatures, aiming to make students think and express like artists.

   In school administration, integrating student and teacher information into a school data platform for cloud-based monitoring enhances campus safety and supports periodic evaluations. Surveys assess family situations, psychological states, and physical health, crucial for maintaining normal campus life amid rising mental health issues. Digital technology boosts office efficiency for teachers, easing administrative burdens through after-school services and flexible work arrangements recorded online. Digital platforms facilitate course selection, payments, and leave applications, transcending

time and location constraints. Big data analysis supports education management, streamlining processes like exam registration and subject selection. Digital applications, like the "flexible class system," improve teaching quality and efficiency through online course selection and forums, exemplified by Shanghai Jinyuan Middle School's digital resource management and online class platform, which integrates interactive learning methods. Before subject selection, surveys gauge student preferences for tailored school subjects and teacher resources, with big data adjusting class sizes and difficulty levels, leveraging the flexible class system's adaptability. Digital teaching in the digital age, using new media platforms like Superstar Learning, MOOCs, and social media, extends the reach of aesthetic education, enriching the classroom with new media, VR, and online platforms, deepening traditional cultural understanding and boosting cultural confidence.

The author advocates for the adoption of innovative teaching strategies within digital aesthetic education, blending theoretical frameworks, methodological innovations, and genuine aesthetic experiences. This approach utilizes a mix of digital and analog resources to enhance learners' emotional engagement and aesthetic reactions to aesthetic education themes, emphasizing the significance of experiential learning and the role of art in developing a sustainable consciousness among learners in the digital era[4].

4.3   The Drawbacks of Digitalization Become Apparent

Compared to traditional teaching methods, digital teaching has shown many advantages but also revealed numerous issues. In an era of information overload, the quality of online aesthetic education courses varies greatly. Due to the high degree of freedom online, there are no barriers to entry for digital aesthetic education, leading to "unstandardized production processes," "overly basic knowledge," and "monotonous teaching methods." The proliferation of non-professional websites and institutions poses a challenge for youths without mature internet discernment skills. The lack of rigorous platform auditing systems results in uneven teaching video content quality. Addressing these issues requires a focus on quality, enhanced social supervision, and platform management, adopting a zero-tolerance policy towards poor educational videos and false advertising.

Online teaching, while advantageous, faces instability, such as teachers faking qualifications, substandard teaching methods, and platforms supporting fraudulent achievements. Education, foundational to national development, relies on teacher quality and ethics. Digital aesthetic education leads to uneven student engagement, with some lacking the autonomy needed for digital learning quality. The internet's flood of information necessitates guiding students towards high-literacy, professional approaches to digital pop culture, promoting healthy aesthetic judgment.

4.4   Emerging Pathways in the Digital Transformation of Aesthetic Education

1. Renewal and Development of Rural School Education Under Digital Transformation

Digital transformation in rural school governance is a key step towards modernizing education nationwide, addressing barriers like system deficiencies and outdated organizational decisions. Recent efforts focus on transitioning from "technology governance" to "governing technology," establishing digital order and collaborative organizations to drive precise and digital transformation in rural aesthetic education.

2. Innovation in Aesthetic Education and the Inheritance of Intangible Cultural Heritage

Protecting intangible cultural heritage is crucial for sustainable heritage development. In 2023, Heilongjiang Foreign Studies University's heritage education base combined digital education with heritage preservation, transforming heritage resources into digital education, exemplified by the award-winning documentary "Culture Cut Out" in the 2023 China Brand Design Competition. Strengthening student clubs and teaching in intangible heritage alongside digital education enhances cultural impact and students' appreciation of beauty.

3.Digital Transformation and Teacher Digital Training Strategies Post- Pandemic

The post-pandemic era highlights digital transformation as a core force in education's future readiness. Addressing challenges in policy, technology, and teaching resources is vital. The Ministry of Education's "Teacher Digital Literacy" standards provide guidance for developing digital teacher teams, offering benchmarks for enhancing teachers' digital literacy and informational knowledge during digital transformation[5].

5   Reflections On the Practice of Digital Transformation in Aesthetic Education

Digital transformation in aesthetic education signifies using information technology to enhance communication and sharing among educators, learners, and administrators. Its essence lies not just in changing teaching and learning methods but also in updating educational concepts, transforming models, and restructuring systems, thereby fostering a more convenient, coordinated, and efficient educational operation. The "Smart Education Cloud Platform" for aesthetic education, based on the principle that methodological and organizational innovation is more crucial than technological innovation, aims to integrate big data technology for a comprehensive reform in aesthetic education. This approach seeks to bridge the "last mile" in aesthetic education by building educational cloud platforms and digital campuses, exploring new models

based on information technology, and developing new educational services and governance models.

In modern Chinese schools, computers, digital blackboards, and multimedia podiums have become fundamental teaching tools. Teachers extensively use multimedia technologies for lesson preparation, resource collection, and classroom interaction. Digital transformation offers new methodologies and learning strategies for the field of aesthetic education, making educational evaluation more precise and personalized.

6   Conclusion

The digital transformation of aesthetic education is a significant trend in today's educational field. By integrating art with technology, it offers students richer and more diverse learning experiences. Digital technology serves not only as a teaching tool but also as a crucial driver for aesthetic education. Personalized learning path design, a key aspect of digital aesthetic education, allows for precise matching of teaching resources to learners' needs, breaking through the confines of traditional aesthetic education.

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