

Potential Risks and Countermeasures of Artificial Intelligence in Teaching: A Case Study of High School Art Education

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Abstract. Artificial intelligence offers new resources for image generation, feedback, and lesson preparation in high school art education, while also raising questions about the purposes and processes of artistic learning. Focusing on this teaching context, this paper discusses potential risks and corresponding educational responses. Four concerns structure the analysis: weakening students' innovative thinking and practical skills, reducing teacher autonomy, widening inequalities in access to learning resources, and privileging standardized visual perfection over diverse aesthetic values. The paper proposes clear boundaries for AI use, continued emphasis on hands-on artistic practice, development of teachers' digital literacy and professional judgement, more equitable provision of resources, and teaching that encourages aesthetic diversity. It argues that AI should support students' creative agency and teachers' educational judgement within a practice-based approach to art learning. The proposed responses require adaptation to local teaching conditions and further evaluation in classroom practice.

Keywords: artificial intelligence, high school art education, creative thinking, teacher autonomy, educational equity, aesthetic education.

1. Introduction

In recent years, artificial intelligence (AI) has been reshaping the field of education. AI painting tools such as Midjourney and Stable Diffusion, along with domestic intelligent drawing platforms and AI grading systems for art, have gradually entered high school art classrooms. High school art education focuses on cultivating students' innovative thinking, aesthetic literacy, and emotional expression abilities. Unlike more objective subjects, the integration of AI and art education has always been controversial. While AI can help students complete works quickly and increase their learning interest, over-reliance may weaken students' practical skills and stifle their motivation for innovation. This paper takes high school art teaching as the research context, analyzes the potential risks in the application of artificial intelligence, and proposes corresponding countermeasures.

2. Potential Risks of Applying AI to High School Art Teaching

2.1. Weakening of Students' Innovative Thinking and Practical Ability

Regarding the impact of AIGC on learners' creation, Mao, Long, and Li [1] found through empirical research that although the AIGC environment helps stimulate learners' imagination, emotional expression, and visual aesthetic abilities, attention must also be paid to the learning process, strengthening the cultivation of students' critical thinking and avoiding the mental laziness brought by over-reliance on technology. Similarly, Habib, Vogel, Anli, and Thorne [2] conducted a mixed-methods study using the Alternative Uses Test (AUT) in a college-level creativity course and found that while generative AI has the potential to support creative thinking, it can also negatively impact students' creativity and creative confidence, particularly in terms of divergent thinking abilities such as flexibility and originality. In the long run, without proper guidance, students may lose their initiative in independent thinking and hands-on creation, and their works may lack emotional depth and personal style.

Take a thematic art class "My Hometown" as an example: students who used AI to paint produced works that had no emotional connection to their hometown; in contrast, hand-drawn works, even if technically immature, were full of genuine emotion and unique creativity.

2.2. The Tension Between AI Tools and Teacher Autonomy

In the traditional art teaching system, teachers rely on their own professional competence to participate in the entire teaching process: observing students' drawing states, interpreting their creative ideas, providing individualized guidance, and making comprehensive evaluations based on artistic connotations. This series of tasks is the core embodiment of teachers' professional value and autonomy.

However, with the popularization of AI, grading systems and intelligent lesson-preparation tools are now widely used due to their efficiency and convenience, which has given rise to a number of practical problems. Looking at the causes: on the one hand, daily teaching affairs are complicated, and some teachers habitually rely on AI to complete routine tasks such as grading and lesson preparation in order to reduce working hours and workload; on the other hand, the standardized and process-oriented operation mode of intelligent tools gradually weakens teachers' ability to think independently and make professional judgments, leading to technological dependence over time. But AI can only perform quantitative scoring based on fixed algorithms; it cannot perceive the creative concepts, emotional temperature, or personal characteristics behind a painting. If machine evaluation is taken as the sole criterion, students' individual differences will be ignored, completely departing from the humanistic and individual-oriented nature of art education.

In lesson preparation, some teachers directly use AI-generated lesson plans and courseware without reworking them according to the actual situation of their classes and students' characteristics. Such templated content lacks specificity and flexibility, not only gradually eroding teachers' unique teaching styles but also continuously diminishing their core abilities in curriculum design and teaching innovation. At the same time, face-to-face communication between teachers and students around the creative process is decreasing, whereas emotional interaction and intellectual communication are important components of art education. This change also hinders the development of students' artistic literacy and mental health.

Regarding the relationship between AI and teacher development, there are sharply different views in academia. Some scholars hold a positive attitude, believing that AI can undertake mechanical, repetitive basic tasks, effectively freeing teachers from tedious chores and allowing them to devote more time and energy to higher-order educational tasks such as guiding thinking, shaping values, and providing artistic edification, thus truly returning to the essence of education. However, in the practice of high school art teaching, this ideal situation has not been fully realized: the high efficiency of AI, which should have been a help to teachers, has instead become a factor encroaching upon teachers' professional autonomy. This also reveals a deep-seated contradiction: AI's logic of pursuing efficiency and standardization conflicts with the professional requirements of art teaching, which emphasize individualization, humanism, and creativity. How to reasonably use the efficiency advantages of AI while safeguarding teachers' professional autonomy, so that technology truly serves higher-order teaching, is a problem that must be faced and solved in current art education.

2.3. Exacerbating Educational Inequality and Creating a Digital Divide

The application of AI in high school art teaching further widens the educational gap. Using AI painting tools and related teaching resources requires smart devices, a stable internet connection, and basic operational skills. There are significant differences in the resources accessible to students from different family backgrounds. Students from affluent urban families can easily use various AI painting tools and receive relevant guidance, while students from rural areas and economically disadvantaged families often lack the necessary conditions. This not only causes unfair evaluation but also dampens the learning enthusiasm of disadvantaged students. Even among students who can use AI tools, their levels of proficiency vary. As Bulathwela, Pérez-Ortiz, Holloway, Cukurova, and

Shawe-Taylor [3] argue, the discourse that AI alone will democratise education is deeply problematic, as millions of students around the world remain excluded from these technologies due to existing digital divides and socio-economic inequalities. If this trend continues, the large-scale popularization of AI in education will further deepen these disparities, ultimately hindering students' artistic development and affecting their future opportunities for further education and career advancement.

2.4. Deviation in Aesthetic Values and Over-Pursuit of "Visual Perfection"

AI works are generated based on massive amounts of existing art data, mostly catering to mainstream aesthetics. They generally feature "visually perfect" effects but lack personalized expression. Long-term exposure to such works can distort students' aesthetic judgment, causing them to equate "visual perfection" with "excellent work" while ignoring the emotions, thoughts, and personal charm behind the works. High school art education aims to cultivate students' diverse aesthetic abilities, but it is difficult for AI to produce works with unique styles and artistic breakthroughs. Research has pointed out that the impact of AI painting on art discipline literacy is reflected in many aspects, including image reading, artistic expression, aesthetic judgment, creative practice, and cultural understanding. While AI provides new creative tools, it may also lead to the simplification of students' aesthetic judgment [4]. If students rely too much on AI creation, they will gradually lose the ability to appreciate and create non-mainstream and personalized works, forming a single and rigid aesthetic concept. At the same time, the psychological suggestion brought by AI's "perfect works" can also cause students to feel anxious about hand-drawn creation, reduce their enthusiasm for learning, and even negatively affect their mental health.

3. Countermeasures for AI Risks in High School Art Teaching

3.1. Defining Clear Boundaries for AI Use and Adhering to Practice-Based Teaching

To prevent AI from weakening students' innovative thinking and hands-on ability, schools and teachers need to clearly define the boundaries of AI use from three aspects: classroom rules, curriculum design, and homework assessment, making hands-on practice the core of basic art teaching. In basic skill courses such as calligraphy, traditional Chinese painting, sketching, watercolor, and color composition, teachers should explicitly require students to independently complete the entire hand-drawn process of outlining, shading, and coloring. Students may use AI tools to generate the visual effects they have in mind, but the final work must be drawn by the students themselves.

In creative courses, a human-AI collaboration model of "AI inspiration + hand-drawn implementation" should be promoted. The use scenarios of tools should be refined: AI is only allowed to generate multiple visual reference images and expand creative ideas during the initial conception stage. After organizing their inspiration, students must reconstruct the image based on their own ideas and complete the final work in hand-drawn form. In exploring teaching methods that integrate AI technology into high school art classes, Huang, Y. [5] pointed out that teachers should reasonably control the extent of AI use in the classroom, positioning AI as an auxiliary tool rather than a substitute, and focus on strengthening students' hands-on practice and creative implementation abilities. Drawing on project-based learning concepts, thematic assignments such as "AI inspiration + hand-drawn creation" should be regularly set, requiring students to submit three pieces of material simultaneously: AI reference sketches, hand-drawn final works, and a reflective report on their creative process, forcing students to distinguish between "tool reference" and "independent creation." At the same time, the proportion of practice-oriented courses such as outdoor sketching and mixed-media creation should be increased, with at least four cross-thematic hands-on activities organized each semester. Students are encouraged to try various techniques such as watercolor, printmaking, and mixed-media collage, helping them hone their hand-drawing skills and develop personal artistic styles.

Analysis of strategy limitations: This solution faces multiple practical obstacles in implementation. First, verification is difficult; currently, there is no mature technology to accurately distinguish

between hand-drawn works and AI-modified works. Relying solely on teachers' visual judgment and process records makes it hard to prevent students from later using AI to retouch or refine their works, leaving loopholes in supervision. Second, students' willingness to comply varies; some students who have long relied on AI for efficient output may resist hand-drawing training, increasing the difficulty of classroom management. Third, differentiated instruction is difficult to implement; for students with weak drawing foundations, completely restricting AI use may undermine their creative confidence, and a uniform set of usage rules cannot accommodate the learning needs of students at different levels.

3.2. Enhancing Teachers' Digital Literacy and Maintaining Subjective Evaluation as the Core

Teachers are key agents in balancing AI and art teaching. Schools need to build a systematic, regular AI literacy training system, abandoning scattered short-term lecture formats. Referring to the digital competence framework for art teachers proposed in the literature, training should be stratified around four modules: tool operation, instructional design, evaluation logic, and ethical awareness. Compulsory courses should be offered to all art teachers, explaining the algorithmic logic and application boundaries of mainstream AI painting tools and intelligent grading systems. Advanced seminars should be held for key teachers, focusing on skills such as AI resource filtering, secondary development of personalized courseware, and design of human-AI collaborative classrooms. At the same time, a mentoring mechanism should be implemented, whereby younger teachers with higher digital literacy help middle-aged and older teachers, thereby improving the overall AI application level of the teaching group.

In terms of teaching evaluation, a diversified evaluation system with process-oriented evaluation as the mainstay and AI evaluation as a supplement should be strictly implemented, reversing the current situation of relying solely on machine scoring. According to the theory of AI-integrated teaching, the evaluation index system for art works should be reconstructed, with the following weights: creation process (40%), creative conception (30%), emotional expression (20%), and technical presentation (10%). AI scoring is only used as a reference for the technical dimension. In the classroom, group peer evaluation and one-on-one teacher-student communication sessions should be added. Teachers provide personalized written comments based on students' creative states and stories behind the works, focusing on interpreting the emotions and thoughts behind the works. In lesson preparation, teachers are explicitly required to use AI only for basic tasks such as collecting materials and organizing templates. All lesson plans and courseware must be reworked based on class conditions and student characteristics. Quarterly lesson plan evaluations should be conducted to prevent direct use of AI templates. In addition, a regular teaching reflection system should be established, where teachers record their experiences with AI tools each month, identify problems in technology application, and discuss improvements collectively.

Analysis of strategy limitations: First, training resources are unevenly distributed. Due to funding shortages and a lack of professional instructors, county and rural high schools have difficulty conducting high-quality, sustainable AI literacy training, so teachers' digital capabilities improve slowly. Second, workload increases further. Tasks such as diversified evaluation, secondary creation of lesson plans, and process recording significantly increase teachers' workload. In the high school stage, where exam pressure is high and class hours are tight, teachers may perform these tasks perfunctorily. Third, the threshold for understanding algorithms is high. Most art teachers lack computer-related knowledge, making it difficult to deeply identify algorithmic flaws in AI scoring. They cannot accurately judge the unreasonable aspects of AI evaluation results and remain passively influenced by machine evaluation.

3.3. Bridging the Digital Divide and Ensuring Educational Equity

Efforts should be made to promote the balanced distribution of AI art resources and protect the learning rights of all students. In terms of hardware, education authorities should coordinate funding to uniformly equip all high school art classrooms, both urban and rural, with smart tablets, network equipment, and compliant AI painting tools. A classroom-focused use system should be implemented,

stipulating that AI tools are only used in art classes and after-school club activities, completely solving the problem of students from less affluent families having no access to equipment. At the same time, relying on the National Smart Education Platform for Primary and Secondary Schools, free AI art teaching resource libraries should be integrated, enabling cross-regional sharing of quality resources and making up for the resource shortage of rural schools.

In terms of skills training, AI art basic public welfare classes should be offered during after-school service hours, one hour per week, providing tool operation instruction to all students, with a focus on one-on-one tutoring for rural students, left-behind children, and students from economically disadvantaged families, ensuring that all students master basic operational skills. In terms of evaluation mechanisms, the assessment criteria for art works should be comprehensively adjusted, greatly reducing the weight of "visual perfection" and focusing instead on the three dimensions of creative expression, emotional communication, and hands-on practice. Schools should set up special awards such as "Creative Star" and "Genuine Creation Award" to specifically recognize hand-drawn works that are simple in style but full of genuine emotion, mitigating the unfair evaluation caused by AI's "perfect vision." In addition, urban-rural pairing exchange activities should be carried out between schools, organizing joint AI-assisted creation projects for urban and rural students to promote resource and experience sharing.

Analysis of strategy limitations: First, hardware maintenance costs are high. Smart devices, network systems, and AI platforms require continuous funding for operation and maintenance. Schools in economically underdeveloped areas have great difficulty bearing these long-term costs, and equipment may become idle or damaged without repair. Second, the usage time is limited. AI tools can only be used on campus during class, and students cannot practice after class, so their operational proficiency improves slowly. There remains a gap compared to students who have equipment at home. Third, resource adaptability is insufficient. General-purpose AI painting tools are biased toward mainstream aesthetics and lack materials that fit local culture and regional characteristics. Rural students find it difficult to use AI to complete locally themed creations, so the effectiveness of resource universal access is compromised.

3.4. Establishing Correct Aesthetic Concepts and Cultivating Diverse Aesthetic Literacy

To correct students' one-sided pursuit of "visual perfection," schools need to build a three-pronged aesthetic cultivation system consisting of curriculum integration, comparative appreciation, and ethical guidance.

First, strengthen regular art appreciation courses, expand the appreciation material library, and add works of diverse styles such as traditional ink painting, folk art, abstract art, and niche avant-garde art. Arrange one hour of thematic appreciation per week, guiding students to understand that "technique, style, emotion, and artistic conception" together constitute artistic value, breaking the single cognition that "good looks equal good work."

Second, offer an elective course on AI art aesthetics and ethics (no less than 16 credit hours per semester), explaining the generation logic, homogenization defects, and creative limitations of AI works through case studies. Design fixed classroom activities, such as group comparative appreciation of AI works, student hand-drawn works, and classic works by famous artists on the same theme, and organize debates on "Can AI art replace hand-drawn art?" to guide students to view AI's visual effects dialectically.

Third, strengthen emotional expression guidance in creative classrooms. Using life-themed topics such as "My Hometown" and "Campus Life," require students to paint based on their own real experiences. Teachers actively identify and publicly affirm the personalized expressions in students' works, helping students build confidence in hand-drawn creation. At the same time, link with campus cultural activities by holding a "hand-drawn first, AI as supplement" creative art exhibition each semester, displaying purely hand-drawn works and human-AI collaborative works in separate sections, visually presenting the artistic characteristics of the two forms of creation, and guiding students to choose their creative methods rationally. In addition, integrate digital copyright education,

explaining the copyright disputes and risks of misuse of AI-generated works, standardizing students' use of AI, and establishing correct digital art ethics.

4. Conclusion

The integration of AI and high school art education is an inevitable trend in the development of education in the digital age. New technologies represented by AI painting, intelligent grading, and assisted lesson preparation have entered art classrooms. On the one hand, they enrich teaching forms, broaden creative boundaries, and inject new vitality into high school art education; on the other hand, they give rise to many practical risks: the gradual weakening of students' innovative thinking and practical ability, the impact on teachers' professional autonomy, the widening digital divide due to regional and family differences, and the distortion of students' value orientation by mainstream algorithmic aesthetics. These problems are essentially conflicts between technological efficiency and the essence of art, tool application and humanistic cultivation, and resource universal access and educational equity. They are also common difficulties faced in the digital transformation of primary and secondary school art education.

Facing a situation where opportunities and challenges coexist, we should neither blindly reject AI nor allow its disorderly and excessive use. In response, this paper proposes systematic solutions from four dimensions: teaching practice, teacher development, resource balance, and aesthetic cultivation. By defining clear boundaries for AI use and adhering to hands-on practice as the foundation, we protect students' creative abilities and innovative thinking. By building a regular training system and reconstructing diversified evaluation standards, we strengthen teachers' digital literacy and professional dominance. By coordinating hardware resources, popularizing digital skills, and optimizing evaluation rules, we gradually narrow the digital divide and safeguard educational equity. By improving appreciation courses, offering specialized classes, and carrying out thematic activities, we guide students to form diverse and healthy aesthetic concepts.

At the same time, it must be objectively recognized that each countermeasure has practical limitations in implementation. Difficulties such as identifying works, uneven urban-rural resources, insufficient teacher capabilities, and the stubbornness of students' existing aesthetic concepts will all constrain the effectiveness of governance. This means that the standardized application of AI in art education cannot be achieved overnight; it requires long-term exploration and dynamic adjustment through the collaboration of schools, teachers, and education authorities.

The core of art education is always nurturing people. Its fundamental goal is to cultivate students' artistic creativity, emotional expression ability, and humanistic literacy -- things that algorithms and AI cannot replace. In the future, as AI technology continues to iterate and upgrade, high school art teaching will face more new changes and challenges. Educators need to stay true to the original aspiration of art education, rationally assess the value of technology, and find a balance in human-AI collaboration: let AI become an auxiliary tool to inspire inspiration and enrich the classroom, rather than a subject that dominates creation and replaces thinking. Only by leveraging advantages and avoiding disadvantages can digital technology truly serve the development of art education, and can we find a balanced development path between technological innovation and humanistic heritage, ultimately cultivating a new generation of young people with solid artistic skills, independent innovative thinking, and profound humanistic feelings.

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