Practical Exploration of AIGC Tools in Assisting Creative Teaching of Digital Painting in Vocational Undergraduate Education

Chen Yang

School of Design, Hainan Vocational University of Science and Technology, Haikou, Hainan Province, China 570000

Abstract: In the context of educational digital transformation, AIGC (generative AI) tools have gradually integrated into the teaching of Art and Design courses in vocational undergraduate education, providing new conditions for the creativity teaching for Digital Painting. Vocational undergraduate education aims to cultivate application-oriented and technical talents. However, conventional Digital Painting teaching still suffers from challenges such as limited space for creative training, relatively rigid teaching models, and insufficient articulation with industry practice. This study, based on the teaching characteristics of vocational undergraduate education, analyzes the functions, application methods and potential problems of AIGC tools in assisting Digital Painting creative teaching, and, integrating specific case studies, proposes improvement strategies for integrating technology with teaching.

Keywords: AIGC, Vocational Undergraduate Education, Digital Painting, Creative Teaching

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1.Introduction

Vocational undergraduate education aims to cultivate technical talents. It is oriented towards the real-world industry demands and focuses on the synergistic development of students' creative capabilities and hands-on competencies. Digital Painting is a fundamental course in digital media art, visual communication design and other disciplines. It serves as a bridge between artistic creativity and commercial design practice, and places high demands on students' aesthetic judgment, creative ideation, and visual expression capabilities. Introducing the AIGC tools into the Digital Painting creative teaching in vocational undergraduate education may lead to adjustment in the teaching organization modes, creative training sessions, and practice procedures.

2.Current Status and Challenges in Creative Teaching of Digital Painting within Vocational Undergraduate Education

2.1 *Relatively Fixed Teaching Models with Limited Space for Creative Training*

Current creative teaching for Digital Painting in vocational undergraduate education predominantly adopts the traditional art teaching framework, focusing on software operations and image rendering techniques, investing relatively little in cultivating creative thinking. Its classroom teaching usually adopts fixed themes and styles. Students mostly copy reference cases provided by teachers and imitate their creative ideas. As a result, they are not likely to develop their own independent creative ideation. There are differences in the artistic foundations among vocational undergraduate students. Some students have certain hand-drawing and software operational capabilities, yet lack ideation divergence methods. When it comes to creating original works, they often encounter problems such as ideation limitations and visual image homogeneity. Meanwhile, limited by class size and course hours, it is difficult for teachers to provide personalized guidance according to each student' characteristics. The uniform teaching requirements have to some extent restricted the diversified development of students' creation forms and styles, making it challenging to adapt to industry demand for differentiated creation.

2.2 *Slow-updating Teaching Resources Leading to Disconnect from Market Practice*

Digital Painting creation requires the support from a large number of stylistic references, compositional exemplars, and chromatic coordination resources. Under the traditional teaching method, teaching resources mainly come from the personal accumulation of teachers and textbooks, with limited quantity and slow updating speed. In recent years, continuously emerging creative styles, such as Guofeng (Chinese New Wave), cyberpunk, minimalist

and flat design, and Chinese ink and wash aesthetics, leads to existing teaching resources failing to meet the diverse style demands, thereby imposing restrictions on students' creative horizons. Furthermore, vocational undergraduate education emphasizes students' position-fit competency. However, current creative training in Digital Painting courses mostly focuses on assignment-based thematic exercises, failing to align closely with the actual demands of the market and commercial projects.

2.3 *Imbalance in Competency Cultivation with Lagging Awareness of Emerging Technologies*

In current Digital Painting teaching within vocational undergraduate education, there is certain imbalance in students' competency cultivation. Some educational institutions focus on hand-drawing techniques and visual effect presentation, placing more emphasis on visual image refinement and technical proficiency, while paying insufficient attention to the cultivation of creative ideation, aesthetic judgment and scheme implementation capabilities. At the industry level, some positions have already conducted integrated application of intelligent tools and hand-drawn creation. However, the application of intelligent technologies is still relatively limited in classroom teaching. Students possess limited cognitive and application capabilities of tools like AIGC. Some students tend to rely on AI tools to directly generate outputs, with weak original creative intentions and copyright awareness, which negatively affects the development of their creative capabilities.

3.Functions of AIGC-Assisted Tools in Creative Teaching for Digital Painting

3.1 *Expanding Creative Sources and Facilitating Ideation Divergence*

AIGC-assisted painting tools can generate various styles and forms of image content, which can to some extent alleviate resource and ideation limitations in traditional creative teaching. In the early stage of creative ideation, students can quickly obtain multiple initial proposals through keyword description and style selection, covering different composition modalities, color relationships and artistic styles, thereby getting more reference perspectives and converting vague creative ideas into visual images more quickly. Comparing and evaluating the various generated results can also facilitate the cultivation of students' divergent thinking and aesthetic discernment capabilities. It should be noted that this function is predicated on that students possess basic judgment and selection capabilities. Tools themselves cannot replace creative ideation [1].

3.2 *Adjusting Teaching Sessions to Improve Instructional Efficiency*

After leveraging AIGC tools, some of the time that is previously spent on repetitive technique practice and material preparation can be redirected towards training on creative ideation and aesthetic judgment [2]. Meanwhile, teachers can leverage AI tools to generate and compare multiple visualized modification schemes based on students' initial drafts. This enables teachers to provide concrete visual feedback during critiques, significantly reducing time spent on in-class revisions while enhancing the targeted relevance of creative guidance within limited class hours.

3.3 *Aligning with Industry Practices to Meet Occupational Competency Position Demands*

Currently, the work pattern integrating human creation with the assistance of intelligent technology has been applied in the Digital Painting industry to some extent. Game art, film and television illustration, cultural and creative design, new media painting and other sectors have put forward new requirements for practitioners' AIGC tool application capabilities. Integrating AIGC tools into teaching can enable students to experience the common creative methods in the industry at classroom, and to understand how to use the tools in draft formation, multi-version style adjustment, material generation, and image optimization, thereby narrowing the gap between classroom teaching and industry positions, which aligns with application-oriented talent cultivation objectives in vocational undergraduate education. Generative AI should not be regarded merely as an artistic creation tool. As the subject, humans give up a portion of creative decision-making power and transfer it to AI, enabling AI to form an automated "output-generation" process through algorithmic models. Reshaping refers to the ongoing revolution in the production methods, artistic forms, and industry ecosystem of digital painting art under the generative AI wave.

Artistic production modes have gradually shifted from a "linear production" model to an "iterative symbiosis" model due to the deconstruction of the creative process, thereby influencing the commercial production chain of digital art [3].

4.Application Pathways for AIGC-Assisted Tools in Creative Teaching for Digital Painting

4.1 *Pre-Class Phase: Building a Dynamically Updated Teaching Resource Bank*

During the pre-class preparation phase, teachers can utilize AIGC tools to address slow-updating teaching resources and establish teaching resource repositories with content diversity and automated dynamic updating. Based on the course themes and students' varying foundations, teachers can create tiered creative examples, composition templates and chromatic coordination schemes to adapt to the learning needs of different students. For each lesson's training focus, they can also generate comparison cases of ideation reference materials and error-prone images. Moreover, teachers can use AI tools to promptly supplement the latest styles and cases in the industry, ensuring that teaching resources keep pace with industrial advancement [4].

4.2 *In-Class Phase: Prioritizing Manual Creation to Improve Creative Training Sessions*

Classroom teaching should adhere to the principle of prioritizing human-centric creation supplemented by AIGC to avoid excessive reliance on AI tools. During the inspiration stage, teachers guide students to first define the creative themes, scheme conceptualization and style positioning, and then leverage AIGC tools to generate several initial proposals for ideation expansion. During the creative practice stage, students must redesign reference proposals through their aesthetic discernment and original ideas and produce hand-drawn sketching, rather than directly replicating generated outcomes. In the refinement stage, students can leverage AI tools to assist in color adjustment, compositional optimization, and detail augmentation. During the summary stage, teachers can compare multiple versions of generated results with students' original works, guiding the students to analyze the pros and cons of the creativity and summarize the shortcomings. This approach makes use of the ancillary role of the tools while preserving the dominant position of human originality.

4.3 *Post-Class Phase: Constructing Project-based Practice Scenarios*

Leveraging AIGC tools, after-class practice teaching can break through temporal-spatial limitations of classrooms, and establish in-class and extracurricular combined practical components. Integrating the application-oriented talent cultivation characteristics of vocational undergraduate education, teachers can introduce authentic business projects, empowering students to use AIGC tools for whole creative process across creative concepts, proposal selection, stylistic adjustment, and artwork finalization according to the actual requirements of the business design projects, making the training align more closely with the work patterns in the industry. When school-enterprise cooperation conditions are met, students can also be guided to apply their AIGC creative capabilities to real-world projects such as the painting of cultural and creative products, new media illustrations, and game painting design, thereby enabling seamless articulation between classroom training and job practice.

4.4 *Instructional Case Studies: Implementation Process of AIGC-Assisted Digital Painting Course*

To illustrate the actual operation modes of the pathways, let's take the course "AIGC- Assisted Digital Painting" that the author taught as an example. This course is centered around human-led painting, with AI tools serving as ancillary means. The course begins with fundamental training in Adobe Photoshop, requiring students to perform line draft drawing, coloring, and stylization of material objects to ensure that they possess independent manual drawing skills and software operational proficiency. Based on this, it gradually introduces AI as ancillary tools. During the line draft stage, Jimeng AI is used to optimize the line drafts drawn by students. In the coloring stage, image-to-image is employed to generate different color schemes to enhance students' aesthetic judgment capability. During the style exploration stage, students' own works are used as input to generate multiple digital painting styles in order to broaden their creative thinking. In this process, AI plays the role of reference and contrast provision. The

final selection and refinement execution of the images are still performed by the student themselves.

Then, the prompt word training phase begins. Students are required to analyze their own images, summarize their stylistic characteristics, and convert them into prompt words. Subsequently, they verify the efficacy of the prompt words through the combination of text-to-image and image-to-image. This "image-to-text, text-to-image" cycle process aims to facilitate students to understand the correspondence between the image styles and the language description, rather than relying solely on tools to generate images. In artwork extension phase, teachers, integrating commercial application demands, guide students to leverage AIGC tools to generate effect drawing for different commercial scenarios based on the finished artworks, thereby establishing relationship between the classroom creation and the creative requirements in real-world positions. From course implementation, it can be seen that AI tools play an ancillary role in chromatic coordination comparison, style expansion, and effect drawing generation, reducing repetitive trial-and-error time. Meanwhile, the phases such as line draft rendering, compositional structuring, and refinement execution will be intentionally reserved as human-led tasks, which to some extent avoids excessive reliance on tools [5].

5.Enhancement Strategies for AIGC-Assisted Creative Teaching of Digital Painting

5.1 *Clarifying Technological Positioning and Maintaining Originality Primacy*

The prerequisite for AIGC-assisted teaching is to define its technological positioning, establishing the teaching principle of prioritizing originality supplemented by technology, thereby avoiding issues arising from overreliance on tools. During the teaching process, teachers should define the application reach and legal boundary of AIGC tools, and explain to students that these tools are mainly used to provide inspiration sources, reference materials, and modification assistance, and they must not be directly used to complete assignments or for commercial purposes. Through methods such as classroom explanation, case comparison, and artwork evaluation and analysis, teachers can help students recognize the inherent worth of original works, understand the distinction between AI-generated content and human-originated works, thereby strengthening their original consciousness. Based on this, teachers should regard creative ideation, aesthetic judgment, theme expression and industry standards as teaching focus, positioning tools as ancillary means across ideation to execution, not as surrogates for the creative act itself.

5.2 *Refining the Curriculum Systems and Strengthening the Faculty Development*

Based on the talent cultivation positioning of vocational undergraduate education and industry role requirements, vocational undergraduate institutions can adjust their creative curriculum systems of Digital Painting, incorporate the AIGC creativity application capabilities into the learning objectives, and construct a relatively systematic teaching framework. In terms of course content, they can add appropriately prompt-word engineering, style adjustment, intelligent work modification, and commercial creativity matching to integrate traditional painting techniques, art aesthetic theories with intelligent creation methods. Regarding faculty, they can provide periodical training to help teachers master the application methods of mainstream intelligent painting tools and relevant teaching approaches, understand the latest creative trends in the industry, and enhance their tool application skills and creative guidance capabilities. Concurrently, they should support teachers in conducting relevant teaching research and school-enterprise cooperation projects, and encourage them to accumulate experience in intelligent teaching and commercial creation, gradually cultivating faculty cohort with artistic literacy and proficiency in intelligent teaching methods [6].

6.Conclusion

Against the backdrop of educational digitalization and intelligentization of artistic creation, the auxiliary integration of AIGC tools has provided new conditions for the reform of Digital Painting creative teaching in vocational undergraduate education. During the application process, we should continue exploring intelligent, personalized, and vocationally-oriented creative teaching approaches that balance technological functions with

artistic essence, positioning intelligent technology as a means of serving creative talent cultivation, advancing the development of digital painting education in vocational undergraduate education, and cultivating technically skilled artistic talents with originality, aesthetic sensibility, and intelligent creative capabilities.

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