

# **Practical Exploration of Integrating AI Technology into Blended Teaching from the Perspective of Digital Transformation of Education**

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## **Abstract**

Digital transformation of education represents an inevitable trend in higher education reform. Blended teaching matches the pedagogical characteristics of design majors, yet its traditional model suffers from homogenized instruction, insufficient process evaluation, inadequate creativity cultivation and disconnection between online and offline sessions. Technologies including AI-generated design, virtual simulation and intelligent learning situation analysis can effectively address these dilemmas. This paper illustrates the integration logic between AI and blended teaching for design majors, analyzes existing teaching challenges, proposes optimization approaches from four dimensions: teaching procedures, digital resources, diversified evaluation and teachers' digital literacy, constructs an intelligent creative education model, and offers references for the digital transformation of design education.

## **Keywords**

Digital transformation of education, AI technology, blended teaching.

## **1. Introduction**

Driven by the strategies of Digital China and digitalized higher education, traditional design teaching relying on offline lectures and manual training can no longer satisfy the cultivation demands of innovative design talents. The Ministry of Education proposes that universities accelerate the integration of artificial intelligence and specialized teaching to realize the digital and intelligent upgrading of education. Design disciplines integrate theory, practice, innovation and aesthetics, raising higher standards for personalized creative teaching and immersive practical training.

Blended teaching combines online autonomous learning and offline practice to break multiple limitations of conventional design teaching[1]. Nevertheless, its current application mostly remains superficial combination, featuring inefficient online learning, untargeted training, homogenized creativity and single-dimensional evaluation, which restricts the exertion of digital education value. Against such backdrop, this paper combines the digital transformation of education and teaching features of design majors to explore the integration mechanism and practical paths of AI and blended teaching, promote teaching transformation from superficial combination to substantive improvement, and boost high-quality digital development of design teaching.

## **2. Definition of Core Concepts and Integration Mechanism**

### **2.1. Definition of Core Concepts**

Digital transformation of education is a systematic reform of higher education that restructures the whole teaching system via digital intelligence technologies to realize targeted and personalized education. Blended teaching for design majors links online theoretical study and offline practical training to form a virtual-real closed-loop teaching system focusing on cultivating students' creativity, practical capabilities and aesthetic competence. AI-enabled teaching for design majors adopts generative AI, virtual simulation and other technologies to support basic teaching, assist creative design and intelligently evaluate works, fully fitting the practical and innovative teaching demands of design disciplines.

### **2.2. Integration Mechanism of AI Technology and Blended Teaching for Design Majors**

Digital transformation of education provides policy support and practical scenarios for the integration of AI and blended teaching. Traditional blended design teaching suffers from inaccurate learning assessment, insufficient training resources and subjective evaluation[2]. AI technologies can remedy these deficiencies, restructure the whole teaching process, shift homogenized teaching toward personalized creative education, and advance the realization of digital education goals for design majors.

## **3. Current Situation and Existing Problems of AI Integrated Blended Teaching for Design Majors**

### **3.1. Current Development Status**

Universities nationwide have comprehensively carried out blended teaching reform for design majors and gradually introduced AI into daily teaching. Intelligent platforms are adopted to integrate design cases and digital training materials to enrich online teaching resources. Some teachers apply AI to learning surveys, classroom interaction and homework grading for higher teaching efficiency. Virtual simulation and AI modeling are gradually applied in practical courses to make up for the shortages of traditional training scenarios. Generally speaking, AI has initially penetrated basic links of blended teaching and laid a practical foundation for the digital transformation of design education.

### **3.2. Core Existing Problems**

Four major defects hinder the in-depth integration. First, technical integration stays superficial. Teachers only utilize AI for basic teaching work instead of exploring its core functions such as creative assistance and precise learning profiling. Universal teaching modes fail to meet the demands of various design sub-disciplines, causing disconnection between online intelligent teaching and offline creative training. Second, digital resources are highly homogenized without classified hierarchical resources, leading to weak personalized resource delivery. High-quality intelligent teaching resources are unevenly distributed among universities and regions. Third, teachers lack digital literacy and backward digital teaching concepts, unable to optimize teaching design with AI learning data. Fourth, the evaluation system lags behind, overemphasizing final outcomes while ignoring creative processes. It lacks specialized modules to assess creativity and aesthetics of design works and cannot form a complete teaching optimization loop.

## **4. Practical Paths of AI Integrated Blended Teaching under Digital Transformation of Education**

### **4.1. Restructure Professional Teaching Procedures to Realize In-depth Coupling of Virtual and Offline Teaching**

AI is adopted to build an integrated pre-class, in-class and post-class closed-loop teaching system to eliminate barriers between online and offline teaching. Before class, layered resources are delivered via AI platforms, learning data is collected to generate learning portraits and identify students' deficiencies. During class, stratified teaching is conducted with AI design tools and virtual simulation systems for immersive training, and teaching strategies are dynamically adjusted according to real-time creation data. After class, AI pushes personalized optimization proposals to support iterative improvement of design works and achieve thorough linkage of virtual and offline teaching.

### **4.2. Build Specialized Resource System to Precisely Empower Creativity Cultivation**

Big data algorithms are used to construct a dynamic classified digital resource library matching different design majors. Resources are accurately pushed based on students' learning gaps to satisfy diverse learning demands of students at different levels[3]. Meanwhile, an inter-university resource sharing platform powered by AI is established to break resource barriers, realize inclusive sharing of high-quality digital resources and facilitate balanced development of design education.

### **4.3. Establish a Comprehensive Intelligent Evaluation System to Improve the Closed-loop Teaching Mechanism**

Establish a multi-dimensional evaluation system that combines process and outcome, as well as quantitative and qualitative assessments. Rely on AI tools to collect and track data the entire process of students' classroom learning, scheme conception, and design creation, conducting objective quantitative scoring across dimensions such as completion timeliness, work parameters, and practice frequency; simultaneously incorporate qualitative, including targeted professional comments from teachers and face-to-face discussions on creative ideas, to compensate for the lack of aesthetic and humanistic judgment in intelligent evaluation. Furthermore, the evaluation system extends to cover teaching stages, including teacher lesson preparation, classroom instruction, and post-class guidance, relying on two-way evaluation feedback to continuously adjust course content and teaching methods, thereby forming complete optimization closed loop of data collection — comprehensive evaluation — teaching iteration[4].

### **4.4. Enhance Teachers' Digital Literacy and Boost Integrated Teaching & Research Capacity**

Universities regularly conduct stratified and classified special digital intelligence teaching training, guiding teachers to actively innovate traditional offline teaching mindsets and establish new concepts of digital creative education. Relying on an online and offline teaching and research platform, they regularly offer AI-integrated demonstration classes and excellent teaching case seminar salons to open up channels for experience sharing. Meanwhile, special teaching reform are established to encourage teachers to conduct practical research based on the characteristics of different majors such as visual communication and environmental design, customizing intelligent teaching solutions adapted to their respective majors, comprehensively strengthening digital teaching capabilities of the teaching staff, and building a solid talent foundation for the deep integration of AI and blended teaching[5].

## 5. Conclusion

Against the backdrop of digital transformation of education, deep integration of AI and blended teaching represents an inevitable trend of teaching reform for university design majors and a vital approach to cultivate high-quality innovative design talents. Centering on personalized creativity and immersive practice, design teaching can resolve prominent drawbacks of traditional blended teaching including superficial technical integration, homogenized resources and single evaluation via AI empowerment. Optimizing teaching procedures, digital resources, evaluation systems and teachers' digital literacy transforms design teaching from mere skill instruction to creative education.

Currently, the integration of AI into blended design teaching remains in the exploratory stage, with room for improvement in technical adaptability, depth of creative empowerment and professionalism of evaluation systems. In the future, universities offering design majors shall comply with the strategy of educational digitalization, follow disciplinary characteristics to avoid superficial technical stacking, continuously refine intelligent blended teaching modes, maximize the educational value of AI, comprehensively upgrade the quality of design talent cultivation, and support the high-quality digital development of art and design education.

From the perspective of the overall layout of educational digital transformation, the integration of AI technology and blended teaching in design majors is essentially a systematic reshaping of the education model empowered by digital technology. This study analyzes the AI empowerment path around four core dimensions: teaching processes, digital resources, evaluation systems, and faculty development, while objectively reviewing the practical in current implementation and clarifying the core implementation principles of prioritizing disciplinary characteristics and using technology to serve education. In the future, design universities need to continuously balance the technical tool attributes with the creative core. In the process of continuously iterating intelligent teaching models, they should bridge the intrinsic connections among digital technology, classroom teaching, and creative cultivation. Through normalized and in-depth blended teaching practices, they should build a design talent cultivation system adapted to the needs of the new era, providing a referable and implementable practical approach for the digital teaching reform of art majors.

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