

The Value and Pathways of AI-Empowered Senior High School Fine Fine Art Education

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Abstract: With the rapid development of artificial intelligence (AI) technology, revolutionary transformation have taken place in the educational paradigm of senior high school fine fine art education. The intelligent generation of images, videos and animations based on text prompts builds ubiquitous teaching environment, facilitates the intelligent formation of students' core literacy, and underpins diversified evaluation mechanisms. From three dimensions—revolutionizing learning experiences through human-machine collaboration, empowering teachers' instruction with massive resources, and realizing individualized instruction by stimulating students' potential, this paper clarifies the value of AI-Empowered senior high school fine arts education. It further proposes three implementation paths for AI-powered senior high school arts education: enhancing teachers' technical application capabilities, cultivating students' autonomous learning competencies, and rationally examining intelligent technology-based evaluation systems.

Keywords: AI; Senior High School Fine Art Education; Value and Paths

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With the rapid iteration of science and technology, artificial intelligence(AI), a product of the innovations of the times, has been widely applied in various fields, exerting a profound impact on education. Generative AI has brought tremendous transformations to fine fine art education. It empowers classroom teaching, facilitates teaching innovation and teachers' professional development, and enriches learning environments and experiences, offering a wider range of learning experiences and approaches to arts education. The Art Curriculum Standards for General High School (Revised in 2020)explicitly stipulates “It is necessary for educators to explore the in-depth integration of information technology and art teaching, carry out practices of “Internet+fine art education”, and create and develop new forms of fine art education.”^[1]Digital creation technologies, such as AI painting tools and digital drawing tablets, art experience systems including Virtual Reality (VR) and Augmented Reality (AR), learning platforms represented by microlectures and MOOCs, as well as teaching multimedia tools like PPT and Prezi, have injected new vitality into arts education.

In May 2025, the Basic Education Teaching Steering Committee of the Ministry of Education issued the Guidelines for General AI Education in Primary and Secondary Schools (2025 Edition) and the Guidelines for the Use of Generative AI by Primary and Secondary School Students (2025 Edition). These guidelines put forward that “To cultivate innovative talents with AI literacy, high school education should focus on developing systematic thinking and innovative practice capabilities.”^[2]Currently, generative AI is being integrated into educational practices through its intelligent paradigms, empowering high school fine art education. It not only facilitates the implementation of core competencies but also fosters an environment

for autonomous learning. By respecting individual differences among students and meeting their personalized needs, it lays a solid foundation for lifelong learning,^[3] thereby boosting the high-quality development of high school fine art education.

1. Value Implications of AI-Empowered Senior High School Arts Education

1.1 Transforming Learning Experiences via Human-Machine Collaboration

Intelligent tools are driving the transition of the teaching model from a traditional “teacher-student” dyadic structure to a “teacher-machine-student” triadic structure,^[4]reshaping the roles and identities of both teachers and students while empowering teaching. In the conventional teaching model, students acquire knowledge in a largely passive manner, and teachers tend to adopt rote knowledge indoctrination, resulting in dull and tedious classes. Distinctive in its disciplinary traits, arts education emphasizes conveying emotions and expressing ideas through diverse media and technical approaches.

AI technologies, such as Virtual Reality (VR) and Augmented Reality (AR), can construct immersive learning environments that support contextualized teaching and aesthetic perception. For instance, in Art of Classical Chinese Gardens, Unit 4 of the PEP High School Art textbook, AR technology enables virtual tours of Humble Administrator’s Garden in Suzhou, Summer Palace in Beijing and other classical gardens, which allows students to experience the aesthetic charm of ancient gardens and architecture, stimulating their learning motivation. Combined with big data analytics of students’ learning processes, AI also assists teachers in grasping students’ learning status and adjusting teaching strategies accordingly. Collectively, AI can significantly improve teaching effectiveness, and human-machine collaborative teaching represents an inevitable trend in educational innovation and digital transformation.^[5]

1.2 Enriching Teaching Resources to Empower Teachers’ Instruction

The application of AI in general high school education not only provides teachers with a rich and diversified teaching resources, but also sets corresponding requirements for their teaching capabilities, creating new avenues for their professional development. With generative AI, arts teachers can access animation materials, demonstration audio, virtual artwork generation functions and precise data collection, laying a solid foundation for diversified teaching formats and content presentation.

Taking the lesson Culture and Customs, included in Unit 5 (Folk Art) of the PEP(People’s Education Press) textbooks as an example. AI acts as a content producer,^[6]which helps students quickly obtain comprehensive and intuitive learning materials and instructional content. On this basis, teachers can innovate teaching approaches, enable students to figure out the origin of knowledge and interdisciplinary knowledge, and enhance their capabilities of image interpretation and artistic expression. Furthermore, AI can generate diversified teaching designs according to the feedback of teaching outcomes, helping teachers optimize teaching evaluation systems and broaden their professional development.

1.3 Stimulating Students’ Potential to Achieve Individualized Instruction

The core value of AI in classroom teaching lies in promoting students’ in-depth learning and stimulating individual potential through extensive personalized learning.^[7]By conducting data analysis via intelligent devices, AI can accurately capture students’ learning trajectories and generate unique individualized learner profiles, , such as their inclinations toward understanding formative symbols and preferences for color schemas. Based on such profiles, customized growth plans and cultivation programs can be formulated for individual students.

Take Modern Chinese Arts from Unit Six of the PEP textbook as an example. Works ,including Xu Beihong’s Chinese painting Portrait of Tagore and Zhao Yannian’s black-and-white woodcut print Portrait of Lu Xun ,break the limits of conventional cognition of painting materials and transcend fixed mindsets about artistic thinking and material application, guiding students to integrate artistic creation techniques of diverse art media with AI to carry out cross-media creation, such as 3D printing and text-to-speech/image generation.

While expanding the boundaries of students’ creativity, this process reconstructs their aesthetic competencies. Artworks, created with different formative styles and painting materials, carry distinct focuses in ideological implications and cultural appeal. As a tool for art learning, AI can stimulate students’ innovative thinking and creative passion, boost their all-round individual development, and ultimately achieve the goal of individualized instruction.

2. Opportunities of the Times for AI-Empowered Senior High School Fine Art Education

In 2025, the Central Committee of the Communist Party of China and the State Council issued the Outline of the Plan for the Construction of China into an Education Powerhouse(2024–2035),which advocates “implementing the national strategy for digital education and promoting the transformation of AI-driven education”.^[8]The policy document not only charts a blueprint for the future development of China’s education sector, but also entrusts frontline educators with historic responsibility and the mission of the times.

Specific AI-assisted teaching applications include: AI-assisted micro-lesson production, where utilizing DeepSeek for intelligent script generation and CapCut for converting text and images into videos, teachers can record and produce the full painting process of traditional Chinese painting Plum Blossoms; VR panoramic immersive aesthetic education, where digital tools like Stable Diffusion reconstruct virtual dynamic panoramic scenes of Along the River During the Qingming Festival, allowing students to immerse themselves in the bustling life of the Northern Song Dynasty depicted in this millennium-old masterpiece; interdisciplinary integrated practice, which combines Doubao, CapCut and Jimeng AI to dynamically generate animated scenes of The Night Revels of Han Xizai, breaking the boundaries of time and space; text-to-image generation, which uses Canva to instantly generate visual images from text, helping students interpret brushstrokes and colors in Van Gogh’s painting Sunflowers.

By mastering the application of AI tools which require balanced coordination between technological rationality and human emotional interaction, and centering on the teaching, learning and assessment of fine art education, educators can cultivate students’ innovative practical abilities and aesthetic competencies, promote their all-round development, and achieve individualized instruction.

2.1 Constructing Ubiquitous Teaching Environment

Work in the artistic field generally involves explicit exploration and examination of identity and culture.^[9] Therefore, fine art education can be regarded as a practice oriented toward perception, experience and creation, whose activities feature individual-group interactions and the expansion of diverse scenarios. In 1991, Mark Weiser put forward the concept of ubiquitous computing, from which ubiquitous learning was derived. Ubiquitous learning indicates that with the support of various communication technologies, educators and students can carry out teaching and learning activities free from the restrictions of time, space and location. Against the backdrop of AI, fine art education breaks conventional physical limitations and gains extremely abundant ubiquitous teaching.

On the one hand, in terms of learning environments, fixed class hours and fixed classroom settings are no longer mandatory. Lifelong, fragmented, formal and informal art learning and practical activities can be conducted anytime and anywhere. Students may choose learning environments tailored to their personal will, interests and aptitudes, thereby creating open, free and diversified interactive teaching environments. On the other hand, in terms of learning content, AI provides multi-level and multi-stage ubiquitous learning materials, which greatly expand students’ horizons and facilitate remote interactive learning. Such resources not only satisfy the diverse demands of different students, but also enable differentiated and personalized transmission and generation of art knowledge. Interconnections among various techniques, painting styles, color combinations and art tools expand teachers’ instructional space, arouse students’ enthusiasm for learning and broaden their horizon.

2.2 Cultivating Intelligent Artistic Competencies

The core competencies of senior high school arts consists of four dimensions: artistic perception, creative expression, aesthetic taste and cultural understanding. Intelligent technological tools serve as a vital driving force in nurturing these competencies. Building upon the creation and sharing of original narrative art, conducting in-depth and sustained creative practice with diversified media tools and artistic imagination constitutes a crucial path to the formation of art competency. Intelligent technologies can effectively optimize teaching methods and forms.

With knowledge logic frameworks sorted and collected by AI, students can trace back to the origins of art knowledge and examine the nuanced brushstrokes, structural compositions and historical and cultural contexts of artworks in detail. Supported by sufficient data and objective evidence, students engage in artistic perception from both macro and micro

perspectives. It enables students to analyze and explore creators' underlying expression and intentions embedded in their works, learn from the creative ingenuity and techniques of masterpieces, and accumulate and internalize profound emotional experiences that transcend conceptual articulation and exhaustive description.^[10]

Taking Mona Lisa, a Renaissance classic, as an example. Students can explore its creative context and technical applications: Leonardo simulated atmospheric light scattering based on optical principles to craft the painting's enigmatic smile, whose dynamic visual effects emerges from the interaction between psychology and visual perception. Relying on multi-dimensional AI application scenarios including intelligent assistants, AI image generation, video synthesis, image processing and human-machine dialogue, students integrate aesthetic exploration with cultural inheritance to deeply interpret the emotional connotations carried by objects and environments that balance practical functions and aesthetic appeal.

The ecological reconstruction of "human-machine integration" between technology and art helps break the algorithmic inertia of generative AI. By developing human-machine collaboration capabilities, understanding AI technologies and mastering interactive skills, students can advance the mutually beneficial coexistence of art and technology.^[11] After AI tools reconstruct and interpret classic artworks, students integrate personal imitation and creativity. Through human-machine interactive collaboration, they can form individualized artistic perceptions and understandings, recognize the cultural connotations and unique charms of traditional arts, and utilize diverse tools and artistic languages to achieve individualized and diversified fine art education. Ultimately, students gradually develop intelligent art competency that combines traditional aesthetic sensibilities with technological thinking.

2.3 Supporting Diversified Evaluation Mechanisms

In April 2025, the Opinions of the Ministry of Education and Nine Other Departments on Accelerating the Advancement of Educational Digitization clearly put forward the goal of "fully advancing intelligentization to empower the reform of educational evaluation".^[12] Generative AI refers to a technology that leverages deep learning algorithms and complex neural networks to simulate human cognitive mechanisms for creative content generation. It comprehensively surpasses existing evaluation indicators and helps evaluation reform break away from the predicament of "superficial digitalization".^[13]

For instance, when students imitate A Thousand Li of Rivers and Mountains which is a colour-and-link painting on silk, AI technology adopts image recognition to diagnose more details including color gradients, line fluency and compositional proportions, and generates evaluation reports targeting their techniques in applying green-and-blue pigments and outlining rocks. The fundamental philosophy of arts curricula lies in fostering students' all-round development and satisfying individual needs. Essentially, evaluation serves to refine human activities and reflects the self-awareness and reflective nature of humans.

^[14]Traditional evaluation in fine art education heavily relies on subjective judgment from teachers. Evaluation dimensions are determined entirely by their personal experience, knowledge and background, leading to limited assessment perspectives. Such evaluation overemphasizes scores and grades while obscuring the fundamental educational goal of fostering individuals. AI constructs human-machine interactive evaluation agents, integrates perceptual information through multimodal data fusion, and achieves continuous optimization and revision based on multi-dimensional dynamic trajectory feedback.

Human-machine collaborative evaluation operates on two levels: interactive evaluation between teachers and students, and negotiated evaluation supported by AI tools like Zhinan AI and ClassIn. Arts teachers deliver value guidance and dynamic analytical evaluation by combining their professional literacy with objective data. Meanwhile, students engage in deep learning, practicing demonstration, imitation, and reflective evolution with "virtual peers." This creates a diversified evaluation cycle consisting of task participation, intelligent agent analysis, feedback delivery, feedback reception, in-depth discussion with intelligent agents, and content revision.^[15]

After students completing imitation of A Thousand Li of Rivers and Mountains, the intelligent agent generates visual reports through image recognition to analyze layered application of blue-green pigments and texture strokes of mountains and rocks. Educators then provide supplementary feedback, evaluation and revision concentrating on artistic conception and cultural connotation. The organic integration of educators' guidance in humanistic aesthetic and quantitative visual analysis powered by intelligent technology, enables evaluation to truly return to its core mission of fostering individuals.

3. Practical Pathways for AI-Empowered High School Fine Art Education

The integration of AI into teaching and learning of senior high school fine arts education injects new momentum into breaking developmental bottlenecks and advancing high-quality education. Centered on the core competencies of fine arts education, AI can construct diverse problem-based learning contexts and support students to carry out problem-solving practical exploration as well as interdisciplinary learning amid complex society.

Advancements in AI technology bring challenges to address while opening up new possibility for educational progress.^[16] Fine arts education should prioritize authentic artworks and the identity construction. Taking technology as a supportive instrument, educators can deepen high-level educational connotations, cultivate top-tier innovative fine arts talents equipped with refined aesthetic vision and a strong sense of social responsibility, and facilitate the reshaping of educational values and the upgrading of pedagogical paradigms for fine arts education in the intelligent education era.

The in-depth integration of technological tools and instructional scenarios inevitably drives the iteration of teaching paradigms in three dimensions. First, teachers leverage abundant cases and resources from generative AI to provide support. Second, students engage in secondary creation based on their original artworks and AI-generated visual works, through which they strengthen critical thinking and interdisciplinary application skills. Third, generative AI can intelligently recommend customized fine arts learning activities and evaluation methods according to the complexity of teaching objectives and students' development levels. For instance, exploratory hands-on activities will be recommended for skill-based fine arts objectives, paired with assessment of students' performance and individualized conversational evaluation,^[17] thereby achieving the integration of teaching, learning and assessment empowered by AI.

3.1 Enhancing Teachers' Capabilities in Technology Application

Teachers ought to develop critical thinking regarding the use of technology, and skillfully leverage intelligent systems to break the spatial constraints and resource barriers of traditional teaching, while firmly adhering to the intrinsic values of education.^[18] As fine arts teachers keep pace with the evolution of the times, they must possess sharp insight, receive systematic training and conduct in-depth research on artificial intelligence technologies, so as to accurately grasp the latest applications and development trends of AI within fine arts education.

In the application of generative AI and prompts to fine arts teaching, it is crucial to guide the generation of artworks aligned with "Big Ideas" and core competencies. Taking *The Foolish Old Man Who Removed the Mountains* by Xu Beihong from Unit 6 (Modern Chinese Fine Arts) of the PEP textbook as an example. Prompts can incorporate the historical background and regional culture of that era. They can also highlight specific techniques, like lines and brushstrokes, as well as panoramic composition and tonal atmosphere. A sample prompt could be: "Imitate the ink wash painting style of Xu Beihong's *The Foolish Old Man Who Removed the Mountains*. Adopt a panoramic composition, outline the background with dark ink, and use vigorous lines to create stark contrast between the density and shade of ink."

Diversified and personalized prompts cater to students' individualized learning demands. An enlightening and step-by-step approach stimulates students' imagination, enables them to connect with the original artist, and evokes emotional resonance. The process also reshapes the role of teachers, shifting them from mere "technique demonstrators" to "competency cultivators". For instance, Jimeng AI can rapidly generate artworks in the style of Xu Beihong's *The Foolish Old Man Who Removed the Mountains*. Nevertheless, teachers remain irreplaceable in providing targeted guidance covering cultural identity and interdisciplinary integration of history, geography and other subjects, to interpret the spiritual symbolism, humanistic sentiments and emotional connotation embodied in the works. Centered on fostering students' aesthetic accomplishment, creative thinking and emotional expression, such guidance empowers students' artworks to bear distinctive imprints that reflect the warmth, ideology and spiritual stature of the AI era.

3.2 Cultivating Students' Competencies in Autonomous Learning

In the intelligent era, students' dominant position stands out more prominently. Adaptive learning programs keep growing in number and functionality, making learning resources easier to share and capable of catering to students' personalized learning preferences and demands.^[19] Empowering students to acquire competencies through hands-on creation lies at the core of the curriculum reform for senior high school fine arts education.

From the perspective of providing learning environments, artificial intelligence facilitates the circulation and aggregation of high-quality resources, boosts cross-space and cross-regional communication among students, thereby injecting new impetus into the realization of educational equity. Powered by intelligent technology platforms, students shift from passive subjects to active initiators, laying a solid foundation for fostering talents with all-round development of morality, intelligence, physical fitness, aesthetic taste and labor education.

Intelligent human-machine collaboration will redefine senior high school fine arts education. For instance, scripts generated by DeepSeek and processed through CapCut can streamline the complicated production of fine arts micro-lessons. Meanwhile, VR and AR technologies deliver new scenarios for embodied experiences in online fine art exhibition halls. Take the lesson Sculpture Art from Unit 3 of the PEP textbook as an example. VR technology allows students to immerse themselves in virtual visits to art museums, galleries, the Longmen Grottoes in Luoyang and other art sites. Within the authentic three-dimensional environments built by AR technology, students can directly perceive and comprehend the spatial dimensions, structural relations and sculptural materials of iconic artworks, such as the Terracotta Army of Emperor Qin Shi Huang, the Monument to the People's Heroes and the Grand Vairocana Buddha.

Fine arts students need to master human-machine collaborative learning strategies, engaging in deep processing of knowledge through interaction with technology and cultivating critical thinking. By participating in collaborative fine arts practices on AI platforms, students gradually develop cultural awareness and foster the artistic contexts of painting during creative creation, which are similar to professional artists. The application of artificial intelligence cultivates students' autonomous learning competence and strengthens their internal learning motivation, transforming the traditional fine art classrooms from "single-dimensional spaces" into "integrated learning environments."

3.3 Prudent Engagement with the Evaluation of Intelligent Technology

The empowerment of digital technology can bring revolutionized transformations to educational evaluation, enabling accurate and scientific depiction of a "holographic image" of evaluation subjects.^[20] Admittedly, evaluation based on intelligent technology features its real-time responsiveness and precision. The fundamental task of education is to cultivate virtue and nurture individuals, while fine arts education aims to impart fine arts knowledge, train practical skills, cultivate aesthetic literacy, boost creativity and inherit humanistic spirit. Intelligent technological evaluation tends to adopt simplistic and efficient methods to select what Foucault called "newly invented scoring products" — "digital humans". Stripped of truth, goodness, beauty, and the flesh-and-blood emotions that define a real person, education would lose all its value. To actively guide the rational application of intelligent technologies and ensure technological progress benefit teachers and students,^[21] we must remain vigilant against the risk of templated evaluation brought by intelligent technology.

Artificial intelligence technology can conduct data analysis from multiple dimensions including line application, light and shadow processing, color tendencies and structural design, and rapidly generate instructive and improvement-oriented feedback for artworks. During teaching and painting practice, it can also analyze students' creative trajectories such as their conceptualization, material selection, modification processes, thereby fully compensating for the limitations of formative assessment. Humans bear cultural attributes. The emotional expression and creative manifestation in art inherently rely on certain humanistic literacy and emotional depth, where intelligent technologies inevitably prone to biased judgments. As art education is a field characterized by implicit representations, the standardized metrics generated by AI carry risks of confining students' personal development and stifling their individuality.

An evaluation community of "teachers – machines – students (peers)" should be constructed to clarify boundaries within the system: teachers provide guidance, students engage in reflective development, peers offer collaborative support, and intelligent technology delivers auxiliary coordination. The interactive operation of this evaluation community that integrates technological rationality and educational sensibility can truly realize a new paradigm of fine arts education empowered by technology.

4. Conclusion

Artificial intelligence (AI) has brought numerous opportunities for the development of senior high school fine arts education. Taking senior high school fine arts PEP textbooks as the basis, the paper systematically explores the application of AI in

senior high school fine arts education. The systematic integration of AI into high school art education empowers artistic expression and aesthetic innovation. Through the optimization of teaching resources and the creation of immersive learning environment, AI helps cultivate students' humanistic literacy and enhance teachers' pedagogical skills.

Clarifying the value and practical pathways of AI-empowered fine arts education helps promote and highlight the educational mission of fine arts education in the new era. Oriented toward building efficient classes, diversifying learning modes, enabling dynamic learning tracking and conducting rational evaluations, such practices facilitate the realization of educational goals centered on students' personalized growth and all-round development. Meanwhile, we need to rationally examine the evolution arising from the integration of technological rationality and humanistic sensibility, pursuing a dynamic balance between technological empowerment and humanistic guidance.

Upholding the essence of education through the philosophy of symbiosis, we can transition teachers and students from "technological anxiety" to "ecological balance." Looking ahead to the in-depth integration of technology and education, we can drive AI to better serve the long-term development of the education, through defining it as a vital auxiliary tool that empowers senior high school fine arts education.

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