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FOR TOP SCHOLARS

2026 Volume 4, Issue 3
Contemporary Education Frontiers
ISSN:3029-1879 (Online)
ISSN: 3029-1860 (Print)

"Human-AI-Scenario" Tri-Component Integrated Artistic Design Intelligent Teaching Innovation

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Abstract: Driven by the fast evolution of artificial intelligence and the upgrading of the art and design industry, the conventional teaching model of art design is in urgent need of restructuring. The integrated development of human, "Human-AI-Scenario" has become the core orientation for the innovation of intelligent teaching in art design. This paper explores the essential connotation of the tri-element integration in intelligent teaching, clarifies its value in reshaping teaching logic, cultivating interdisciplinary talents and promoting disciplinary development, and puts forward three systematic innovation strategies: personalized teaching empowerment, optimized teaching implementation and evaluation, and the construction of an industry-education integration platform. With specific teaching cases, this study elaborates the practical paths of each strategy. The results show that the tri-element integration model effectively addresses the drawbacks of traditional teaching, improves teaching quality, and nurtures interdisciplinary art design talents who meet industrial demands.

Keywords: "Human-AI-Scenario"; Art Design; Intelligent Teaching; Teaching Reform

Online publication: March 26, 2026

1. Introduction

Artificial intelligence has been widely applied in various social sectors. The art design industry increasingly demands interdisciplinary professionals who integrate artistic accomplishment, technical competence and scenario adaptability. However, traditional art design teaching is plagued by problems such as disconnection between theory and practice, insufficient personalized guidance and weak alignment with industrial practice. The integration of human, "Human-AI-Scenario," takes teachers and students as the core subjects, AI technology as an enabling instrument, and real scenarios as practical carriers to realize organic coordination and deep integration of the three elements. This model conforms to the developmental trend of the art design discipline, boosts the innovation of teaching modes and improves the quality of talent cultivation, which bears both theoretical and practical significance. This paper discusses the significance and innovative strategies of the integration model, aiming to provide references for educators and researchers.

2. The significance of "Human-AI-Scenario" three-element integration, artistic design intelligent teaching

2.1. Reshaping teaching logic and solving inherent problems of traditional teaching

Traditional art design teaching follows a closed logic dominated by one-way knowledge imparting from teachers. The separation between classroom and industry, theory and practice, has long restricted the improvement of teaching quality. The intelligent teaching model integrating human, "Human-AI-Scenario," provides an effective approach to reconstruct teaching logic and overcome such dilemmas [1]. With the support of AI tools, teachers can accurately identify students' creative weaknesses and personalized learning demands, and formulate tailored guidance schemes combined with industrial standards in different design scenarios. While sticking to the core role in aesthetic guidance and creative inspiration, teachers can also use AI's efficient computing capacity to help students rapidly visualize creative ideas and optimize design schemes, thus avoiding difficulties in idea realization and unfamiliarity with technical applications. By carrying out creative practice with AI tools in real design scenarios, students deepen their understanding of design theories and master the practical skills required by the industry. A complete teaching loop of "idea generation – technology implementation – scenario adaptation" is formed, promoting the transformation of art design teaching from knowledge-oriented to ability-oriented and fully demonstrating the educational value of intelligent teaching.

2.2. Empowering the cultivation of versatile design talents to meet industrial needs

Against the background of emerging new-quality productive forces, the art design industry features prominent cross-border integration. There is a growing demand for versatile professionals with artistic literacy, technical ability and scenario adaptation competence. The tri-element integrated intelligent teaching model precisely caters to such industrial demands. As an efficient tool for creative assistance, skill training and scheme iteration, AI technology helps students break through the limitations of traditional design tools and expand the boundaries of creative expression. Meanwhile, it guides students to understand the application logic of AI and develop the thinking ability to apply technology to creative design. Various design scenarios, including digital media design, environmental art design and visual communication design, offer students authentic contexts and problem-oriented tasks. Students gradually acquire the core ability to balance aesthetic value, technical feasibility and market demand, and cultivate cross-border integration and innovative application qualities [2].

2.3. Promoting disciplinary upgrading and improving the intelligent teaching system

To enhance the internal construction and improve the intelligent teaching system of art design, full integration of human, AI and scenario is essential. This integration breaks the dual restrictions of traditional disciplinary boundaries and teaching methods, injecting new momentum into disciplinary development. AI technology enriches the creative methods and expressive forms of art design and drives the continuous renewal of teaching content. The curriculum system thus covers both traditional artistic literacy and intelligent technology application, with scenario-based practical courses and AI-related design modules added, making disciplinary knowledge consistent with the requirements of the times, technology and industry. As a key carrier of tri-element integration, scenarios free art design teaching from abstract theories and closely link disciplinary research with social needs and industrial practice. It promotes the transformation of disciplinary research toward scenario-based, intelligent and practical orientation, significantly enhancing the discipline's social service capacity and core competitiveness.

3. "Human-AI-Scenario" tripartite integration artistic design, wisdom, teaching innovation strategy

3.1. Constructing a personalized teaching empowerment system focusing on tri-element collaboration

3.1.1. Establishing a stratified creation guidance mechanism supported by AI

The stratified creation guidance mechanism centers on students' individual creative differences and ability levels. By

utilizing AI's data analysis and precise recommendation functions, it realizes the accurate matching of teacher guidance, AI empowerment and students' creative practice, helping students at different levels progress at their own pace [3]. AI tools collect students' previous works and learning feedback, locate their weaknesses in creative conception, technical operation and scenario adaptation, generate personalized learning resources and guidance directions, and provide data support for teachers. Teachers adjust guidance priorities for students at different levels based on AI analysis results. For students with weak basic skills, AI provides color schemes and theme-related suggestions, while teachers guide them to understand the relationship between color and theme. For students lacking creative ideas in composition, AI offers multiple composition references, and teachers help them optimize logical expression based on the design theme.

Taking poster creation in visual communication design as an example, AI tools analyze students' previous works to identify defects in color matching, layout design and theme expression, and generate personalized guidance plans. Supported by AI and guided by teachers, students complete creation for campus culture promotion scenarios. AI provides real-time revision feedback, and teachers offer targeted comments, helping students at different levels improve comprehensively and achieve coordinated progress in creativity and technology.

3.1.2. Designing immersive practical teaching tasks with scenarios as carriers

Immersive practical teaching tasks are based on real art design scenarios and run through the concept of tri-element integration in the whole design and implementation process. Students complete creation with AI tools in simulated or real scenarios, realizing deep integration of theory, technology and scenario requirements. Scenarios are selected in line with industrial reality, with clear scenario-based objectives to guide students' creative practice. Teachers design step-by-step tasks according to scenario characteristics and students' abilities, gradually improving students' capabilities from basic scenario adaptation to complex scenario innovation. Meanwhile, AI is used to build a scenario simulation platform, enabling students to practice in virtual environments, reducing costs and improving efficiency, and cultivating their ability to solve practical design problems in scenario-based contexts.

In the campus culture promotion poster task of visual communication design, students are required to design aesthetic and communicative posters considering campus features and audience needs. Teachers use AI scenario simulation tools to build a virtual campus promotion display platform, allowing students to preview display effects and adjust details for different exhibition scenarios. Students create works with AI drawing and color optimization tools, and AI generates scenario-adapted effects in real time to solve the problem of disconnection between design and scenario. Teachers guide students to balance creativity and adaptability based on scenario requirements, evaluate the relevance and practical details of works, and improve students' scenario-based design skills.

3.2. Optimizing teaching implementation and evaluation mechanisms by strengthening technology integration

3.2.1. Innovating teaching content and methods with AI technology

The innovation of teaching content and methods takes tri-element integration as the core, deeply integrating AI technology with professional knowledge and scenario-based practical demands of art design, updating the teaching content system and breaking the limitations of traditional teaching methods to realize intelligent and efficient teaching. In terms of content, modules such as AI design tool application and scenario-based design case analysis are added, introducing cutting-edge AI design technologies and scenario-based design concepts from the industry to bridge the gap between traditional teaching and industrial development. In terms of methods, the single theoretical lecture mode is abandoned, and AI-assisted teaching, scenario-based teaching and group collaborative teaching are combined. AI tools are used to present teaching content visually and interactively, encouraging students to participate actively and enhance their creative expression and technical application abilities in collaborative exploration, thus improving teaching relevance and interest and promoting teaching quality [4].

Taking short video creation in digital media design as an example, teaching content is updated according to short video

communication scenarios, with knowledge points including AI short video editing and AI special effect production added. In class, teachers use AI editing tools to demonstrate material selection, editing optimization and special effect addition. AI tools automatically identify material highlights and generate preliminary editing schemes. Students create short videos in groups under the theme of "traditional culture communication", taking charge of creative conception, material shooting and AI editing. AI tools provide assistance, such as special effect templates and subtitle generation. Teachers guide students to optimize video content and presentation forms according to communication scenario characteristics, solving problems such as slow rhythm and excessive special effects.

3.2.2. Building a diversified, comprehensive evaluation system based on tri-element integration

The diversified comprehensive evaluation system breaks away from the traditional single-score evaluation model. Guided by the goals of tri-element integration, it integrates three dimensions: teacher evaluation, AI evaluation and scenario practice evaluation, to comprehensively assess students' creative expression, technical application, scenario adaptation and cooperation abilities. AI tools conduct objective quantitative evaluation on students' works, learning process and technical operation through data analysis, accurately capturing their progress and deficiencies. Teachers provide qualitative evaluation on students' creative connotation, aesthetic expression and thinking innovation based on professional judgment, paying attention to individual differences and growth. Scenario practice evaluation focuses on students' ability to solve design problems in real scenarios, and scores comprehensively based on the scenario adaptability and practicality of work [5].

For short video creations, AI tools first quantitatively analyze editing rhythm, special effect adaptation and subtitle standardization, generating objective scores and optimization suggestions. Teachers provide qualitative comments on creative connotation, theme expression and communication adaptability based on traditional culture communication scenarios, affirming innovations and pointing out improvements. Works are uploaded to a virtual short video communication platform, and AI simulates user browsing, likes and comments to evaluate communication effect and scenario adaptability.

3.3. Building an industry-education integration practice platform for ability improvement

3.3.1. Establishing an AI-enhanced industry-education integration practice platform connected to industrial scenarios

The AI- enhanced industry-education integration practice platform targets industrial needs, integrates university and enterprise resources, and deeply combines AI technology with real industrial scenarios and enterprise projects, providing students with an immersive practical environment to realize a seamless connection between teaching and industrial practice. The platform uses AI to build virtual enterprise practice scenarios, simulating the whole process of enterprise design projects, allowing students to participate in project coordination, creative conception and scheme optimization and get familiar with industrial standards and working processes. Meanwhile, it cooperates with enterprises to introduce real design projects, uses AI to decompose and assign tasks, and teachers and enterprise mentors jointly guide students' creation. Students master core industrial skills in practice and cultivate professional qualities and innovation awareness, laying a foundation for future employment.

In environmental art design courses such as residential space and public space design, teachers connect with real scenarios of interior design and landscape design industries through the platform and introduce real enterprise tasks, including residential space full-case design and community small landscape optimization. The system uses AI to decompose tasks into site survey modeling, space layout design, soft furnishing planning and effect rendering. Students undertake tasks in groups and create with the assistance of AI tools. The AI system provides industrial design cases, material libraries and space optimization suggestions. Teachers and enterprise mentors guide design schemes based on site conditions, client needs and industrial norms. After completing schemes and renderings, students submit them to enterprises for review and use AI to optimize details and rendering effects according to feedback, ensuring high consistency with industrial practical standards.

3.3.2. Strengthening teaching staff construction and improving teachers' tri-element integration teaching ability

Through systematic training, practical research and communication cooperation, teachers can master AI application methods, deeply understand the tri-element integration teaching concept, and acquire the ability to design and implement teaching in specific scenarios. Universities regularly organize teachers to participate in specialized training on AI design technology and intelligent teaching methods, inviting industrial experts and technical professionals to deliver lectures and help teachers update knowledge systems and improve AI application proficiency. A practical research platform is established to arrange for teachers to conduct in-depth research in enterprises, participate in real design projects, accumulate scenario-based teaching experience and integrate it into teaching.

For example, universities organize environmental art design teachers to receive advanced training in AI environmental design technology. Industrial experts are invited to explain advanced applications of AI modeling, effect rendering and landscape parametric design software, demonstrating site modeling, stylized rendering and rapid scheme iteration based on real scenarios such as residential spaces and public landscapes. After training, teachers cooperate with interior design and landscape design enterprises in groups, participating in creative conception and scheme optimization of real residential space design and community landscape optimization projects, and deeply understanding client demands, construction norms and AI application links in real scenarios.

4. Conclusion

This paper puts forward concrete innovation strategies from three core aspects for the tri-element integrated intelligent teaching of art design, integrating human, "Human-AI-Scenario", forming a complete research framework of "significance-strategy-case". Future research can further focus on the challenges in the integration process, explore the adaptive paths of AI technology with different sub-disciplines of art design, optimize the teacher training and evaluation system, update teaching content and practical scenarios according to industrial development trends, continuously improve the tri-element integration model, and boost the high-quality development of intelligent teaching in art design.

Disclosure statement

The author declares no conflict of interest.

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