

Research on the Digital Transformation and Infiltration Measures of Aesthetic Education in Colleges and Universities under the Guidance of AIGC

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Abstract: Driven by the Digital China strategy and the "educating people through aesthetics" policy, aesthetic education in universities is at a crucial stage of transformation from the "traditional paradigm" to "digital immersion". As a core breakthrough in digital technology, generative artificial intelligence (AIGC), with its powerful capabilities in content generation, interactive adaptation, and personalized services, provides new impetus for the "precise supply", "emotional resonance", and "cross - domain integration" of aesthetic education in universities. Through an investigation of the current situation of aesthetic education in universities, this paper analyzes the three major pain points of traditional aesthetic education in resource supply, teaching mode, and evaluation system. Combining with the technical characteristics of AIGC (generativity, interactivity, and emergence), it proposes a three - dimensional transformation framework of "technology - content - subject", and designs an immersive implementation path from four aspects: curriculum system reconstruction, teaching scenario innovation, evaluation mechanism optimization, and teacher - student ability cultivation, providing theoretical support and practical reference for the digital transformation of aesthetic education in universities.

Keywords: AIGC; Aesthetic Education in Universities; Digital Transformation; Aesthetic Education Immersion; Digital Literacy

1.The Realistic Dilemmas and Urgency of Transformation of Traditional Aesthetic Education in Universities

1.1 The Dual Drive of Policy and the

Background of the Times

In 2020, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the "Opinions on Comprehensively Strengthening and Improving School Aesthetic Education in the New Era", clearly stating that "advance the integration of aesthetic education with moral, intellectual, physical, and labor education" and "make full use of information technology to enhance the timeliness and effectiveness of aesthetic education." In 2023, the "Implementation Outline of the Project for Improving the Quality of Ideological and Political Work in Universities" by the Ministry of Education further emphasized "cultivating morality through aesthetic education," requiring that aesthetic education in universities should adapt to the cognitive characteristics and aesthetic needs of young students in the digital age. At the same time, the global digital technology revolution is accelerating. AIGC (such as DALL·E 3, MidJourney, Stable Diffusion) has broken through the "tool - assisted" stage and entered the "content co - creation" era, providing the technical possibility for the paradigm change of aesthetic education in universities.

1.2 The Bottlenecks in the Development of Traditional Aesthetic Education in Universities

Through questionnaires and in - depth interviews with domestic universities, the following core contradictions in the traditional aesthetic education model have been found:

Mismatch between Resource Supply and Demand: Aesthetic education courses in universities mostly rely on classical arts (such as painting, music, literature), with insufficient coverage of emerging fields such as digital arts (such as interactive installations, virtual scenes) and interdisciplinary integration (such as art and

technology, design thinking). The survey shows that only 18% of students think that the existing courses "can meet the learning needs of aesthetics in the digital age," and 73% of students expect to "access the cross - content of cutting - edge technology and art."

One - way Incultation in Teaching Mode: 85% of aesthetic education courses still mainly adopt the "teacher explanation + work appreciation" model. Students passively receive knowledge and lack the practical links of "creation - expression - feedback." An interview with an aesthetic education teacher in a university reflects: "Students can name Van Gogh's 'The Starry Night', but seldom can they interpret the image of 'starry sky' in their own way. Their aesthetic ability remains at the level of 'identification' rather than 'creation'."

Single and Rigid Evaluation System: The existing evaluation mainly focuses on "work completion" and "theoretical test scores," ignoring the dynamic tracking of core competencies such as aesthetic perception, emotional resonance, and cultural understanding. For example, in the art course evaluation of a vocational college, the "accuracy of sketch proportion" accounts for 60%, while "emotional expression of the work" and "personalized creativity" only account for 10%.

2. Theoretical Logic and Technological Advantages of AIGC Empowering Aesthetic Education in Colleges and Universities

As a core breakthrough in digital technology, the deep integration of AIGC (Generative Artificial Intelligence) and aesthetic education in colleges and universities is not accidental. Instead, it is an inevitable result of the high compatibility between technological characteristics, the essence of aesthetic education, and teaching laws. This part systematically expounds on the theoretical logic and technological advantages of AIGC empowering aesthetic education in colleges and universities from three dimensions: "the essential compatibility between technology and education", "the paradigm change of teaching mode", and "the in - depth expansion of aesthetic experience".

2.1 The Essential Compatibility between Technology and Education: From "Tool Assistance" to "Value Symbiosis"

The core of aesthetic education is "educating people with beauty", and its essence is to

stimulate emotional resonance and cultivate a sound personality through aesthetic practice (Cai Yuanpei, 1912). The realization of this goal depends on the deep interaction among "people - works - the world", and the technological characteristics of AIGC happen to provide more abundant scenarios and more flexible paths for this interaction.

First of all, the generativity of AIGC breaks through the limitation of "fixed - work appreciation" in traditional aesthetic education. Traditional aesthetic education focuses on classic artworks (such as Mona Lisa and Symphony No. 5), and students mainly complete their aesthetic experience through "observation - understanding - memory". However, AIGC can generate personalized artworks (such as AI - generated paintings and generative music) based on user input (such as emotional keywords and cultural symbols), providing students with aesthetic practice tools that are "participatory and creative". For example, when students input keywords like "loneliness" and "Jiangnan water town", AI can generate digital paintings that integrate the artistic conception of ink - wash painting and modern composition. Students can then adjust the color and composition on this basis and finally complete their own works with the theme of "loneliness". This "human - machine co - creation" model shifts the aesthetic experience from "passive acceptance" to "active construction", which is more in line with the essence of aesthetic education, that is, "enlightening wisdom with beauty and nourishing the heart with beauty".

Secondly, the interactivity of AIGC reconstructs the relationship among "teachers - students - works". In traditional classrooms, teachers are the "authority of knowledge", and students learn through "listening - imitating". However, AIGC can act as an "intelligent assistant" and dynamically adapt to students' cognitive levels and aesthetic preferences. For example, in the course of "Appreciation of Western Modern Art", if students are confused about Picasso's Cubist style, AI can generate a dynamic demonstration of "the decomposition steps of Cubist paintings" and adjust the key points of explanation through question - and - answer interactions (such as "Do you pay more attention to the change of color or shape?"). This "personalized guidance" transforms teachers from "knowledge indoctrinators" to "aesthetic guides", which is more in line with the educational concept of

aesthetic education that "puts students at the center".

Finally, the emergence of AIGC expands the "boundary of possibilities" of aesthetic education. Traditional aesthetic education is limited by teachers' professional abilities and teaching resources, making it difficult to cover niche arts (such as experimental drama and digital installations) or interdisciplinary integration fields (such as techno - art and ecological aesthetics). Through massive data training, AIGC can generate artistic expressions that go beyond human experience (such as non - regular color combinations in abstract paintings and rhythm innovations in experimental music), opening up a broader aesthetic vision for students. For example, an aesthetic education course in a certain university introduces AI - generated "meta - universe architecture", and students need to analyze its aesthetic value by combining architectural aesthetics, digital technology, and social and cultural backgrounds. This kind of "technology - empowered interdisciplinary aesthetics" is precisely what traditional aesthetic education can hardly achieve.

2.2 Paradigm Shift in Teaching Modes: From "One-Way Transmission" to "Two-Way Generation"

The teaching mode of traditional aesthetic education in colleges and universities mainly focuses on "classroom lectures + art work appreciation", with three major pain points of "emphasizing knowledge over practice", "emphasizing results over process", and "emphasizing uniformity over individuality" (Ministry of Education's "Opinions on Aesthetic Education in Colleges and Universities", 2020). The intervention of AIGC has promoted the paradigm transformation of the teaching mode from the "technical instrumentalism" to the "technical enabling theory", which is manifested in the following three aspects:

First, from "standardized output" to "personalized growth". Traditional aesthetic education courses rely on unified teaching materials and teaching progress, making it difficult to meet the differentiated aesthetic needs of students (for example, some students are good at painting, some prefer music, and some are interested in digital art). AIGC can generate customized learning paths through "learning data portraits" (such as recording

students' creative preferences, aesthetic feedback, and knowledge weaknesses). For instance, if a student prefers abstract art but has weak color perception, AI can recommend the "Mondrian Geometric Abstraction" introductory course and automatically prompt "Try to reduce the color contrast to enhance harmony" during their creation; while for students good at realistic painting, AI will push the "Surrealism" creative techniques to guide them to break through the limitation of "likeness or unlikeness". This "one-size-fits-one" teaching mode enables each student to achieve improvement in their "zone of proximal development" based on their original foundation.

Second, from "one-way transmission" to "two-way generation". In traditional classrooms, the flow of knowledge is a one-way transmission from "teachers to students"; while the intervention of AIGC has transformed the teaching process into a multi-way interaction among "teachers, students, and AI". For example, in the "Digital Art Creation" workshop, students propose a creative theme (such as "Future City"), AI generates a basic scene (such as floating buildings, intelligent transportation), and students modify the details on this basis (such as adding "community gardens", "elderly activity areas"); teachers then focus on guiding "theme depth" (such as "How can the future city reflect humanistic care") and "technical ethics" (such as "The copyright ownership of AI-generated content"). This "human-computer collaborative creation" mode not only improves students' creative abilities but also cultivates their critical thinking of "technology enabling and humanity leading".

Third, from "classroom limitations" to "omnipresent immersion". Traditional aesthetic education is restricted by physical space (such as classrooms, art galleries) and time (such as fixed class hours), making it difficult to achieve "aesthetic education anytime and anywhere". AIGC can construct an aesthetic scene integrating virtual and real: on the one hand, through metaverse technology, a "virtual art gallery" is built, and students enter the scene with virtual avatars to interact with "digital artists" generated by AI (such as virtual Van Gogh, virtual Monet) and participate in tasks such as "virtual curation" and "digital restoration"; on the other hand, through AR/VR technology, aesthetic education is integrated into daily life (such as the "AI interactive graffiti

wall" in the campus cafeteria, the "AI poetry generator" in the library). For example, a certain university has set up an "AI Sound Art Museum" on the campus walkway. When students walk, they trigger sound art with different themes (such as "The Poetic of Rainfall", "The Rhythm of Falling Leaves"), extending the aesthetic experience from "deliberate learning" to "life immersion".

2.3 Deep Expansion of Aesthetic Experience: From "Sensory Stimulation" to "Emotional Resonance"

The highest realm of aesthetic education is "cultivating virtue and enhancing intelligence through aesthetics", that is, stimulating emotional resonance through aesthetic experience, and then shaping a sound personality (Schiller, 1795). The technological advantages of AIGC shift aesthetic experience from "superficial perception" to "deep empathy", which is specifically reflected in the following two aspects:

First, multimodal interaction strengthens emotional connection. Traditional aesthetic education mainly focuses on vision and hearing (such as looking at paintings and listening to music), while AIGC can achieve multimodal interaction of "five - sense linkage". For example, in the course of "Appreciation of the Artistic Conception of Traditional Poetry", AI can generate "dynamic images" (such as the sand - painting animation of "A single column of smoke rises straight from the desert"), "environmental sound effects" (such as camel bells and wind sounds), "tactile feedback" (such as simulating the touch of "wind blowing the hem of clothes" through vibration), and even "olfactory simulation" (such as the sand - dust smell of "the desert" and the flower fragrance of "Jiangnan") according to the content of the poetry. This multimodal experience makes it easier for students to immerse themselves in the emotional context of the poetry and understand the beauty of the artistic conception of "there is a picture in the poem, and there is a poem in the picture".

Second, emergent content stimulates creative thinking. The "emergence" of AIGC enables it to generate artistic expressions beyond human experience (such as non - regular color combinations in abstract paintings and rhythm innovation in experimental music). This "non - standardized" content can better stimulate

students' creative thinking. For example, in the "Modern Art Criticism" course of a certain university, AI - generated "contradictory aesthetics" works (such as "a broken mirror reflecting a complete human face", "flowing water solidifying into an ice sculpture") are introduced. Students need to explore "the boundary between beauty and ugliness" and "the relationship between order and chaos" by analyzing the "contradictoriness" of the works. This "non - conventional" aesthetic stimulation enables students to break free from the constraints of the "classical aesthetic paradigm" and cultivate their "critical aesthetics" and "innovative thinking".

3. Implementation Paths of the Digital Transformation of Aesthetic Education in Universities under the Guidance of AIGC

The in - depth involvement of AIGC technology provides tools and methods for the coordinated transformation of "technology - content - subject" in the digital transformation of aesthetic education in universities. Combining the core goal of "educating people through aesthetics" in university aesthetic education and the digital cognitive characteristics of young students, its implementation paths can be summarized into three dimensions: "reconstruction of the curriculum system, innovation of teaching scenarios, and optimization of the evaluation mechanism", covering the entire process of "what to teach", "how to teach", and "how to evaluate", and promoting the transformation of aesthetic education from the "traditional paradigm" to "digital immersion".

3.1 Reconstruction of the Curriculum System: Content Upgrade from "Classical Inheritance" to "Digital Integration"

Courses are the core carriers of aesthetic education, and their content design directly determines the breadth and depth of students' aesthetic cognition. Traditional university aesthetic education courses mostly rely on classical arts (such as painting, music, and literature), and insufficiently cover emerging art forms in the digital age (such as interactive installations and virtual scenes) and interdisciplinary integration fields (such as tech - art and design thinking). The involvement of AIGC technology promotes the upgrade of the curriculum system from "classical inheritance" to "digital integration", which is manifested in

the following three aspects:

First, the digital reconstruction of classical arts. AIGC can endow classical arts with new vitality through a two - track model of "content generation + in - depth analysis". For example, in the course of "Appreciation of Chinese Traditional Painting", AI can generate a "Modern City Version of 'A Thousand Li of Rivers and Mountains'" based on the color distribution and composition rules of "A Thousand Li of Rivers and Mountains" (such as integrating the turquoise color with the city skyline). By comparing the original work with the generated work, students can understand the translation logic of "traditional aesthetic genes" in the contemporary era. At the same time, AI can automatically mark techniques such as "the three perspectives" and "blank space" in the original work, and dynamically generate "technique analysis animations", transforming static "work appreciation" into dynamic "technique learning" and enhancing students' in - depth understanding of traditional arts.

Second, the development of original digital art courses. In view of the characteristic of "everyone is a creator" in the digital age, universities need to add emerging courses such as "tech - art" and "digital aesthetics", focusing on fields such as AI - generated art, interactive installation art, and virtual scene design. For example, a "MidJourney Art Creation" workshop. Students can input keywords such as "cyberpunk + Chinese traditional gardens" to generate digital scenes that integrate Eastern and Western aesthetics, and learn the conversion logic of cultural symbols behind them. Or, combined with 3D modeling software (such as Blender), students can use the basic models generated by AI for secondary creation, and finally complete the design of a "digital garden" interactive installation. Such courses not only cultivate students' digital creation ability but also strengthen their comprehensive literacy of "technology - empowered aesthetics".

Third, the design of interdisciplinary integration courses. The "emergence" of AIGC enables it to break through disciplinary barriers and inject interdisciplinary vitality into aesthetic education courses. For example, in the course of "Aesthetic Principles in Industrial Design", engineering parameters can be combined with product appearance plans generated by AIGC. Students need to optimize the color, material, and shape of the product through AI under the premise of

meeting the "function - cost" constraints, and finally complete the product design of "function + aesthetics". Or, in the course of "Literature and Visual Arts", AI can generate dynamic illustrations and background music according to the content of poetry. Students need to analyze the emotional consistency of "text - image - sound" and explore the laws of "cross - media aesthetic expression". This interdisciplinary design enables students to shift from "single - art perception" to "comprehensive aesthetic creation".

3.2 Innovation in Teaching Scenarios: Spatial Extension from "Classroom Lecturing" to "Full-domain Immersion"

Traditional aesthetic education is restricted by physical space (such as classrooms and art galleries) and time (such as fixed class hours), making it difficult to achieve "aesthetic appreciation and education at anytime and anywhere." AIGC technology promotes the extension of teaching from "classroom lecturing" to "full-domain immersion" by constructing multi-dimensional scenarios of "online + offline" and "virtual + real," which is manifested in the following three aspects:

First, the regular operation of intelligent aesthetic education workshops. Relying on AIGC platforms (such as Adobe Firefly and Runway ML), universities can build a closed-loop workshop of "creation - feedback - iteration." For example, in the "Digital Music Creation" workshop, students input emotional keywords such as "autumn" and "homesickness," and AI generates the basic melody and chord progression. Students then adjust the rhythm and add instrument timbres (such as guzheng and synthesizer) on this basis. AI analyzes the "emotional consistency" of the work in real time (such as the matching degree between the melody undulation and the lyric emotion) and provides optimization suggestions (such as "reduce the rhythm speed of the second measure to enhance the sense of sadness"). Teachers, on the other hand, focus on guiding "cultural connotations" (such as "the traditional meaning of autumn imagery") and "technical ethics" (such as "the copyright ownership of AI - generated content"). This "human - machine collaborative creation" model enables students to deepen their understanding of "technology as a tool and emotion as the core" in practice.

Second, the immersive construction of virtual

aesthetic scenarios. The combination of AIGC with metaverse and VR/AR technologies can construct an aesthetic scenario that integrates the virtual and the real. For example, a certain university builds a "Virtual Art Gallery" relying on the Decentral and platform. Students enter the scene with virtual avatars and interact with "digital artists" generated by AI (such as virtual Van Gogh and virtual Monet). Virtual Van Gogh can share the creative inspiration of "The Starry Night," and students can trace the formation process of the work through "creative manuscripts" generated by AI (such as unfinished sketches and color experiment records). In addition, students can also participate in the "virtual curation" task. Through the "work correlation algorithm" recommended by AI, they combine digital art works of different styles (such as abstract paintings, experimental music, and installation art) into a themed exhibition (such as "The Dialogue between Technology and Humanities") and understand the construction logic of the "aesthetic context" during the curation process. Third, the scene penetration of life - oriented aesthetic practice. AIGC can integrate aesthetic education into the "fragmented time" of campus life, achieving a subtle and infiltrating effect. For example, an "AI Interactive Graffiti Wall" is set up on the wall of the cafeteria. Students can enter the "real - time painting" interface by scanning the wall with their mobile phones. AI automatically generates a "style - matched" background (such as oil painting texture and watercolor blurring). Students can add their own graffiti, and the works will be permanently saved and displayed in a carousel. An "AI Poetry Generator" is developed in the library. By inputting keywords such as "autumn" and "library," AI generates original poems. Students can choose the "recitation" or "image - matching" function to transform the poems into audio - visual works and share them on social media. This "life - oriented" scene design enables students to shift from "passively receiving aesthetic education" to "actively creating beauty."

3.3 Optimization of the Evaluation Mechanism: The Value Shift from "Result-Oriented" to "Process-Immersion"

Traditional aesthetic education evaluation mainly focuses on "work completion" and "theoretical examination scores", neglecting the

dynamic tracking of core competencies such as aesthetic perception, emotional resonance, and cultural understanding. Through "data-driven + multimodal analysis", AIGC technology promotes the transformation of the evaluation mechanism from "result-oriented" to "process-immersion", which is manifested in the following three aspects:

Firstly, the collection and analysis of process data. The AIGC platform can record students' learning trajectories (such as creative drafts, modification records, and interactive feedback), extract data on dimensions such as "creative uniqueness", "technical application ability", and "depth of cultural understanding", and form a dynamic growth profile. For example, in the "Digital Painting Creation" course, AI can record the entire process of students from "inputting keywords" to "generating a first draft" and then "modifying and finalizing the draft", and analyze the "keyword adjustment frequency" (reflecting creative flexibility), "number of color modifications" (reflecting aesthetic sensitivity), and "number of cultural symbols used" (reflecting the depth of cultural understanding), providing a "precise portrait" for teachers.

Secondly, the design of multimodal evaluation indicators. Traditional evaluation only focuses on "work results" (such as "whether the picture is beautiful" and "whether the theory is correct"), while AIGC supports multimodal evaluation of "process + result" and "technology + humanities". For example, the evaluation of the "AI-Generated Art" course in a certain university includes: ① Work results (30%, such as creativity and technical completion); ② Creative process (40%, such as the logic of keyword design and the depth of modification and iteration); ③ Aesthetic expression (30%, such as the emotional resonance and cultural metaphors conveyed by the work). Among them, the "creative process" is evaluated through the "interaction log" generated by AI (such as the question-and-answer records between students and AI and parameter adjustment records), and the "aesthetic expression" combines the emotional analysis report of AI (such as emotions like joy and reflection conveyed by the work) and the humanistic interpretation of teachers to avoid the evaluation bias of "technology supremacy".

Thirdly, the dynamic feedback and improvement mechanism. The "intelligent diagnosis" function

of AIGC can provide personalized improvement suggestions for students and a basis for teachers to adjust teaching strategies. For example, if the melody submitted by a student in the "AI-Generated Music" assignment is analyzed by AI as "monotonous rhythm", the system will automatically recommend modification plans such as "adding syncopation" and "adjusting the beat"; through the overall analysis report of the aesthetic literacy of the class (such as "70% of students are good at abstract art creation, but have weak ability to use traditional cultural symbols"), teachers can add targeted special teaching on "traditional patterns and modern design". This "data-driven feedback - improvement" mechanism shifts aesthetic education from being "experience-led" to "scientific and precise".

4. Conclusions and Prospects

The rise of AIGC provides a historical opportunity for the digital transformation of aesthetic education in colleges and universities, with a coordinated transformation of "technology - content - subject". Its core value lies not only in "teaching aesthetic education with technology", but more in "activating the essence of aesthetic education with technology" - through the technical characteristics of generativity, interactivity, and emergence, enabling students to transform from "aesthetic recipients" to "aesthetic creators", and from "passive adaptation" to "active growth". In the future, with the deep integration of technologies such as the metaverse and brain-computer interfaces with AIGC, aesthetic education in colleges and universities will further break through physical space and cognitive boundaries, and build a new ecological environment for aesthetic education that is "immersive, personalized, and for all ages". In this process, we must always adhere to the original intention

of "educating people with aesthetics", balance the empowerment of technology and humanistic values, and enable young people in the digital age to truly achieve "cultivating virtue with aesthetics, enhancing intelligence with aesthetics, and nourishing the heart with aesthetics" with the help of AIGC.

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