Research on Innovation Path of 2D Animation Teaching in AIGC Era

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ABSTRACT
This paper aims to respond to the profound challenges posed by generative artificial intelligence technology to traditional two-dimensional animation education and explore the transformation path of teaching system in the AIGC era. The research deeply analyzes the shift from frame-by-frame hand-drawing to intelligent-assisted production paradigm, and reveals the structural lag of the traditional teaching mode with skills as the core in curriculum objectives, content structure and evaluation mechanism. On this basis, the article puts forward a set of systematic innovation strategies: first, reconstruct the course content and establish a three-dimensional curriculum system that integrates cue project, style control and creative planning; Secondly, we should innovate teaching methods and build an interactive ecology based on project system. Finally, this paper puts forward to formulate a new evaluation standard for future-oriented diversified talents' literacy, and bring process iteration, ethical judgment and aesthetic decision-making into the core assessment dimension. Only by breaking the shackles of single skill teaching and turning to the deep combination of thinking empowerment and man-machine cooperation can we effectively solve the problem of the disconnection between talent training and industrial demand. The new educational paradigm improves the creative efficiency, redefines the subject value of human creators in the algorithm era, and provides support for cultivating compound animation talents with forward-looking vision and humanistic spirit.

Keywords: *AIGC, Two-dimensional animation, Teaching innovation, Man-machine cooperation, Evaluation system.*

1. INTRODUCTION

With the explosive growth of generative artificial intelligence technology, AIGC (Artificial Intelligence Generated Content) is penetrating into every corner of digital creative industry with unprecedented depth and breadth [1]. As an important carrier of visual narrative, two-dimensional animation is undergoing the most dramatic changes in its production logic and aesthetic form since the celluloid era [2]. From the traditional frame-by-frame hand drawing to digital binding, and now to the intelligent generation driven by algorithms, technical iteration not only reshapes the animation production process, but also deeply challenges the existing art education paradigm [3]. At this historical node, how to examine the influence of AIGC on the ontology of two-dimensional animation creation and then reconstruct the teaching system has become a core issue to be solved urgently in the field of animation education.

At present, two-dimensional animation teaching has long been based on the traditional logic of "technique first", emphasizing the fine training of hand-drawn lines, motion rules and color theory [4]. With the intervention of AIGC technology, the marginal cost of image generation has been drastically reduced, and the once time-consuming and laborious links such as intermediate frame completion, style transfer and dynamic mirror preview have been completed instantly by intelligent algorithms. This leap in efficiency is not a simple tool upgrade, but a redefinition of creative subjectivity [5]. When AI can efficiently produce pictures with high artistic expression, the role of human creators should be changed from simple "painter" to "director" and "curator". If we continue to use the old teaching mode, it will lead

to the disconnection between talent training and industrial demand, and it is more likely that students will lose their core competitiveness in the face of the wave of intelligence [6].

This paper aims to explore the innovative path of two-dimensional animation teaching in the AIGC era, trying to find a new balance between technical rationality and humanistic art. This is the self-innovation of education mode, and it is also to ensure that the unique creativity and emotional expression of human beings will continue to occupy the core position in animation art in the future dominated by algorithms.

2. AIGC RESHAPES THE PRODUCTION PARADIGM OF TWO-DIMENSIONAL ANIMATION

The rise of AIGC technology is fundamentally deconstructing and reorganizing the production paradigm of two-dimensional animation, and its influence goes far beyond the efficiency improvement at the tool level, pointing directly to the bottom reconstruction of creative logic. In the traditional production mode, two-dimensional animation depends on the linear process of "original painting-middle painting-coloring", and the generation of each frame requires the creator to invest a lot of time and energy in manual drawing, and the technical barrier is mainly reflected in the depth of painting skills [7]. The introduction of AIGC broke this linear constraint and built new nonlinear production ecology with prompt-driven and intelligent assistance as the core.

In this new paradigm, the generative model is no longer just a tool to assist drawing, but a creative partner with independent generation ability. In the role design stage, the artist only needs to input the style description and key features, and AI can quickly generate hundreds of schemes for screening and iteration, which greatly expands the boundaries of visual creativity [8]. In the dynamic production process, the automatic tweening technology based on text or sketch can accurately predict and generate intermediate frames that conform to the physical laws and performance rhythm, and compress the action debugging that originally took several days to minutes. AIGC has changed the definition of creative subject, and human creators have been liberated from heavy repetitive work, and instead focused on script conception, visual narrative logic control and final artistic style decision.

3. THE REALISTIC DILEMMA OF THE TRADITIONAL TWO-DIMENSIONAL ANIMATION TEACHING SYSTEM

At present, the two-dimensional animation teaching system in colleges and vocational education institutions is still mired in the path dependence of "skill-based" in the industrial age. Its core logic is based on the linear accumulation of manual drawing efficiency and standardized process. In the face of the production paradigm revolution caused by AIGC technology, this teaching mode has exposed serious structural lag and adaptability crisis [9]. In the AIGC era, the marginal cost of image generation approaches zero, and the algorithm can instantly generate intermediate frames and background images that conform to physical laws and have a high artistic style. When tool intelligence has been able to replace most of the basic drawing work, continuing to focus on mechanical drawing skills will not only lead to high consumption and low efficiency of teaching resources, but also make students fall into an embarrassing situation of "quick hands but weak creativity, fine skills but narrow vision".

The existing curriculum system is obviously fragmented in the arrangement of knowledge structure, and fails to establish an interdisciplinary cognitive framework required for man-machine collaboration. Students are used to thinking in a closed single skill chain, and lack the thinking habit of using AI tools for rapid prototype verification, style transfer test and dynamic mirror preview. The emerging contents, such as cue project, parameter control of generating model, aesthetic criticism and correction strategy of AI output results, are almost blank in most existing textbooks and outlines. This kind of knowledge blind area leads students to fail to effectively construct an efficient closed loop in the face of intelligent workflow, and often feel at a loss in the face of AI generation results, or blindly rely on machines to cause serious homogenization of works, or miss creative opportunities because they refuse to use new technologies. In the old model, teachers are the only authoritative source of knowledge, and students learn by imitating teachers' brushstrokes. In the new scene of man-machine co-creation, the creative process becomes a dynamic game between human intention and algorithm randomness, which requires students to have strong real-time judgment and decision-making power. "Figure 1" shows the contrast and difference between the traditional two-dimensional

animation teaching process and the new production process empowered by AIGC in the core link.

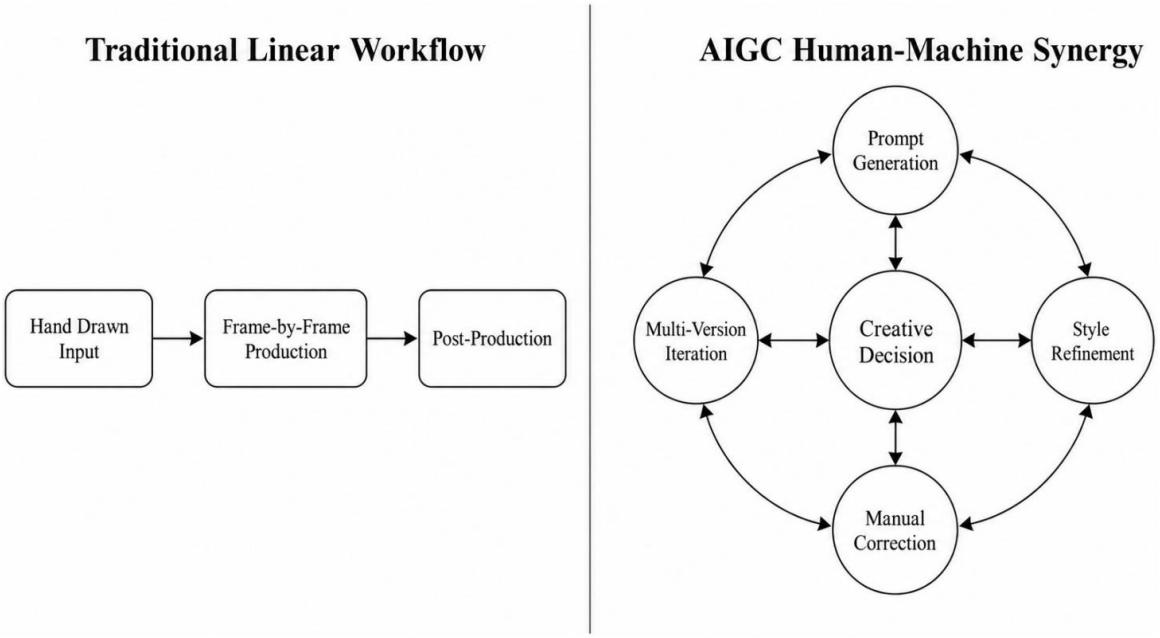


Figure 1 Comparison between traditional and AIGC two-dimensional animation production processes.

4. STRATEGIES OF COURSE CONTENT RECONSTRUCTION UNDER AIGC EMPOWERMENT

In the face of the subversive remolding of two-dimensional animation production logic by AIGC technology, the reconstruction of curriculum content must go beyond the simple thinking of "adding tools" and build a three-dimensional curriculum system that integrates core aesthetics, intelligent technology and creativity. The core of this reconstruction strategy is to break down the traditional discipline barriers and transform the original isolated skill training into comprehensive ability training driven by creative decision-making. The basic skill module needs to be fundamentally replaced, and the traditional "line copying" and "frame-by-frame practice" give way to "cue project" and "style control" training. Higher-order thinking module should strengthen the cultivation of visual narrative logic and dynamic overall planning ability. Under the background that AI can instantly generate a large number of materials, the core value of human creators has turned to script conception, mirror design and critical screening and integration of generated content. The course needs to add special contents about multi-version iteration, style transfer test and man-machine collaborative workflow design, so as to guide students to learn to identify the most artistic appeal and narrative tension among mass generation options.

Ethical norms and aesthetic judgment should be the hidden main thread running through the whole curriculum system. Because the images generated by AIGC may have some problems such as vague copyright, homogeneous style or logical defects, the teaching content must include in-depth discussion on algorithm bias, intellectual property boundary and artistic originality boundary. By setting up a training session that pays equal attention to manual correction and intelligent generation, students can master in practice how to use hand-drawn skills to repair the logical loopholes of AI, and how to give emotional temperature to cold data with unique artistic intuition. This kind of content reconstruction is not to deny the traditional techniques, but to put them in a new context, so that solid painting skills become the cornerstone of identifying and correcting the results of AI generation, rather than the only assessment index.

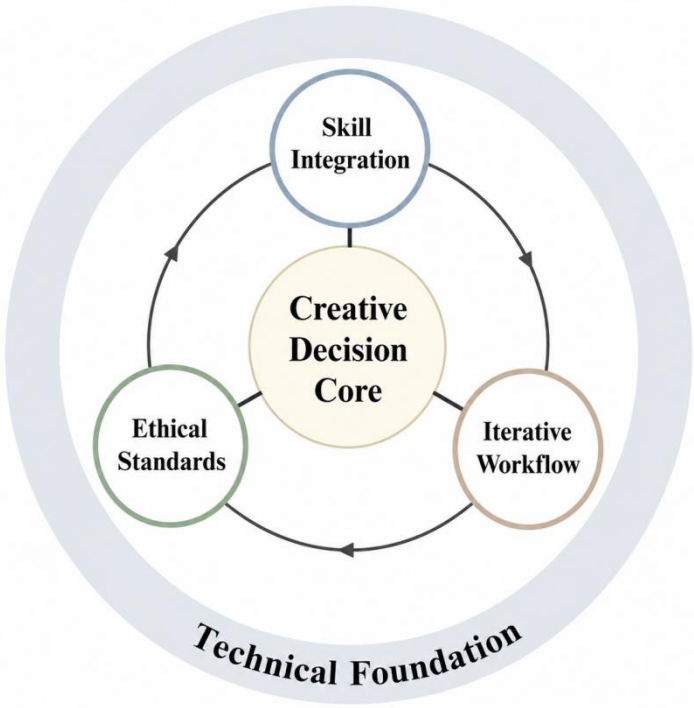


Figure 2 3D model of 2D animation course content in AIGC era.

"Figure 2" shows the hierarchical relationship from the bottom technical support to the middle skill integration, and then to the top creative output, revealing the structural characteristics of interdependence and dynamic interaction among modules.

5. TEACHING MODE AND METHOD INNOVATION OF MAN-MACHINE COOPERATION ORIENTATION

The transformation of teaching mode is the key to the implementation of curriculum reconstruction. We must completely abandon the one-way linear teaching of teacher demonstration-student imitation and build a two-way interactive ecology of man-machine co-creation and iterative optimization. In the creative process, students need to go through the cycle of intention generation -AI-assisted output-manual critical correction-parameter fine-tuning reproduction. This high-frequency iterative mechanism forces students to change from passive acceptance to active decision-making, and learn to find the best balance between randomness and artistic certainty of the algorithm.

Teaching methods should emphasize the explicitness of process thinking. The traditional homework evaluation often only looks at the completion of the final piece, while the new model requires that the iterative record of prompt words, the logical deduction of style selection and the key nodes of manual correction be included in the assessment category. By introducing the real-time feedback mechanism, teachers can immediately intervene in view of the algorithm dependence or aesthetic inertia of students in human-computer cooperation, and guide students to establish the ability to critically examine the results of AI generation.

6. FUTURE-ORIENTED NEW STANDARD OF TWO-DIMENSIONAL ANIMATION TALENT LITERACY EVALUATION

With the popularization of intelligent generation technology, the perfection of works no longer depends entirely on the time-consuming and skill of manual drawing, but more on the creator's creative planning ability, tool control level and aesthetic judgment of the generated results. Therefore, the new evaluation criteria should shift from the result-oriented to the compound dimension of process and result, focusing on the quality of students' decision-making, iterative logic and ethical awareness in the man-machine cooperation chain. The core of evaluation should focus on whether students can

use AI tools to expand creative boundaries efficiently, and at the same time, they should have keen artistic intuition to identify, correct and sublimate machine-generated content, so as to ensure that the works maintain technical efficiency without losing humanistic temperature and artistic personality.

Multi-dimensional quantitative and qualitative indicators should be introduced into the evaluation system, and the construction quality of prompt words, the logic of parameter optimization, the necessity of manual correction and the narrative coherence of the final film should be included in the core assessment points. Aiming at the problems that AIGC may cause, such as copyright ambiguity, style homogeneity and algorithm bias, students' ethical judgment ability should also be the key index of one-vote veto. By establishing a comprehensive evaluation model that includes four dimensions: creative conception, technical cooperation, aesthetic criticism and ethical norms, students' comprehensive literacy in an intelligent environment can be more truly reflected, and teaching can be guided from simple technical training to thinking empowerment. "Table 1" constructs the evaluation index system of 2D animation talents' literacy in the AIGC era.

Table 1. Talent Competency Evaluation Index System in the AIGC Era

Evaluation Dimension	Traditional Evaluation Focus Indicators	New Standard Core Indicators
Creativity & Planning	Script Originality (20%)	Narrative Logic Construction & Concept Divergence Ability (30%)
Technology & Execution	Hand-drawn Line Fluency (40%)	Prompt Engineering & Parameter Tuning Ability (25%)
Aesthetics & Revision	Image Completion & Color Matching (30%)	Manual Revision Quality & Style Consistency (30%)
Ethics & Compliance	No Explicit Assessment Item (0%)	Copyright Awareness & Algorithmic Bias Avoidance (15%)

7. CONCLUSION

The rapid development of AIGC technology is not to replace the artistic creativity in two-dimensional animation, but to force the education system to carry out a profound change from the bottom logic to the top design. If the traditional two-dimensional animation teaching continues to stick to the linear mode of "technique first", it will inevitably lead to the fracture between the supply of talents and the demand for intelligent production. By reshaping the cognition of production paradigm, reconstructing the curriculum content structure, innovating the man-machine collaborative teaching mode and establishing a multi-dimensional literacy evaluation system, this paper constructs a set of educational ecology adapted to the new era. The core of this system is to liberate students from repetitive work and make them become creative planners, tool drivers and aesthetic decision makers.

In the new teaching landscape, technology is no longer a cold tool, but a partner to extend human imagination; the role of teachers has changed from imparting skills to guiding thinking; the standard of evaluation has changed from single completion to comprehensive innovation and ethics. This transformation solves the contradiction between efficiency and quality, and protects the unique humanistic temperature and emotional expression in animation art. Faced with the increasingly powerful generating ability of algorithms, the unique value of human creators will be increasingly reflected in the control of complex narratives, the capture of emotional nuances and the ethical examination of technical boundaries. Therefore, promoting the comprehensive innovation of two-dimensional animation teaching is not only the inevitable choice of educational reform, but also the key to ensure that human creativity continues to shine in the intelligent age.

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