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Research on the Construction of Multi-Dimensional AIGC-Enabled Industry-Education Integration Mechanism for Art and Design Majors

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Abstract: *The rapid advancement of AIGC technology has opened new avenues for the industry-education integration of art and design majors. Traditional industry-education integration mechanisms face growing limitations in resource matching, multi-stakeholder collaboration, and demand response. This paper first analyzes the core elements and logical framework of such integration, then reveals the collaborative mechanism empowered by AIGC, and finally proposes four optimization strategies: precise technical adaptation, establishment of a benefit-sharing system, dynamic curriculum updating, and in-depth practical training. By optimizing relevant mechanisms, this study aims to deeply integrate AIGC technology into art design teaching and industrial practice, enhance the alignment between talent cultivation and post requirements, and provide practical and operable references for the industry-education integration of art and design majors.*

Keywords: *AIGC; Art and design majors; Industry-education integration*

1. Introduction

Driven by the digital economy, AIGC technology has been deeply embedded in design workflows, pushing the art and design industry into a new era featuring human-machine collaborative creation and data-driven intelligent decision-making. This transformation not only diversifies the forms and expressions of design but also raises higher requirements for talent cultivation, emphasizing comprehensive interdisciplinary integrated capabilities of design thinking and technical application. Nevertheless, the current industry-education integration mechanism for art and design majors lags far behind industrial upgrading and technological iteration. Against this backdrop, it is urgent to take AIGC empowerment as an entry point to re-examine the core elements of industry-education integration and explore the operation mechanism of multi-stakeholder collaboration involving governments, colleges, enterprises, industry associations, and terminal users. From the perspective of mechanism reshaping, this paper puts forward innovative integration paths tailored to the demand for future design talents, providing a theoretical basis and practical strategies for the organic connection of the education chain, talent chain, industrial chain, and innovation chain ecosystem[1].

2. Core Elements and Logical Framework of Multi-Dimensional Industry-Education Integration Mechanism

As a key measure to improve the quality of vocational education and accelerate industrial upgrading, industry-education integration has attracted widespread attention in the education sector[1]. The core connection between AIGC and the industry-education integration of art and design majors is first the inherent compatibility between technical characteristics and integration demands. AIGC can rapidly generate design materials to lower the threshold of creative conception and production; its creative auxiliary functions stimulate design inspiration via algorithms and make up for insufficient inspiration cultivation in traditional teaching; and its cross-modal integration capability supports collaborative design of graphics, texts, audios, and videos, which is highly consistent with the multi-dimensional expressive attributes of art and design.

Second, the operation of the mechanism involves interactions among multiple subjects and objects. The subjects include colleges, enterprises, industry associations, and students; and the objects cover teaching resources, practical projects, and talent evaluation standards. Colleges and enterprises connect classroom teaching with industrial demands through practical projects, industry associations guide

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resource allocation with talent standards, and students achieve the critical transformation from knowledge accumulation to ability improvement in multi-stakeholder interactions.

Third, the operation of the mechanism follows a progressive logic of technology-driven, resource-integrated, and value-co-created. The penetration of AIGC technology first promotes the digital upgrading of teaching resources and practical projects, breaking information barriers in traditional industry-education cooperation. It further drives colleges, enterprises and industry associations to share data, experience and tools around technical application, forming a collaborative innovation network. Ultimately, multi-party value co-creation can be realized: Colleges cultivate design talents meeting industrial demands, enterprises obtain innovative design support, and the whole industry raises the technical application level, providing sustainable impetus for the long-term development of industry-education integration of art and design[2].

3. Collaborative Mechanism of AIGC Empowering Industry-Education Integration of Art and Design

Affected by global informatization and industrial modernization, social demands for art and design talents have undergone tremendous changes. Traditional single-discipline designers can no longer adapt to market development, and interdisciplinary innovative talents mastering design, art, and digital technology have become mainstream. This requires colleges to reform teaching models, shifting from traditional single-discipline knowledge transmission to interdisciplinary collaborative innovative teaching modes[2]. Against such a background, in-depth AIGC empowerment for industry-education integration of art and design requires comprehensive reconstruction of mechanisms covering teaching resource construction, multi-subject collaboration, and industrial demand response.

First, at the teaching resource level, AIGC breaks the limitations of traditional textbooks and typical cases, realizing intelligent generation, personalized matching, and dynamic updating of teaching resources. It helps construct a curriculum system of "basic framework + AI generation module", a case database of "real-time industrial projects + future scenario simulation", and a whole-process human-machine collaborative training system, ensuring that teaching content accurately aligns with industrial frontier development.

Second, in multi-stakeholder collaboration, colleges, enterprises, and technical platforms build a closed-loop value co-creation operation mechanism from industrial demand input and curriculum content reconstruction to project output, through data sharing, knowledge integration, and collaborative achievement research and development, so as to realize benefit coordination and collaborative talent training.

Third, AIGC greatly improves the ability of real-time perception and feedback to industrial changes. By collecting multi-source data including recruitment information and design trends to build demand mapping, AIGC supports dynamic and agile adjustment of teaching objectives, contents, and methods on a daily or weekly basis, realizing efficient matching between the education chain and the industrial chain.

4. Optimization Strategies for Industry-Education Integration Mechanism Empowered by AIGC

4.1 Precise Technical Adaptation to Improve the Matching Efficiency between AIGC Tools and Professional Teaching Demands

Industry-education integration is a national strategy for constructing a modern vocational education system and improving vocational talent training quality[3]. To efficiently match AIGC tools with art and design teaching demands, it is essential to build a precise adaptation mechanism linking professional positioning and technical characteristics.

Colleges should cooperate with enterprise designers and industry experts to sort out core teaching requirements of various design directions: Environmental art design focuses on 3D modeling efficiency and material rendering effects; visual communication design attaches importance to style unity and visual creativity; and digital illustration emphasizes personalized brush expression and art style transfer. Meanwhile, core advantages of mainstream AIGC tools including generation speed, style control accuracy, and cross-modal integration ability are sorted quantitatively to establish a standardized tool matching evaluation model.

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According to the matching model, colleges select targeted software for different majors: MidJourney is applied to visual communication design for its adjustable brand style parameters; Blender AI modeling plugins are adopted in environmental art design to rapidly generate spatial structures; and Stable Diffusion is suitable for digital illustration, as its prompt engineering combined with style seed control can accurately restore painting styles. Practical feedback from enterprises is introduced into tool selection and testing to ensure that tools meet both classroom teaching and engineering project requirements.

In addition, a closed-loop mechanism of "teaching feedback – enterprise evaluation – technical iteration" is established to maintain dynamic optimization of the adaptation system. Teachers regularly collect students' difficulties in tool operation such as parameter setting errors and unstable style output; and enterprises feed back practical problems including excessive reliance on AI-generated content. Combined with version updates and algorithm optimization of AIGC tools, colleges adjust indicator weights and update teaching resources and tool lists regularly. When Stable Diffusion releases new multi-style fusion functions, corresponding teaching cases are supplemented in time to enhance the foresight of vocational teaching[3].

4.2 Establish Benefit-Sharing Mechanism to Stimulate Enterprises' Endogenous Motivation to Participate in Industry-Education Integration

To deepen industry-education integration continuously, colleges need to build a benefit-sharing mechanism to balance school-enterprise input and income, and stimulate enterprises' voluntary participation enthusiasm. The core of the mechanism is resource interconnection, intellectual property co-construction, and benefit distribution, implemented from platform cooperation, copyright distribution, and special fund support.

First, colleges build a two-way collaborative platform for technology sharing and achievement transformation. Students participate in real enterprise projects as auxiliary designers to provide creative services to enterprises; and professional teams of colleges provide technical consulting schemes on AIGC application to enterprises. In return, enterprises open authentic project data, design requirements, and market application scenarios for vocational teaching, helping students master AI operation specifications and industry standards. This realizes mutual benefit: Colleges gain practical teaching materials, and enterprises reserve high-quality reserve talents.

Second, colleges formulate clear intellectual property allocation rules to clarify ownership of school-enterprise cooperative achievements. For student works in enterprise projects, copyright of original AI-generated drafts belongs to cooperative enterprises, while manually optimized creative parts enjoy shared copyright and revenue rights jointly owned by schools and students. For self-developed prompt libraries and style control algorithms, school-enterprise agreements clarify joint ownership: Enterprises prioritize commercial application rights, and colleges retain teaching popularization rights, stabilizing long-term cooperative relations.

Third, colleges, enterprises, and industry associations jointly set up special industry-education integration research funds for AIGC application technology research in design majors. The fund operates in a closed-loop mode: Enterprises put forward technical demands, colleges carry out scientific research, and achievements are transformed into industrial applications. Verified research results are preferentially applied to enterprise projects, and teams obtain corresponding rewards according to practical benefits, forming a virtuous cycle of technological research, project application, and benefit feedback.

4.3 Dynamic Curriculum Updating to Deepen the Connection between Teaching Content and Industrial Practice

In the digital era, optimizing the practical teaching system of art and design majors relies on deep industry-education integration, matching actual enterprise posts, and balancing students' theoretical literacy and practical ability[4]. Therefore, colleges construct an industry-oriented dynamic curriculum updating mechanism, synchronizing teaching content with AIGC technological updates and industrial market demands, facilitating deep integration of design teaching and industrial practice.

Firstly, colleges organize curriculum development groups composed of industry experts, professional teachers, and enterprise designers. Industry experts predict technological trends of the design industry and propose AIGC application scenarios in the metaverse, virtual IP, and other emerging fields; teachers coordinate curriculum structure to ensure that new modules connect smoothly with original courses; and enterprise designers extract core AI operation skills from actual projects, including secondary processing

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of AI images and integrated multimedia design. Demand seminars are held at the beginning of each semester: Enterprises release AIGC skill standards, experts issue industry trend reports, and teachers confirm key curriculum adjustment contents around core AI design abilities.

Secondly, regular dynamic curriculum revision is implemented. Each semester, 10%–15% of AIGC professional modules are adjusted from technical principles, tool operation, and creative methods. The technical module updates AI application scenarios such as virtual character design and multilingual visual communication; the tool module follows mainstream platform iterations including AI intelligent video storyboarding technology; and the creative module popularizes "AI generation + manual polishing" collaborative process, guiding students to complete high-quality schemes via AI sketching and human optimization. Updated contents are synchronously applied to textbooks, courseware, and homework assignments.

Finally, authentic enterprise projects are integrated into classroom teaching as typical cases. Colleges sign long-term case cooperation agreements with enterprises to obtain brand image design, cultural and tourism exhibition schemes, and other materials. Curriculum teams convert real projects into practical teaching tasks, cultivating students with whole-process professional practical ability covering demand analysis, AI creation, manual optimization, and final scheme delivery. For virtual image design, students generate drafts with AI, select schemes according to brand positioning, and polish facial and costume details; for spatial design, students build 3D models via AIGC and adjust parameters combined with site conditions to form executable construction schemes.

5. Conclusion

This study systematically sorts out the operation logic of AIGC-enabled industry-education integration of art and design, clarifies the matching compatibility between AIGC technical advantages and professional talent training demands, sorts out practical problems in technical adaptation, enterprise participation willingness, curriculum iteration, and practical training construction, and puts forward targeted mechanism optimization strategies. The research shows that precise technology matching, benefit-sharing mechanism construction, dynamic curriculum iteration, and high-quality practical training can effectively upgrade multi-dimensional industry-education integration, and promote collaborative popularization of AIGC in design teaching and industrial production. Future research can expand empirical case studies to optimize the regional adaptive applicability of strategies, and introduce industry certification standards and international vocational norms, so as to promote high-quality innovative development of industry-education integration of art and design.

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