New Quality Productive Forces-Driven Integration of AI-Generated and Live-action in Narrative Film Production Pedagogy: A Teaching Innovation Study

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Abstract: The rapid development of artificial intelligence is reshaping film and television creation and education paradigms. This study focuses on the core theme of "integration of AI-generated content and live-action footage," systematically exploring its innovative pathways in narrative film pedagogy, industrial operational mechanisms, and its role in promoting new quality productive forces. The research demonstrates that constructing an AI-live-action cross-medium pedagogical system, deepening industry-education integration mechanisms, and optimizing talent cultivation models can effectively drive innovation in film education systems, cultivate interdisciplinary talents aligned with contemporary demands, and inject new momentum into enhancing the quality and efficiency of the film and television industry.

Keywords: AI-Generated Content; Narrative Film Creation; Teaching Innovation; Industrial Application; New Quality Productive Forces

0. Introduction

Artificial intelligence technology is emerging as the core driving force of structural transformation in the film and television industry, with its influence permeating the fundamental restructuring of content production and educational paradigms. After years of iterative advancements, AI applications have evolved from auxiliary creative tools into centralized collaborative production systems. Early experimental works like *Sunspring*, which utilized algorithms to generate screenplays, pioneered narrative experimentation, while KLING AI's full-scale film production marked the maturity of technological integration.In response, higher education institutions have actively adapted. Communication University of China pioneered the "Intelligent Imaging Technology" brand course, integrating AI algorithms with photographic aesthetics. Liaoning Normal University's "Digital Humanities" project employs generative AI to digitally reconstruct intangible cultural heritage. Hunan Taisheng Film & Television's AIGC production line has achieved an annual output exceeding ten high-quality films.However, the widespread adoption of AI raises ethical dilemmas and challenges to artistic authenticity. While *The Irishman*'s facial rejuvenation algorithm enhanced visual appeal, its unnatural emotional expressions sparked debates. France's Deepfake technology-induced face-swapping fraud incidents further highlighted risks of misuse. These incidents have spurred educational reforms, such as Shanghai Theatre Academy's AI element control system in stage design, which strictly limits technical application ratios to preserve human-centric narratives. Zhejiang University of Media and Communications' "Digital Canal" project, utilizing digital twin technology to revive historical landscapes, has won national teaching awards.Looking ahead, AI-driven film education must establish a tripartite cultivation framework balancing technological proficiency, artistic sensibility, and social responsibility. Students must not only master tools like Unreal Engine and AI-generated imaging but also deepen creative expression through project-based learning. Dedicated AI ethics courses are essential to ensure humanistic values remain central to technological practice, harmonizing instrumental rationality with ethical reflection.

1. Theoretical Framework and Model Innovation for AI-Integrated Narrative Film Pedagogy

1.1 Technological Evolution and Pedagogical Transformation

The application of AI technology in film and television creation has evolved from early experimental attempts to large-scale implementation, profoundly reshaping the trajectory of film education. Since 2023, the School of Humanities at Tianjin Polytechnic University has pioneered an "AI-Enhanced Filmmaking" educational model. Its developed "ICCS" (Intelligent Scene Generation System) and "TDSCI" (Text-to-Video via Multi-Modal Semantic Conditioning) prompt engineering frameworks have established a comprehensive AIGC workflow spanning scriptwriting, storyboarding, and video production. This innovation has been integrated into the *Film Editing: Theory and Practice*(2024 Revised Edition) textbook and selected as a flagship case in Tianjin's First Batch of "AI+Higher Education" Application Scenario Repository.

1.2 Pedagogical Reconstruction of the "AI + Live-action" Workflow

Traditional narrative film creation pedagogy typically follows a linear process of "creativity-script-storyboard-live-action-post-production," while the introduction of AI technology has shifted this process to an iterative and integrated model. Multiple innovative achievements have been made by various institutions in this field: Shandong Shenghan Finance and Trade Vocational College, in collaboration with Tencent AI Lab, developed the "AI Director Training Camp," constructing a "Scene Generation Agent" capable of generating regionally cultural characteristic scenes. Its student team's work *New Narratives of Intangible Cultural Heritagewon* the Gold Award at the 2024 National College Students' Digital Creativity Competition. The college also collaborated with the Chaoxing Platform, based on the DeepSeek large model, to build an intelligent teaching system enabling AI-assisted storyboard generation and special effects production. The team from Tianjin Polytechnic University produced AI micro-dramas such as *Lüliang* and *Flowers Bloom in Heze* for regions like Lüliang and Heze, utilizing virtual-real fusion technology to revitalize local culture; these were selected for the 2024 "National University Ideological and Political Work Excellence Projects." Shanghai Theatre Academy added a "human creative intervention degree" detection module in the course *Algorithmic Poet*, ensuring AI-generated content does not exceed 40%, and this model has been incorporated into the textbook *Ethics of Film and Television Technology*. The team from Hubei Institute of Fine Arts, in the creation of *Over the Hills*, adopted an AI dialect lexicon covering common words of Jiangxia dialect, achieving a high accuracy rate in dialogue emotion recognition, with related technological achievements obtaining software copyright certification from the National Copyright Administration.These innovative teaching models demonstrate the diverse possibilities of integrating AI with live-action. Project-centered teaching methods not only help students master AI tool application skills but also cultivate their critical thinking and sense of social responsibility. A graduate student team from the School of Film and Animation at Hubei Institute of Fine Arts, during the 2025 summer practice, used the micro-drama *Over the Hills* on the theme of rural revitalization as a vehicle to explore new pathways for AI technology to empower the entire film creation process, reflecting the deep integration of art and technology.

1.3 Interdisciplinary Integration and Thinking Cultivation

Narrative film pedagogy integrating AI with live-action breaks down traditional disciplinary boundaries and promotes deep intersection of art and technology. By integrating VR (Virtual Reality), MR (Mixed Reality) with live performance and incorporating various art forms such as literature, VR art, immersive theatre, photography, and painting, it effectively cultivates students' cross-media narrative abilities.The integration of the "AI+HI" (Artificial Intelligence + Human Intelligence) concept enables full-process application of AIGC multimodal technologies. Systematic curriculum design begins with the current status and cutting-edge trends of global AIGC technology development, takes "multimodal comprehensive creative application" as the main thread, and sequentially covers six core application scenarios: AIGC creative literacy, AI text, AI image, AI character, AI video, and AI audio. This curricular structure not only cultivates

students' technical application abilities but also deepens their understanding of the essence of collaborative creation between AI and human intelligence.Practical cases show that the immersive work *Serpentine Elegy*(2025), developed by the team from the School of Drama and Film and Television at Communication University of China, integrates VR (Virtual Reality) with live performance and was shortlisted for the Immersive Section of the 82nd Venice International Film Festival. Its technical path includes virtual-real scene integration and intelligent image generation. Tianjin Polytechnic University has constructed a three-dimensional curriculum system of "Technology-Art-Culture," integrating AI toolchains (such as Stable Diffusion, Unreal Engine) with theatrical theories and intangible cultural heritage techniques to form reusable interdisciplinary teaching modules. These practices indicate that interdisciplinary integration not only expands the dimensions of artistic expression but also cultivates students' compound innovative thinking abilities.

2. Industrialization Process and Talent Development in AI-Driven Film Production

2.1 Current Status and Development Trends of AI Film Industry

AI film production has now established a scaled application ecosystem. The "AI Imaging Talent Selection Program" jointly organized by China Film Channel and Bilibili in 2025 received over 5,800 submissions, with 1,600+ entries entering the three major tracks of *Chinese Narratives*, *Chinese Sci-Fi*, and *Chinese Intangible Cultural Heritage*. Works like *Sanxingdui: Future Revelations*—which utilized AI to reconstruct ancient Shu civilization scenes—won the Beijing Municipal Broadcasting Bureau's "Annual Science and Technology Innovation Award". Industry leaders are advancing technological integration:

2.1.1 Wanxiang Tianying

developed the proprietary "VACE WANDAY" large model for end-to-end AI production, with its film Connecting Parallel Universeswinning the Asian Young Director Award.

2.1.2 iFlytek's

"Spark Large Model" was embedded in Samsung's 2024 smart TVs, enabling real-time multilingual interaction for film consulting applications.

2.1.3 Tencent Pictures AI Lab

implemented LED-based virtual shooting systems in projects like The Three-Body Problem, reducing on-set filming time by 40% through virtual production workflows.

2.2 Industry-Education Integration Talent Development Model

Facing rapid industrial development, higher education institutions urgently need to reform film and television talent cultivation models. Practical combat-oriented teaching approaches such as "classroom as film set, assignment as final work" and "dual-teacher collaboration" (industry professionals optimizing technical workflows while academic faculty focus on educational objectives) deepen industry-academia integration. Students engage in full-cycle film production to gradually master specialized skills.

Shanghai Theatre Academy and Tencent Video co-established the "AI Film Creation Laboratory", integrating virtual shooting pre-visualization tools into teaching. Student teams utilized the ZenRender rendering engine to complete Why the Nian Monster is Red, a stylized project that won the Technical Innovation Award from the China Film and Television Association.The School of Film and Animation at Hubei Institute of Fine Arts developed the "County-Level Film Triple-Easy Toolkit", featuring a dialect voice synthesis library and green screen keying plugins. Deployed across 12 counties in Jiangxia District, this toolkit reduced production costs by 65% for regional short films, later featured in the White Paper on Reform of Practical Film and Television

Education in Higher Education Institutions.Beijing Film Academy partnered with Jimei AI to create the "AI Digital Actor Training System", employing micro-expression capture technology to replicate historical figures' mannerisms. Its digital asset Jiaolong Warriorsearned a nomination for Best Digital Character at the 38th Golden Rooster Awards.

2.3AI-Driven Film & Television Talent Competency Framework for Industry Needs

AI-era film and television professionals must possess multidimensional capabilities in technology application, artistic innovation, and industry insight. Expert reviewers from the 2025 Film Channel's "AI Imaging Talent Selection Program" emphasized that outstanding AI-driven works should balance technological innovation with cultural expression, avoiding overemphasis on technical gimmicks at the expense of narrative substance. This provides critical guidance for formulating AI film talent cultivation objectives in higher education.Tianjin Polytechnic University's "5W Education System" was validated in the production of *Sanxingdui: Future Revelations*. Student teams applied the principle of "writing for the times" to reconstruct ancient Shu civilization narratives, achieving cinematic translation of archaeological achievements through the "telling Chinese stories" dimension. This project received the Ministry of Education's Industry-Education Collaboration Case Excellence Award.Shanghai Film Group's "Global AI Visual Creativity Competition (Waka Awards)", launched in 2023, has attracted over 2,300 teams. Its 2024 winning work *Mechanical Heart and Dog's Tailutilized* Stable Diffusion to generate post-apocalyptic scenes, earning the Tencent Video Annual AI Short Film Award. Tencent Video's AI-driven script analysis system, employing large language models to dissect key elements of *The Three-Body Problemwith* 95% accuracy, has already empowered 37 film and television projects during pre-production.Industry adoption of AI remains gradual. Representatives from Shanghai Film Group noted that traditional filmmakers remain cautious due to immature technologies, while AI specialists often lack professional film experience. "Bridging these two groups is a major challenge," they stated. To address this, Shanghai Film Group initiated comprehensive AI competitions like the Global AI Marathon and Waka Awards since June 2023. "We aim to build bridges—helping traditional filmmakers embrace AI while discovering exceptional AI creators. When technology matures, we won't rule out producing authentic AI films," the spokesperson added.

3. AI-Driven Innovation and New Quality Productive Forces in Film & Television

3.1 AI Technology Empowering Film Production Workflows

AI technology is fundamentally reshaping film production workflows, establishing a "human-AI collaboration" paradigm. Taking China's first AI-generated film *Reunion Commandas* an example, the project overcame three technical challenges—character consistency, animation generation, and cross-scene coherence—using large AI models to achieve full-process intelligentization from modeling to rendering, significantly boosting production efficiency compared to traditional methods.In scriptwriting, AI-assisted platforms for Chinese-language films employ multimodal large models to close the loop of script generation, emotional analysis, and market prediction. This reduces development cycles while algorithmic evaluations improve script approval rates. In material preparation, AI has propelled virtualization technology into "real-time decision-making." Alibaba's "Divine Silhouette" AI costume system analyzes historical garment data to generate Tang/Song-style character outfits in 2 minutes, excelling at official robes, palace maid uniforms, and ethnic minority attire. Digital actor technology has also made breakthroughs: iQiyi's IQStage virtual shooting system uses 150-camera arrays for 15-second high-precision actor modeling. Combined with virtual production, this cut *Dongji Island*'s wave scene costs by [X]%, enabling precise control over 200+ wave types via computer adjustment.Editing tools now feature emotion-driven innovations. China Film Group's AI dubbing system employs acoustic field matching algorithms to align voice tones with character personalities, improving translation efficiency by [X]%. This technology has been applied to global releases like *Nezha: The Devil's*

Birth.

3.2 Manifestations of New Quality Productive Forces in Film & Television

The new quality productive forces in film and television are manifested through technological breakthroughs, innovative allocation of production factors, and deep industrial transformation. AI technology is reshaping the film and television ecosystem by empowering creative generation, lowering production barriers, and innovating expressive forms.The core characteristics of new quality productive forces in this field are reflected in a "technology-industry-value" triple leap. By reconfiguring production factors, AI has fostered a "virtual-physical coexistence" creative ecosystem. For instance, Kuaishou's *Kelin AI Video Generation Large Model*—localized for deployment—significantly reduced special effects costs for works like *Shanhai Qijing: The Wave-Cutting Odyssey*. Such advancements directly spurred niche market development. In *The General of An Guo*, AI-generated scenes of snow-capped mountains deploying troops preserved historical authenticity while transcending physical filming limitations, earning a nomination for Best Traditional Opera Film at the Golden Rooster Awards.The democratization of creation has become a notable trend. Chongqing Yongchuan's *Digital Intelligence Scene Switching Workshopenables* scene transitions in seconds through industrialized platform controls, slashing invisibility effect costs for *The Assassin in Red 2*. Non-professional creators now generate complete characters and scenes using tools like *Jimei AI* by uploading concept art. For example, the *Little Monstersteam* simulated time-lapse photography via fixed-camera techniques, earning their work a spot in Beijing International Film Festival's AIGC category. This "low-threshold-high-creativity" model validates new quality productive forces' role in democratizing filmmaking.

3.3 Innovative Business Models and Industrial Ecosystems in AI-Driven Film & Television

AI technology is catalyzing new business models in the film and television industry, creating fresh growth opportunities. On one hand, AI significantly reduces production costs, enabling million-scale projects with viable niche-market monetization models where covering costs allows artists to sustain creative output. On the other hand, AI generates novel service formats—such as AI-driven film generation platforms and AIGC content customization services—that enrich the industry's value networks.In terms of industrial ecosystems, the collaboration between China Film Channel and Bilibili to launch the "AI Imaging Talent Selection Program" systematically advances the integration of "AI + Chinese Cinema" through talent curation, competition frameworks, and incubation initiatives. This platform-based empowerment model provides exhibition windows and resource support for AI film creation, fostering innovation element aggregation and circular development.AI technology is driving the film industry toward a "platform-enabled-ecological synergy" business paradigm. Virtual shooting pre-visualization tools and computing power sharing mechanisms enable commercialization breakthroughs. In marketing, *Nezha: The Devil's Birthslashed* promotional material production costs by [X]% through AI-driven hot-spot prediction models, achieving [X]% higher presale conversion rates. The ecosystem now exhibits a dual-loop structure of "technology feedback-standard output", marking China's transition from technology adoption to standard-setting in global film and television.

4. Existing Problems and Development Pathways

4.1 Main Constraints at the Current Stage

4.1.1 Technical Insufficiencies and Challenges to Creative Autonomy

Current AI-generated content still has shortcomings in storyline coherence, emotional depth portrayal, and artistic uniqueness. Although content output efficiency has improved significantly, it remains mechanical and rigid when depicting complex human nature and delicate emotions, failing to match the unique perspectives and original thinking of human creators rooted in rich life experiences. Industry cases show that AI-produced works often lack emotional resonance and

flexible adaptability, leaving character portrayals at the level of technical(stacking) and struggling to break free from the limitations of formulaic expression.

4.1.2 Imperfect Ethical Norms and Copyright Systems

Disputes over copyright attribution for AI-generated outcomes continue to intensify, involving multiple stakeholders such as technology developers, users, training data rights holders, and AI systems. The current legal framework faces difficulties in defining the boundary between "idea and expression" in generated content. While deep synthesis technology serves artistic creation, it also poses risks of generating misinformation. Coupled with hidden risks of personal information leakage in training data and algorithmic bias, this further complicates ethical regulation.

4.1.3 Pressure on Occupational Structure and Competency Upgrading

The popularization of AI in standardized segments like editing and dubbing has led to a contraction in traditional job positions, while demand for new-type interdisciplinary talents proficient in both artistic cultivation and AI technology has surged. The film and television talent cultivation system urgently needs reform, requiring the establishment of a curriculum structure that integrates technical theory and artistic aesthetics to alleviate the current mismatch in practitioners' competencies.

4.1.4 Contradiction Between Virtual and Physical Structures in the Industry Ecosystem

AI technology drives the transformation of production processes toward digital simulation. However, the core competitiveness of the film and tourism industry still relies on immersive experiences in physical environments. Although virtual production technology reduces reliance on on-site location shooting, it lowers the tourism added value of film bases. The systemic conflict between declining utilization rates of physical scenes and difficulties in initial investment returns hinders the sound development of the industry.

4.2 Future Development Directions

4.2.1 Establishing Human-AI Collaborative Creation Models

The fundamental principle of "technology as an aid, not a replacement for human creativity" should be upheld. Exploring synergies between AI and human creators in inspiration stimulation, style coordination, and emotional conveyance is essential. Developing a "creative dominance weight assessment framework" will clarify AI's role boundaries in tasks like shot design and material screening, ensuring human oversight remains central to artistic judgment.

4.2.2 Building a Tripartite Regulatory Framework

•Legislative Level: Establish a classified management system for AI-driven film production, mandating ethical evaluations and rights labeling for high-risk applications like deep synthesis.

•Technical Level: Advance R&D in "digital watermarking + distributed ledger" technologies to enable full-chain tracing and solidify evidence collection for infringement cases.

•Educational Level: Integrate AI ethics modules into higher education curricula to cultivate creators proficient in both technical standards and social responsibility.

4.2.3 Strengthening Industry-Academia Collaboration

Implement "dual-mentorship (industry-academia)" and project-based training mechanisms using real-world industry cases to drive pedagogical reform. Co-developing labs focusing on virtual production and intelligent post-production will bridge skill gaps between talent and industry demands. Guiding students toward AI-enhanced cross-media storytelling practices will enhance their technical adaptability and artistic innovation capabilities.

4.2.4 Promoting Technological Democratization and Resource Accessibility

Developing open-source ecosystems, public datasets, and cloud platforms will lower entry barriers for AI-driven film creation. Creating simplified tools for SMEs—integrating features like AI scriptwriting and automated storyboarding—will empower grassroots creators to produce high-quality content. Concurrently, establishing digital preservation systems for cultural heritage will expand AI's application in artifact restoration and intangible cultural heritage documentation, broadening the technology's societal impact.

5 Conclusion

The narrative film teaching model that integrates AI-generated content with traditional live-action techniques has become a key pathway for the transformation and upgrading of the film and television education system. Through technological innovation, process reengineering, and industry-academia collaboration, this integrated teaching is building a new teaching system that aligns with the demands of the digital-intelligent era. Faced with the rapid iteration of AI technology and profound changes in the film and television industry, higher education institutions should actively adjust curriculum structures, innovate teaching methods, and strengthen school-enterprise cooperation, committing to building a sustainable film and television education ecosystem and promoting the quality improvement and upgrading of China's film and television industry.This innovative teaching model, while enhancing students' technical practical skills, places greater emphasis on cultivating their cross-media narrative abilities, innovative thinking abilities, and cultural inheritance awareness, delivering to the industry interdisciplinary talents with both digital literacy and artistic creativity. Driven by the dual forces of technological evolution and industrial transformation, universities need to proactively optimize teaching content, improve teaching methods, and deepen school-enterprise linkages to establish a future-oriented mechanism for film and television talent cultivation. In this process, it is essential to emphasize the organic unity of technological application and humanistic care, enabling AI to truly become an effective tool for inspiring creativity, disseminating culture, and serving society, thereby boosting the coordinated development of China's film and television education system and industrial ecosystem.The innovation of AI in the film and television industry is essentially a dialectical practice concerning "efficiency and warmth." As technology continuously expands the boundaries of creation, only by adhering to the development philosophy of "people-oriented and technology for good," while pursuing production efficiency and creative expression, improving laws and regulations, clarifying ethical boundaries, and optimizing the industrial ecosystem, can we achieve a leap in production efficiency and safeguard the unique value and diverse forms of artistic creation amid the wave of intelligent transformation.

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