

EXPLORE THE APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN ART TEACHING AND CREATION

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Abstract: Artificial intelligence (AI) technology, with its powerful computational and data processing capabilities, offers new possibilities and opportunities for art education and creation. It not only revolutionizes traditional art education but also significantly enriches the methods and forms of artistic expression. By examining recent studies on the application of AI technology in art education and creation, this exploration seeks to discuss its current development, application models, challenges, and future trends. The aim is to provide a reference for further exploration in this field and to offer practical approaches for enabling the digital transformation of aesthetic education through AI technology.

Keywords: Artificial Intelligence (AIGC); Art education; Educational teaching; Applications

1 INTRODUCTION

In the context of this study on the application of artificial intelligence (AI) technology in art education and creation, the term "application" is defined by the author as the process of utilizing theoretical knowledge or technical methods in specific practical contexts to solve real-world problems, enhance productivity, and create value. This process is characterized by its strong precision, relevance, and purposefulness. Researching the application of AI painting technology in art education and creation aligns with the practical needs of societal development. It keeps pace with the new standards introduced in the updated curriculum guidelines for high school art education, making teaching more intelligent and convenient. Furthermore, AI technology is leveraged to strengthen the unique educational functions of art as a discipline, innovate teaching models, improve learning outcomes, cultivate artistic skills, and foster a deep appreciation for art as a field of study.

2 THE ROLE OF ARTIFICIAL INTELLIGENCE IN ADVANCING AESTHETIC EDUCATION

In recent years, artificial intelligence (AI) has gradually become a focal point of attention across various industries and research fields. With its advantages in intelligent technology and continuous updates and iterations, AI has progressively penetrated and transformed numerous sectors, demonstrating vast potential for applications and scenarios.

In the field of education, the State Council's *New Generation Artificial Intelligence Development Plan* proposed that "by 2025, certain AI technologies will reach a world-leading level, and by 2030, China will become a major global AI innovation center. Intelligent technologies should be utilized to accelerate the reform of talent cultivation models and teaching methods, building a new education system that includes intelligent and interactive learning... and promoting the comprehensive application of AI in teaching, management, and resource development [1]."

In 2018, the Ministry of Education issued the *Education Informatization 2.0 Action Plan*, which called for "using emerging technologies such as artificial intelligence, big data, and the Internet of Things as a foundation, relying on various intelligent devices and networks, and actively conducting innovative research and demonstrations on smart education to drive the transformation of education models and the reconstruction of education ecosystems underpinned by new technologies."

With its "intelligent substitution" capabilities and the national policy push for digital transformation in education, AI has become a key focus in both educational practice and theoretical exploration. In the context of art education and creative applications, AI demonstrates immense potential, making it a significant subject in the development of art education.

2.1 Having Revolutionized the Teaching and Learning Model

The current artificial intelligence technology and algorithms of the rapid improvement, through the input of keywords and its per second calculation processing and learning of data volume is increasingly large, AI painting technology development is becoming more and more mature, in the discipline of art teaching in the application of the gradual increase in the teaching mode of teaching and learning to promote the innovation of the teaching mode, for the application of AI technology in the teaching mode of art education, many scholars have carried out the exploration. For example, Yatian Liu (2024) explored the application of AI technology in secondary school art subjects [2], taking the Shanghai area as an example, she pointed out that AI technology provides students with personalized learning resources and feedback in teaching through personalized learning path recommendation and intelligent assessment system, which effectively enhances the students' learning interest and efficiency, and this research provides a practical case for the popularization of AI in art education; Ji Yi et al. (2022) proposed a personalized painting education model based on

artificial intelligence that [3], analyzing students' learning habits and levels through AI technology and providing personalized learning programs, greatly improving the relevance and effectiveness of art teaching; in addition, Dejian L (2019) pointed out in the study [4], artificial intelligence empowers the transformation of talent cultivation in colleges and universities, and realizes the optimal allocation of teaching resources and intelligent management of the learning process through intelligent assisted teaching systems and online learning platforms. The above is a series of technological innovations brought by artificial intelligence in teaching, each with its own characteristics applicable to different teaching environments, AIGC can undoubtedly assist teachers to carry out more accurate teaching assessment and feedback, and provide more flexible and diverse teaching modes and learning experiences for art education.

2.2 Enhancing the Effectiveness of Teaching and Learning

Weiming D (2024) explored the evaluation of the teaching results of painting education and digital aesthetic education in the context of the era of generalized artificial intelligence [4], and he proposed that AI technology can provide a more objective and comprehensive evaluation of the teaching results through the analysis of big data, which can help to improve the quality of teaching; Jing J and Runzhou L (2024) take "elementary school art" as the center of investigation [5], analyze the connotation, hidden worries and transcendence path of art intelligent evaluation, and provide a new perspective and method for the quantitative evaluation of art literacy, they think that although the AI evaluation system can improve the accuracy of evaluation, there are also hidden worries such as neglecting the cultivation of students' creativity, which need to be paid attention to in the use of educators. educators to pay attention to in their use, and this research helps us to assess students' art learning outcomes more scientifically and objectively; Jin L (2024) explored the application of image generation technology in the education of art courses [6], pointing out that the technology can provide students with more intuitive and vivid learning materials, and stimulate students' learning interest and creativity; Lijing X (2024) [7], on the other hand, took Yancheng Early Childhood Normal Higher and Specialized School as an example to study the development of higher vocational art education curriculum based on the influence of artificial intelligence, which further verified the positive effect of technology integration on art education, and that the art teacher's intelligent education literacy is the key to promoting AI technology in art teaching; studied the application of artificial intelligence in elementary school art teaching, and realized interactive teaching, work evaluation and other functions through AI technology, which enhanced students' learning interest and participation.

In summary, we can find that many experts and scholars in the discussion of artificial intelligence and teaching effectiveness are relatively objective and rigorous attitude affirmed that AI has brought a lot of convenience in the improvement of teaching quality, scientific assessment of results, stimulate the interest of learning, integration of technological development, assisting in the design of teaching and learning, etc., but also put forward a higher demand for the coordination of the development of the teacher's knowledge of information technology, instructional design ability, student assessment ability and continuous learning ability and other intelligent literacy. However, it also puts forward higher requirements in coordinating the development of teachers' knowledge of information technology, instructional design ability, student assessment ability and continuous learning ability and other intelligent literacy. It is believed that artificial intelligence can bring breakthroughs in technology in this era, and Chat GPT makes this hope a reality. The emergence of AI technology has enriched art teaching resources. Through digitalization and intelligent means, teachers can obtain more diversified teaching resources, such as AI-generated images, videos and virtual reality scenes, etc., in order to adapt to the needs of teaching in the age of artificial intelligence and to enhance the art teaching ability, and at the same time, these resources can help students to expand their horizons and to enhance their practical and creative abilities.

3 ARTIFICIAL INTELLIGENCE TECHNOLOGY ENABLING THE DEVELOPMENT OF FINE ART CREATION

According to the discussion on the requirements of AI technology in art education in the White Paper on Art Education with Artificial Intelligence in China 2023, and the specific needs of the art discipline for the controllability, ease of use, and popularization of the new technology in teaching design and creative guidance, the establishment of AI disciplinarianization system has become the key to the in-depth integration of AI technology in the art teaching of the current colleges and universities.

3.1 Intelligence of Creation Tools

Colleges and universities can help students to obtain information on art theory, creative materials, creative styles and other materials by applying intelligent teaching systems and personalized learning paths. For example, Wei Wei (2024) examines the application of Mid journey in a surrealist fashion photography course [8], showing how AI technology can be used as a creative tool to provide artists with new inspirations and expressive techniques, this study reveals the great potential of AI technology in artistic creation; Zhichao C (2024) studied conceptual art creation based on the background of AIGC technology, pointing out that AI technology can generate rich image materials and creative inspirations, providing new possibilities for art creation [9], demonstrating the great potential of AI technology in the migration and generation of painting styles, and the students can input commands to flexibly create rich and colorful paintings in classroom learning; Fang L et al (2021) [10] further summarizes the new trend of educational evaluation,

and points out the application prospect of intelligent evaluation in art creation, including automatic scoring, sentiment analysis and other functions. The intelligence of the creation tool can analyze a huge amount of art works. Through deep learning, natural language processing and other technologies, the AI tool can understand the user's needs and automatically generate works that meet the requirements, such as articles, paintings, music works, etc., extracting the laws and characteristics of creation and providing inspiration for the artists. At the same time, it can also generate works with market prospects according to market trends and user preferences, seamlessly connect with other software and devices, and work together to improve the efficiency and quality of creation. It not only provides artists with a new creative medium, but also brings about profound changes in creative concepts and art forms, and promotes the diversified and intelligent development of art creation.

3.2 Diversity of Creative Styles

Another major application of artificial intelligence technology in art creation is style migration and generation. Through deep learning algorithms to diversify creative styles, AI can learn and mimic the styles of different artists to create works with unique styles. For example, Wu Qi (2024) proposed a new strategy for art teaching in the context of the rapid development of artificial intelligence [11], which includes the use of AI technology for style migration and creative exploration; Yangxin L (2024) analyzed the online and offline hybrid teaching mode of art class, pointing out that AI technology can optimize the teaching process to improve the efficiency of creation, and through the online platform and intelligent tools [12], it makes the creation styles diversified, so that the students can create anytime and anywhere, and the teachers can provide timely feedback and guidance.

3.3 Innovativeness of Creative Content

Artificial intelligence technology creation tools in the development of art, culture and industry are of great significance, and play a unique charm in aesthetic education. First of all, it breaks the limitations of traditional creation, making the creative content more diversified and rich, AI tools can explore new artistic styles and forms of expression, creating unprecedented works, expanding the boundaries of the arts and analyzing the cultural elements of different regions and nationalities to create works with cross-cultural characteristics, promoting global cultural exchanges and mutual understanding, AI creation tools can quickly generate a large amount of creative content to meet the market demand for fresh and unique content, promoting global cultural exchange and mutual understanding. By analyzing the cultural elements of different regions and nationalities, it creates works with cross-cultural characteristics, which promotes the exchange and mutual understanding of global cultures. AI creation tools can quickly generate a large amount of creative content to meet the market's demand for fresh and unique content, which promotes the development of the cultural industry to a higher level. For example, Qing Z and Yize L et al. (2024) discuss the cross-border application of AIGC technology in animation movie art design [13], showing how AI technology brings a new visual experience and narrative way for animation movies, and demonstrating the advantages of AI technology in enhancing the efficiency and creativity of art design; Guoxing A (2023) argues that AI has a subversive impact on art creation, and that it is not only capable of imitating human creative style [14], but also of imitating human creative style, which is the most important factor in the development of the cultural industry. human creative style, but also show unique innovativeness in the creative process. Jin W and Zhencheng S (2023) further explores artificial intelligence in contemporary art [15], analyzing the multiple roles and possibilities of AI in the creation and application of fine art.

Above all, the application of AI technology in art creation focuses on the intelligentization of creation tools, the diversification of creation styles, and the innovation of creation contents. Artificial intelligence technology can provide artists with the function of assisting creation and inspiration stimulation, and at the same time, it can also analyze a large number of art works and creation data through AI, and provide innovative, diversified and intelligent multi-channel content paths for art education.

4 CHALLENGES AND FUTURE TRENDS OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN ART EDUCATION AND CREATION

4.1 Challenges Faced

Although AI technology shows great potential and advantages in art education and creation, its development also faces many challenges. First of all, the ethical issues of technology are becoming more and more prominent, and how to ensure that the use of AI technology does not infringe on personal privacy or jeopardize the public interest of the society has become an urgent problem to be solved. Secondly, the conceptual change of educators and artists is also a major challenge, requiring them to actively embrace new technologies and adapt to new changes. Finally, the limitations of the technology itself should not be ignored, such as the lack of emotion and creativity in AI creation, and other issues still need to be further studied and resolved.

Although artificial intelligence technology shows great potential in art education and creation, how it can be better integrated with art is still a problem to be solved. For example, the College of Fine Arts of Guangdong University of Technology Normal has assisted in the design of the course "Landscape Thematic Design" by utilizing the Vineland graphic technology of Mid journey and Stable Diffusion for the course, which greatly It greatly improves students'

creative efficiency, design inspiration and practical ability. In the preliminary stage of teaching preparation, students were organized to collect resources: collect pictures, text descriptions, design cases and other materials related to landscape thematic design as input materials for the text-generated graphic technology; teachers introduced the basic operation and functional characteristics of Mid journey and Stable Diffusion to ensure that they can be skillfully used in the teaching process, designed targeted teaching cases and practical activities, and designed the teaching cases and practical activities to help students to create their own designs. Teachers introduce the basic operation and functional characteristics of Mid journey and Stable Diffusion software to ensure that they can be skillfully used in the teaching process, and design targeted teaching cases and practical activities to let students master the application of Vinnie's diagram technology in practice. Secondly, in the implementation of the teaching process, the basic principles, operation interface, core functions and other basic knowledge of Mid journey and Stable Diffusion are introduced in depth to analyze the application potential and advantages of the two software in landscape thematic design and stimulate the students' interest in learning. And show the existing landscape design cases, combined with Mid journey and Stable Diffusion images generated by the comparative analysis, so that students understand the specific application of the Venn diagram technology in landscape design, guide students to think about how to integrate the Venn diagram technology into their own design works, to enhance the creativity and expressiveness of the design. Teachers guide students to use Mid journey's cloud computing resources to quickly generate multiple styles of landscape design sketches, teach students how to achieve rapid switching and optimization of design styles through simple commands and parameter adjustments, and encourage students to constantly try to refine and improve their own design solutions with artificial intelligence technology. Guide students to download and install Stable Diffusion software (or visit its online platform), familiarize them with its technical and customized operation interface, teach students how to set detailed parameters and options to achieve fine control of landscape design details, and create highly original and artistic landscape design works by using Stable Diffusion's powerful detail control ability. Landscape design works. Finally, the teacher organizes students to discuss and feedback, students share their own design works and the creative process, discuss the advantages and shortcomings of the Vincennes technology in landscape design, the teacher collects students' feedback, and makes timely adjustments and improvements to the problems in the teaching process. The third point is to analyze the summary and reflection of teaching, to evaluate the landscape design works completed by students using Mid journey and Stable Diffusion in the course, to affirm the students' efforts and achievements, to analyze the actual application effect of Venn diagram technology in the landscape thematic design course, to evaluate its effect on the enhancement of the students' design ability and innovation ability, according to the feedback and teaching effect evaluation results of the students. Based on students' feedback and teaching effect evaluation results, we will reflect on and improve the course content and teaching methods, pay attention to the latest development of Vincennes technology, update the teaching content and case materials in time, and ensure that the course is cutting-edge and practical. There are still many challenges and deficiencies in the teaching process of the course "Landscape Thematic Design" to effectively integrate the Venn diagram technology of Mid journey and Stable Diffusion, which needs to enhance the students' design ability and creativity, and at the same time, it also needs to lay a solid foundation for the future practice of landscape design.

4.2 Future Trends

Looking into the future, the application of AI technology in art education and creation will be more extensive and in-depth, with the continuous progress of AI technology, we need to constantly explore new educational modes and methods to meet the needs of the times. On the one hand, with the continuous progress and maturity of technology, AI technology will be more intelligent and personalized to serve art education and creation; on the other hand, interdisciplinary integration will become an important trend, AI technology will be combined with other fields of technology such as Virtual Reality (VR), Augmented Reality (AR), etc., to bring a richer form of expression and experience for art education and creation, and AI intervention will weaken the creativity and depth of art creation. Whether it will weaken the creativity and individuality of art creation is the focus of many scholars. Deng Jing (2023) explored the value and limitations of AI painting as a new art medium [16], pointed out that while utilizing AI technology, we should also pay attention to protecting the creativity and individuality of the creators, and pointed out that the synergistic development of education and technology is the key to realizing the innovation of art education.

5 SHORTCOMINGS AND PROSPECTS

In the future, with the continuous progress of technology and the expansion of application scenarios, AI technology will play a more important role in art education and creation, but AI technology still faces many challenges in art education and creation. For example, how to balance the relationship between AI technology and traditional art education, and how to ensure the originality and value of art works created by AI. It is undeniable that the works created by AI painting are actually based on the results of human wisdom, and the painting content is extracted, decomposed and combined from a large number of works, but this kind of reorganization can not be called emotional art creation, and it is difficult to replicate the highly personal creative activities, the users of the technology are always human beings, and AI painting will become a daily tool, and the initiative should be firmly in the hands of art learners and practitioners. The initiative should be firmly in the hands of art learners and practitioners [17]. AIGC is the inflection point of intelligence from specialization to generalization, a new round of innovation in the paradigm of content production, and a powerful weapon to accelerate the change and high-quality development in the era of digital intelligence, depicting a broad and

promising development prospect. By analyzing the content of relevant policy texts, exploring the educational controversies and ethical risks caused by generative AI, as well as the innovative solutions and promotional methods of generative AI in educational applications, including updating the concept of education, transforming the way of school education, and enhancing the competence of teachers and students, etc., the continuous maturation and development of AI technology will have a broader prospect of its application in art education and creation. In the future, we can look forward to AI technology in the following areas to achieve greater breakthroughs: ① technology integration is more in-depth: AI technology will be integrated with more art teaching and creative tools to form a more complete technical system; ② evaluation system is more scientific: intelligent evaluation system will be continuously improved to provide a more scientific and comprehensive assessment methods for art learning and creation; ③ more balanced educational resources: through the application of AI technology, the application of AI technology, the art education and creativity of teachers and students will be more broad prospects. The application of AI technology, educational resources will be more balanced distribution, and promote educational equity.

In the face of new development requirements in the era of digital economy, how to efficiently utilize AIGC technology to empower high-quality changes in teaching and learning, rationally allocate educational resources, guide students to choose appropriate career paths, and add new vitality to the job market have become important issues that need to be resolved urgently. At the same time, we also need to pay attention to the ethical issues of technology to ensure the healthy development of AI technology in art education and creation, and educators also need to continuously improve their own intelligent education quality to adapt to the new teaching needs and challenges.

6 CONCLUSIONS

In summary, artificial intelligence technology has revolutionized the teaching mode and improved the quality of teaching, making the tools of art creation more intelligent, more diversified styles, more innovative content, and following up the application of artificial intelligence technology in the field of art education and art creation can help integrate art resources with technological innovation, strengthen the unique nurturing function of the art discipline, revolutionize the teaching mode, improve the learning effect, cultivate art skills and accumulate art literacy, injecting the life force of the times with driving force for art education and has achieved remarkable results, and will show a broader and more open development prospect. The application of technology in art education and art creation helps to integrate art resources with technological innovation, strengthen the unique educating function of art discipline, innovate the teaching mode, improve the learning effect, cultivate art skills and build up art disciplinary literacy, and inject the vitality of the times into art education with driving force. However, in the face of challenges such as technological ethics, conceptual changes and technical limitations, we still need to keep a clear mind and a positive attitude, and continue to explore and innovate. We believe that in the near future, AI technology will bring a more brilliant future for art education and creation, and we expect that we should continue to explore the potential of AI technology in the field of fine arts, promote the in-depth fusion of AI technology and traditional art education, inject new vitality into the development of the cause of fine arts, promote the synergistic development of education and technology, and hope to realize the prospect of a better art education and creation.

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