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The Integration and Development of Artificial Intelligence Technology in Art and Design Under the Background of Educational Digitization

Meng Hou

Modern College of Northwest University, Xi'an 710130, Shaanxi, China.

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Corresponding author: Meng Hou, Modern College of Northwest University, Xi'an 710130, Shaanxi, China.

Abstract

With the development of the social economy, the characteristics of informatization, digitization, and intelligence are becoming increasingly evident. The deep integration of education and digital technology has become a new direction for the future development of education. Artificial intelligence technology has a wide range of applications and can achieve interdisciplinary integration. Therefore, the education field can effectively apply artificial intelligence technology to interdisciplinary research. Although this technology has many advantages, it also brings considerable challenges to the current art and design education model and talent cultivation system. In the traditional field of art and design, designers often need to spend a lot of time and energy to design their own works. Although artificial intelligence can greatly reduce the workload of designers now, it also makes the works lose their innovation and uniqueness. This article will start with the significance of artificial intelligence technology in art and design, analyze and summarize the current difficulties in the integration of artificial intelligence technology and art and design, and attempt to propose targeted solutions, in order to provide some reference for the teaching reform of art and design majors.

Keywords

Digitalization of education; Artificial intelligence technology; Art and design

Introduction

At present, digital intelligence technology mainly presents the advantages of automation, low cost, and high efficiency, which are impacting many traditional industries (Li, 2024). In the field of art and design, AI drawing creation software is based on image big data and image algorithms, which can effectively combine science and technology with art and design, continuously optimize the creation process, and lower the creative threshold of art and design majors, subverting traditional art and design concepts. Therefore, traditional art and design education needs to keep up with the trends of the times, and universities should actively explore talent training models suitable for the new situation in the field of art and design.

1. The significance of integrating artificial intelligence technology with art and design

1.1 Enhancing the innovation ability of art and design talents

As far as art design is concerned, artistic creations that used to need manual work can rely on computers and other intelligent devices to replace some human work in the era of artificial intelligence. For example, the Luban artificial intelligence system developed by Alibaba, which includes design framework building, element center selection of materials, action devices, and evaluation of network feedback, can replace part of the Internet poster production and design work that needs manual work (Ma, 2023). In the process of promoting the reform of art and design education, universities should reasonably apply artificial intelligence technology according to the specific needs of art and design courses, so that students can basically master the innovative design methods of digital products, innovate talent training goals, closely link artificial intelligence with art and design, and continuously improve students' innovative design abilities.

1.2 Breaking free from the limitations of time and space in art and design

For the reform of art design education in colleges and universities, the application of AI technology can provide more opportunities, especially in the Internet era, the design platform is more open, which can show students a wealth of art design cases. Teachers are able to search for and utilize excellent teaching cases, and engage in artistic design and creative exchanges with students. In addition, the development of modern technology enables art and design to break free from the constraints of time and space, further broadening students' creative horizons. For example, Khroma developed by George Hastings is an online color tool that can automatically provide multiple color schemes with applicability based on different user needs. In addition, the intelligent drawing tool Auto Draw developed by Google can match patterns reasonably based on users' design drafts.

1.3 Providing more artistic and design creativity

The update and development of modern technology are the driving force behind the development of artificial intelligence. For example, the XKool platform integrates intelligent design, building algorithms, and big data, which can intelligently generate rich building layout design schemes by combining user input-related information, plot ratio, and other parameters (Zhang, 2023). Then, relying on the platform's intelligent screening, it brings users various design reference schemes of different styles. A design that originally required several days or even more than ten days can be achieved in just a few seconds with the help of artificial intelligence. The innovation of artificial intelligence in art and design can also bring more possibilities for designers. For the reform of art and design education, we should fully leverage the advantages of artificial intelligence technology, effectively stimulate students' desire to explore and learn, and accumulate and form more creative ideas in artificial intelligence practice.

2. Application principles of artificial intelligence technology in the reform of art and design education in universities

2.1 Intuitiveness

The practical application of artificial intelligence technology can utilize information-based teaching, intelligent classrooms, and various cloud learning platforms to present abstract and static art and design knowledge and related concepts in a more intuitive form to students, which helps cultivate students' visual thinking ability and improve teaching efficiency. Therefore, in the era of artificial intelligence, the reform of art and design education in universities should follow the principle of intuitiveness, and use artificial intelligence technology to present art and design-related knowledge in an intuitive and visual way (Yang, 2024). On this basis, we need let students integrate relevant materials according to the learning objectives and tasks designed by teachers with the help of the Internet, cloud platform, and other carriers, and achieve learning objectives through teacher-student interaction and student-student communication. In addition, the use of image recognition, language recognition, and automatic programming can effectively compensate for the lack of intuitiveness in art and design teaching activities

2.2 Creativity

The application of artificial intelligence technology in the reform of art and design education can effectively utilize tools such as cloud learning platforms and cloud classrooms to endow art and design courses with more creativity. Meanwhile, artificial intelligence is derived from the continuous updating and integration of modern information technology, so adhering to the principle of creativity is the key to the reform of art and design education (Xue, 2024). For example, in the process of creating a thematic cloud learning platform, art design teachers use the cloud platform to organize students to participate in art appreciation activities, breaking the time and space constraints of learning content and learning scope. In the teaching link, using the cloud platform can not only promote the innovation of art design teaching methods, but also help to cultivate students' information processing ability, guide them to establish Internet thinking, and enable them to have the integration concept of art design and information processing.

2.3 Practicality

The application of artificial intelligence technology in the reform of art and design education in universities has brought about significant changes in teaching concepts, teaching modes, and teaching content. The interaction of information and language, as well as intelligent and convenient learning, have effectively improved teaching efficiency. From the essence of art and design majors, students are required to participate in various practical operations during the learning process, so it is necessary to always adhere to the basic principle of practicality. For example, when students use computers to carry out art design practice or image drawing, they can choose C++, Python, and other programming languages to create a set of emotional expression computer languages. At the same time, they can graft the matching computer languages into the drawing design software, rely on big data and cloud platforms to effectively filter and output emotional expression content, and use cloud platforms to display the output results in real time (Liu, 2024).

3. Opportunities and challenges faced by the integration of artificial intelligence and art design

3.1 Opportunities

3.1.1 Artificial intelligence provides a more intelligent, comprehensive, and efficient resource platform for artistic creation

In the process of artistic and creative design, designers need to collect a large amount of reference materials and information based on the theme, and then summarize, refine, and integrate them. And artificial intelligence can provide powerful data resources for it. Designers can use digital tools such as image recognition and data analysis to quickly and accurately screen suitable materials, saving design time, reducing workload, and improving creative efficiency.

3.1.2 Artificial intelligence expands the creative space of art and design

The essence of art and design work is innovation and breakthrough, which is also the most typical feature of artificial intelligence. Through data analysis and image generation algorithms, artificial intelligence technology can mimic various art styles and even create better works. Works generated by artificial intelligence can provide designers with new inspiration, open up their creative space, stimulate their creativity, and enable designers to break through traditional constraints in the creative process, using artificial intelligence technology to create more personalized and creative artworks.

3.1.3 Artificial intelligence can provide precise user positioning and personalized services for art and design

Artificial intelligence technology can accurately predict market trends through big data analysis, provide targeted data for designers, help designers more accurately grasp user needs and fashion trends, ensure that works fit user needs, achieve personalized customization services, and provide unique user experiences.

3.1.4 Artificial intelligence can promote the cross-integration of art and design majors with other disciplines

As a diverse and interdisciplinary field, artificial intelligence has close connections with professional fields such as visual communication design, environmental design, and fashion design. AI technology can provide interdisciplinary communication and collaboration platforms for art and design majors, promote collision and integration between disciplines, and cultivate advanced professionals with more innovative abilities and comprehensive qualities.

3.2 Challenge

3.2.1 The existing curriculum system of art and design majors lags behind

Artificial intelligence is driving the development of big data, networking, and informatization in China's higher education, striving to break the boundaries of learning time and space in universities and achieve the superposition of diverse scenarios such as school learning, enterprise practice, and scientific research. However, in terms of current disciplinary development, most universities still adopt traditional talent training models. They mainly focus on cultivating students' software operation ability, with traditional disciplines as the key to assessing students' literacy, emphasizing results over processes, and emphasizing operations over thinking. The existing teaching scenarios and environments in some universities cannot meet the practical training requirements of "AI+subject education", and the existing resources cannot build a student learning and training platform.

3.2.2 Insufficient efforts in school enterprise integration and industry education integration

In the era of digital intelligence, there is a time gap between enterprises and universities in terms of talent demand and talent cultivation positioning, fields, integration, and other aspects. In the process of school-enterprise cooperation, enterprises cannot guarantee their own economic interests, and universities lack guidance in talent cultivation, which cannot promote the sustainable development of human and intellectual resources.

3.2.3 Frequent psychological problems in learning and employment among students majoring in art and design in universities

In the teaching of "AI+Art and Design", due to copyright issues that cannot be handled by existing AI graphics, some students have insufficient discernment ability, which can easily lead to dependence on artificial intelligence to produce design practices, resulting in insufficient originality and hindering the cultivation of students' innovative spirit. Some students' original works are frequently plagiarized and integrated, which can trigger negative emotions and lead to a loss of interest in learning and career expectations. Due to the development of artificial intelligence, there has been a sharp decline in job positions, leading to increasing pressure on students seeking employment and a tendency towards imbalanced attitudes and mismatched choices.

4. Optimization strategies for the integration and development of artificial intelligence technology in art and design under the background of digital education

4.1 Reasonable layout of disciplines and optimization of curriculum quality evaluation system

To promote the full integration of artificial intelligence technology and art and design education, firstly, the education authorities should further promote the reform of higher education, provide more autonomy in the construction of professional disciplines for universities, appoint dedicated personnel to conduct research activities in universities, and reasonably formulate educational plans based on the overall development of the art and design industry, so as to effectively optimize and adjust the discipline layout and truly leverage the advantages of art and design disciplines. Second, professional teachers should establish Internet thinking, be good at using artificial intelligence technology to analyze the actual teaching situation and promote the deepening of teaching research. Thirdly, it is necessary to regularly organize teaching achievement-sharing meetings, conduct practical innovation competitions, and establish a more comprehensive teaching and research evaluation mechanism. Teachers should encourage and support students to actively engage in various practical activities, promoting the continuous improvement of the intellectual property conversion rate.

4.2 Grasp market demand and explore the construction of smart education platforms

In the era of artificial intelligence, college art, and design teachers should determine talent training goals based on actual market demand when organizing teaching activities, promote the targeted improvement of students' professional skills, and fully reflect the forward-looking nature of talent training. Modern science and technology are constantly updating, and various intelligent devices and learning platforms provide more convenient channels for teachers to collect and analyze students' learning information (Zhou, 2024). With the help of artificial intelligence technology, students can build professional knowledge, closely link talent training programs with artificial intelligence, analyze and understand industry development trends in real time, flexibly adjust talent training goals, and ensure that art and design teaching is in line with industry development trends.

4.3 Innovate teaching content and enhance the consensus between curriculum and industry

Universities can promote the implementation of the school-enterprise cooperation talent training system and carry out cooperation based on practical projects. On the one hand, promote the implementation of the dual-teacher teaching system. School teachers mainly impart professional theoretical knowledge, while enterprise mentors focus on promoting students' practical abilities, using practical projects to engage students in various aspects such as research and development, production, and marketing. On the other hand, we will promote the implementation of an evaluation feedback system. School teachers and enterprise mentors objectively evaluate students' specific performance and submit project reports to school teaching and research meetings as a key basis for evaluating the teaching level of art and design majors.

5. Conclusion

The development of AI technology has brought enormous challenges and new opportunities to various industries. The development and application of AI technology have improved work efficiency, changed the field and direction of art and design, and also brought about changes in society's demand for talent. Technological progress requires reform in the education and teaching of art and design majors, with a greater emphasis on the integration of technology and humanities, technology and aesthetics, as well as interdisciplinary integration. There is also a greater focus on cultivating interdisciplinary talents, emphasizing the cultivation of comprehensive qualities such as innovative thinking, critical thinking, and teamwork. In order to help students better adapt to future career development and social changes, the teaching reform of art and design majors is particularly important in the context of the AI era. Education management workers must actively explore new talent cultivation models, reconstruct curriculum systems, optimize teaching content, and innovate teaching methods. At the same time, establish a "dual teacher" teaching team, which combines theoretical and practical experience, with a focus on the personalized development of students as the core, providing more comprehensive and practical ability training programs. These measures aim to enhance students' practical abilities, enabling them to more effectively respond to the challenges and opportunities brought by the AI era, thereby promoting innovation and development in art, and contributing greater strength to the future development of art design and related industries.

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