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AI-Assisted Design in Film Post-Production Course Teaching

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Abstract:
This paper discusses the application of AI-assisted design in film post-production course teaching, emphasizing its importance in enhancing students' practical abilities and innovative thinking. The article first outlines the revolutionary role of AI technology in film post-production, including functions such as content-aware editing and color correction, and points out that integrating AI technology into teaching can help students better adapt to industry demands. The research background section reviews the history and current status of AI applications in post-production education, emphasizing its role in cultivating students' technical skills and creative abilities. The article details teaching design strategies, including heuristic teaching, practice-oriented strategies, and multimedia-assisted strategies, and elaborates on the teaching implementation plan by modules. Finally, the article analyzes the impact of AI-assisted design on the field of education and proposes prospects for future research directions, aiming to promote innovation and development in the field of education.

Keywords:
Artificial Intelligence; Film Post-Production; Course Teaching;

1. Introduction

In the field of film post-production, the integration of artificial intelligence (AI) technology is sparking a revolution. Through machine learning algorithms, AI can perform tasks such as content-aware editing, color correction, visual effects enhancement, and audio optimization, significantly improving production efficiency and audiovisual quality. In the educational realm, introducing AI technology into film post-production course teaching allows courses to more closely resemble actual work environments, fostering students' practical abilities and innovative thinking. Students can learn the latest post-production techniques and tools through interaction with AI-assisted design work, thereby enhancing their competitiveness.

The purpose of this study is to delve deeply into the application of AI-assisted design in film post-production course teaching and analyze its impact on the field of education. Through a comprehensive analysis of existing research and practical case studies, this paper aims to provide educators and researchers in related fields with best practices and strategies for AI-assisted design in post-production teaching. This article will introduce the current applications and development trends of AI in film post-production, discuss the specific

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applications and effects of AI in post-production course teaching. The paper analyzes the impact of AI-assisted design on the field of education and offers corresponding suggestions and outlooks. Finally, it provides a perspective on future research directions.

Through the discussion in this study, this paper hopes to provide new ideas and methods for AI-assisted design in film post-production course teaching, promoting innovation and development in the field of education. The widespread application of AI has already changed many industries, and film post-production course teaching will also face new opportunities and challenges as a result. Through the elaboration and analysis in this article, we hope to draw the attention of educators and researchers to the importance and potential of AI-assisted design in film post-production course teaching, further promoting research and practice in this field.

2. Research Background

In recent years, the film and video production field has made significant technological advancements, especially in post-production. One notable development is the integration of Artificial Intelligence (AI) into the design process, which has fundamentally changed the execution of visual effects and editing. The application of AI-assisted design in film post-production course teaching has garnered widespread attention due to its potential to enhance students' learning experiences and prepare them for the industry's evolving demands.

The application of AI-assisted design in film post-production education involves various educational backgrounds and theoretical foundations. Firstly, it is based on the principles of media education, emphasizing the cultivation of students' technical skills and creative abilities in media production. By incorporating AI technology into the curriculum, educators can provide students with practical experience and hands-on training using cutting-edge tools and technologies. Additionally, the application of AI in post-production education is inspired by the field of instructional design, which focuses on creating effective and engaging learning experiences. Instructional design theories and models, such as the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), provide a framework for designing and delivering post-production courses that effectively utilize AI technology. These theories emphasize aligning educational objectives with student needs and creating an optimal learning environment[1].

The application of AI-assisted design in art and design education has become an increasingly researched topic. Previous studies have examined the effectiveness of incorporating AI technology into curricula and explored its impact on student learning outcomes. For example, the "AIGC: Assisted Brand Advertising Innovative Design" course at the Communication University of China explored how AI-generated content influences design thinking in brand advertising[2]. Other research has focused on exploring AI image generation technology in packaging design teaching, suggesting that AIGC can enhance the intuitiveness of course information delivery and stimulate students' learning interest[3].

This paper primarily addresses undergraduate education. For students, AI-assisted design provides an opportunity to practice and explore innovation, helping them acquire skills that match industry demands. The teaching objectives aim to cultivate students' foundational knowledge and skills in AI technology, enabling them to understand and apply AI's potential in film post-production. Secondly, educators hope to enhance stu-

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dents' creativity and innovative abilities through practical experiences with AI-assisted design, enabling them to explore new creative directions in design and editing processes. Lastly, educators also aim to cultivate students' critical thinking and problem-solving abilities through AI-assisted design teaching, enabling them to tackle complex post-production tasks.

3. Description of Teaching Design

The course teaching strategies primarily include heuristic teaching, practice-oriented strategies, and multimedia-assisted strategies. The heuristic teaching strategy guides students through observation and practice, stimulating their interest in learning and helping them deeply understand the concepts and skills related to film post-production. The practice-oriented strategy combines practical operations and demonstrations, encouraging students to engage in hands-on activities using software like AE and VR painting tools to deepen their understanding and application of knowledge and skills. The multimedia-assisted strategy utilizes AI tools and software platforms such as Midjourney, Vega AI, and SD to generate example images and stylized visuals, enhancing students' understanding and practical abilities in post-production. These strategies are combined to create a highly interactive and technologically advanced learning environment aimed at improving students' learning outcomes and innovative capabilities.

The course teaching plan is divided into four modules, designed to enhance students' film post-production skills through AI-assisted design technology:

Module 1: Students will understand the development of compositing techniques and their application in filmmaking through historical research and VR technology practice.

Module 2: Focuses on theoretical knowledge of tone, brightness, and chromaticity, combined with practical operation of AE software to cultivate students' color adjustment skills.

Module 3: Guides students to explore different image styles and practice special effects production using AI tools, enhancing their visual expression abilities.

Module 4: Requires students to comprehensively apply what they have learned to create a one-minute creative video, utilizing AI-assisted design in at least one production stage to achieve a combination of technology and creativity.

Through this plan, students will not only master necessary technical skills but also develop innovative thinking and problem-solving abilities through practical operations[4].

4. Teaching Implementation Process

The teaching objective of this course is to cultivate students' mastery of AI-assisted design technology in film post-production, enhancing their technical skills, innovative thinking, and problem-solving abilities. The design intent is to better adapt to the changing industry demands through a combination of practical operation and theoretical learning. The teaching implementation process employs diverse teaching methods to help students actively construct their knowledge system, utilizing AI tools and AIGC platforms to aid in teaching

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design, enhancing students' intuitive understanding of theoretical knowledge and improving their production techniques.

4.1 Teaching Module One: Understanding the Concept of Compositing

This module aims to help students deeply understand the concept of compositing in film post-production, including its historical evolution, principles, and development trends. Students first watch documentaries on early Industrial Light & Magic special effects production to trace the history and recognize the crucial role of compositing technology in filmmaking. The teacher then guides students to discuss the concept of compositing in post-production, encouraging active participation and responses.

Students then learn the basic principles of digital compositing technology by watching behind-the-scenes videos of digital compositing effects in films. The teacher demonstrates how to use compositing and layer functions in AE software with practical cases, while students practice independently, creating a dynamic poster using the knowledge learned to strengthen their application of digital compositing techniques.

Finally, students are introduced to emerging film compositing technologies by watching 3D animated short films drawn in VR devices to understand the latest technological advancements. The teacher demonstrates real-time 3D painting functions using VR equipment, and students engage in hands-on thematic creation using VR painting tools. Through this process, students not only exercise their creativity but also complete a research report on the application of VR, AR, and XR in film post-production by recording their creation process, writing creative logs, and collecting relevant materials, thus comprehensively enhancing their practical abilities.

4.2 Teaching Module Two: Understanding Tone Concepts and Using AE Software for Color Grading

This module focuses on helping students deeply understand the concept of tone and practice color grading using AE software, applying theoretical knowledge to practice. The process begins with using AI-assisted design tools to generate examples of various tones, allowing students to visually experience the impact of different tones on overall visual effects. The teacher then demonstrates how to use color grading tools in AE software to achieve specific tone effects, showing students concrete operational steps and techniques.

In-class exercise 1 involves using Midjourney to generate images of the same scene with different tones, explaining the impact of tonal differences on visual effects, and guiding students to recreate the tonal effects of AIGC example images using AE software. In-class exercise 2 uses AIGC to simulate character images under different lighting positions and brightness, guiding students to observe how light changes affect character outlines and visual effects, and simulate specific lighting and brightness effects using AE software. Finally, in-class exercise 3, the teacher uses AIGC to create comparison images of different chromaticities under the same brightness, helping students understand the balance between brightness and chromaticity. The teacher demonstrates how to adjust video brightness and chroma curves in AE to create effects with different contrast and saturation, while students adjust given video materials to achieve balanced brightness and chromaticity effects.

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4.3 Teaching Module 3: Understanding Image Style and Using AI Tools for Special Effects Production

This module aims to guide students in understanding image style concepts and applying AI tools to transform theoretical knowledge into practical skills. Students first intuitively experience the significant impact of different image styles on visual effects through AIGC-generated photorealistic works, attempting to guess the director styles these works imitate, thus deepening their understanding of image style diversity. The teacher then introduces professional terminology for image styles and demonstrates the process of generating prompts using AI tool ChatGPT, guiding students to master techniques for writing effective prompts. Students practice creating prompts independently to generate images with specific style atmospheres.

In-class exercise 1 involves students watching different stylized versions of the same video content, experiencing AI applications in image stylization. The teacher demonstrates how to use AI tool Runway to stylize real-shot videos, such as converting them to claymation style. Students operate independently, importing their own videos into Runway and attempting to create special effects films with unique styles. In-class exercise 2 explores sound styles in images. By comparing human and AI voice-over segments, students gain a deeper understanding of sound styles. The teacher demonstrates how to use AI voice tools to create voice-overs with different tonal effects using various voice packages. Students practice using AI tools to generate AI versions of their own voices and create narrations with personalized sound styles.

4.4 Teaching Module 4: Creative Video Production Based on AI-Assisted Design

This module aims to cultivate students' ability to use AI-assisted design technology for creative video production. Students are encouraged to create a one-minute video based on a well-known IP work, incorporating various effects such as live-action video, 2D and 3D animation, with no style restrictions. Students focus on three key video production stages, applying AI technology in at least one stage to enhance work efficiency and creative expression.

In the concept stage, students learn to use text-to-image tools to design lighting effect and color tone atmosphere images, experimenting with styles to more accurately capture and express the expected style and atmosphere of the video. In the post-production material creation stage, students master using AI tools like Midjourney, Stable Diffusion, and Vega AI to generate texture maps and background material images, enriching the video's visual effects and improving production efficiency. In the production and processing stage, students learn to apply texture maps to 3D models, or use software like Photoshop to convert illustration materials into vector graphics, along with other necessary material modification techniques.

Through this module, students not only enhance their skills in using AI-assisted design technology for video production but also strengthen their creative expression and technical practical abilities. Additionally, students experience the importance of teamwork and cultivate problem-solving skills in practical processes. Ultimately, students complete a creative video project incorporating AI technology assistance, showcasing their learning outcomes and innovative potential in the field of film post-production.

5. Teaching Results and Reflection

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After a series of teaching implementations, this study has achieved significant educational outcomes. Through learning and practicing AI-assisted design technology, students not only mastered key skills in film post-production but also significantly improved their innovative abilities and critical thinking. In Module 1, students gained a deep understanding of compositing technology principles and applications by combining historical review with modern technology. The use of VR painting tools cultivated their creativity and research abilities. The implementation of Module 2 allowed students to intuitively experience the impact of different tones, brightness, and chromaticity on the visual effects of audiovisual works, and through hands-on operation of AE software, improved their technical application skills. In Module 3, students understood the diversity of image styles through the application of AI tools and enhanced their ability to control image styles through practical operations. Finally, in the creative video production of Module 4, students successfully integrated their acquired knowledge and skills to create personalized creative video works.

Although AI-assisted design tools greatly improved teaching efficiency and student interest, there is still a need for more refined selection and application of tools. Some tools have a high complexity of operation, presenting a certain threshold for beginners. In the future, it will be necessary to choose tools more suitable for students' levels or provide more detailed operational guidance. Secondly, teaching should encourage more teamwork among students to cultivate their collaboration abilities and communication skills. Regarding teaching content, although this course covered several important aspects of film post-production, the discussion of emerging technologies was not deep enough. With the rapid development of artificial intelligence technology, future teaching should incorporate more content about the latest technological trends to keep students abreast of industry developments. At the same time, the teaching evaluation system needs further improvement. In addition to evaluating technical operational abilities, it should also include assessments of creative thinking and problem-solving skills to comprehensively reflect students' learning outcomes.

Overall, the application of AI-assisted design in film post-production course teaching has achieved positive educational effects. However, continuous optimization and improvement are still needed in teaching methods, tool selection, course content, and evaluation systems to better adapt to educational development needs and students' actual situations.

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