USING PROJECT-BASED LEARNING METHOD TO IMPROVE PRACTICE SKILLS OF VIDEO POST-PRODUCTION COURSE OF UNDERGRADUATE STUDENTS

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A thesis submitted in partial fulfillment of the requirements for
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ABSTRACT

The objectives of this research were 1) to use project-based learning method to improve the practice skills of video post-production courses of undergraduate students, and 2) to compare students' practice skills of video post-production course before and after the implementation based on the project-based learning method. The sample group consisted of 30 freshmen students from Chongqing Vocational College of Media in China, through cluster random sampling. The research instruments included 1) lesson plans based on project-based learning, and 2) practice skills tests: multiple choices and performance assessment. The data were analyzed by mean, standard deviation, and t-test for the dependent samples.

The results revealed the following:

1. Using project-based learning method to improve the practice skills of the video post-production course. Researcher studied information based on project-based learning method and synthesized into 7 steps: Determining the project theme, Setting project objectives, Planning the project process, Organizing students into groups, Project implementation, Display and communication and Evaluation and reflection. Quality analysis of lesson plans by 3 experts, shown that the overall results were most suitable. After students have learned according to the 3 lesson plans, the average score after learning was 61.23, while the average score before learning was 35.13.

2. The comparison of students' practice skills of video post-production course before and after based on project-based learning method. The result found that students' practice skills scores after learning were higher than before learning statistically significant at the level .01. Therefore, learning by the project-based learning method could improve students' practice skills of video post-production course.

Keywords: Project-Based Learning Method, Video Post-Production Course, Undergraduate Students

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The four-year postgraduate journey has slipped away in a heartbeat, yet the memory of my initial arrival at the Bansomdejchaopraya Rajabhat University remains as vivid as if it were yesterday. Throughout these four years of dedicated study, my affection for sculpture teaching has grown deeper, intensifying my resolve to build a career within the realm of sculpture education.

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On this resplendent spring day, awash with the vibrant hues of blooming flowers and new beginnings, I extend my most heartfelt wishes to all my esteemed teachers, fellow students, and cherished friends. May good health be your constant companion, and may happiness permeate every corner of your lives, filling your days with warmth and contentment.

Wang Tianqi

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Chapter 1
Introduction

Rationale

The "General Catalogue of Undergraduate Programs of Ordinary Higher Education Institutions (2020 Edition)" and "List of New Undergraduate Programs Admitted into the Catalogue of Higher Education Institutions (2021)" mainly involve the setting and management of undergraduate majors in higher education in China, including a clear stipulation on art-related majors. They provided official and authoritative reference for colleges and universities in planning their curriculum and content for related majors such as film and television production. Specifically, the film and television production major belonged to the "Broadcast, Film and Television" major under the "Art" category. This classification clearly defined the location of the film and television production major and provided guidance for college and university majors. The government stated that in this catalog, the specific setting, training objectives, and training requirements of the film and television production major must strictly follow the provisions of this major classification. The division of majors was mainly to ensure the systematic and scientific nature of higher education and to enable students to have a clearer understanding of and choose their major fields. For example, if a student had a strong interest and career planning in film and television production, he could choose relevant colleges and majors according to the provisions of this professional catalog and apply for admission and study (Ministry of Human Resources and Social Security, 2019). The professional catalog also provided a basis for the setting of related courses. Colleges and universities needed to refer to the relevant provisions in this catalog when setting related courses to ensure the rationality, and advanced nature of teaching content and training objectives. In summary, this professional catalog provided important norms and guidance for the opening, development, and improvement of majors such as film and television production and was one of the basic guiding documents for higher education work (Hebei Provincial Education Examination Institute, 2023).

The significance of the undergraduate film and television post-production course lied in the fact that with the development of society and the increasing demand for high-quality films, high-quality film and television post-production had become a key link in improving the aesthetics and viewing experience of films. Through these courses, students could systematically learn and master the

theoretical knowledge and practical skills of film and television post-production, including but not limited to video editing, color correction, special effects production, and sound synthesis (Hu Nannan, 2021). The course of film and television post-production was of paramount importance in the film and television industry today. In video production, it was the key link for integrating and optimizing the raw materials obtained in the preliminary shooting, which could integrate scattered shots into a complete, smooth and logical film, endowing the film with vitality. For video editing and special effects, by operating professional software, it could cut, color and add various cool special effects to the picture, greatly enhancing the visual impact and artistic appeal of the video, making the film stand out. In the stage of completing and outputting the post-production, it could ensure that the film was presented in the appropriate format, resolution and quality to meet the playback requirements of different platforms. In summary, the course of film and television post-production was an indispensable important guarantee for creating high-quality film and television works and had far-reaching significance in promoting the development of the film and television industry (Feng Yanyan, 2017).

The development of economic globalization promotes the progress of science and technology, and human life changes day by day. The increasing number of teaching resources and the improvement of teaching conditions have challenged the traditional teaching model, and they must be closely linked with developing students' activeness and learn up-to-date information. The traditional teaching model has not aroused enough interest and attention. Applying project-based learning method to video post-production course cannot only enrich teachers' theoretical research on teaching mode, but also bring new ideas and methods for classroom teaching. Yang Liu (2021) stated that real-world problems were complex and difficult to address with knowledge from a single discipline. Project-based learning method broke down barriers between subjects and built bridges for knowledge integration. When students worked on projects, they needed to call on knowledge from multiple disciplines, such as language, math, and science, and linked them together. Through this process, students built a comprehensive knowledge system and clarified the logical connections between different disciplines. In the future, when faced with diverse and interdisciplinary real-world problems, they could quickly mobilize knowledge resources and provide suitable solutions. Which Wang Decai & Jiang Lingyun (2017) pointed out that traditional teaching methods often fell into the limitation of theoretical knowledge transmission, and this tendency was especially evident in the undergraduate film and television post-production course was a

discipline with extremely strong practical nature, and students needed to have advanced practical skills and innovative thinking. Including consistent with Zeng Zhu & Xiao Lan (2017) pointed out that the benefits of applying project-based learning method to the undergraduate film and video post-production course enhance students' practical operation ability and problem-solving ability. Students needed to start from the material shooting in the early stage, apply the photography skills they had learned, choose suitable shooting equipment, scene setting and camera language to obtain high-quality raw materials. Entering the post-production stage, they needed to be proficient in professional software such as Adobe Premiere Pro for editing. At the same time, during the project progress, students were bound to encounter various problems, such as lighting problems during material shooting leading to poor picture quality, or unsatisfactory special effects. Faced with these problems, students had no choice but to actively think, refer to materials, and try different solutions. And consistent with Fan Xiaotian (2021) emphasized that the key to project-based learning was giving students the power to lead their own learning. Traditional teaching often involved a one-way lecture by the teacher and passive learning by the students. However, project-based learning encouraged students to take the lead in planning their progress, setting goals, and controlling the pace. To advance their projects, they actively searched for information, overcame knowledge gaps, and learned to self-assess and adjust. This exercise in autonomy could help students become independent thinkers and proactive learners, which was beneficial for long-term learning and personal development.

In summary, the project-based learning method improve of teaching conditions have challenged the traditional teaching models. The key to project-based learning was giving students the power to lead their own learning, encouraged students to take the lead in planning their progress, setting goals, and controlling the pace. To advance their projects, they actively searched for information, overcame knowledge gaps, and learned to self-assess and adjust. This exercise in autonomy could help students become independent thinkers and proactive learners, which was beneficial for long-term learning and personal development. Furthermore, it can enhance students' cooperation and communication abilities. The project-based learning method is of great significance in the undergraduate film and video post-production course.

Objectives(s)

1. To use project-based learning method to improve practice skills of video post-production course of undergraduate students.

2. To compare students' practice skills of video post-production course before and after implementation based on project-based learning method.

Research Hypothesis

After implementing using project-based learning method, the students' practice skills of video post-production course were improved obviously.

Scope of the Research

Population/ Sample Group

The Population

There were 60 freshmen students, majoring in fine arts with 2 classes from Chongqing Vocational College of Media, Chongqing city, China, in the first semester of the academic year 2024. (There were mixed abilities in each class: high level, medium level and low level.)

The Sample Group

Through a cluster random sampling, there were 30 freshmen students, majoring in fine arts with 1 class from Chongqing Vocational College of Media, Chongqing city, China, in the first semester of the academic year 2024.

The Variable

Independent variable: project-based learning method

Dependent variable: practice skills of video post-production course

Contents

Using project-based learning method to improve practice skills of video post-production course of undergraduate students. The course of practice skills of video post-production is divided into 3 units, total 33 hours. Which has the following content details:

Unit 1: Video production (11 hours)

Unit 2: Video editing and special effects (11 hours)

Unit 3: Post-production finishing and output (11 hours)

Time

The study period was from March 2024 to March 2025 and was divided into the following stages:

1. In March 2024, three chapters were submitted and defended.

2. In June 2024, modify and completed 1) The lesson plan of project-based learning method to improve practice skills of video post-production course, 2) the multiple-choice test for understanding concept of each content and 3) the performance assessment for improvement practice skills of video post-production course.

3. In July 2024, took the lesson plan and research instrument to 3 experts to consider consistency, and try out research instruments to analyze the formal research phase.

4. In July 2024, experiment with sample group used the lesson plans of practice skills of video post-production course based on project-based learning method.

5. In March 2025, the research report and paper published are completed.

Advantages

1. For the students: Problem-based Learning teaching method.

1.1 In practical operation and problem-solving, students become proficient in software and equipment operation through actual projects such as making short films, and they are able to solve various problems encountered during shooting and production. Their abilities are significantly improved.

1.2 In terms of knowledge construction, taking the lead in project progress encourages them to actively integrate knowledge such as understanding the interrelationship of knowledge in advertisement production and building a deep knowledge system.

1.3 At the same time, they learn to work in a team by completing projects together, such as a large documentary production, and develop their interpersonal communication and expression skills, as well as enhance self-confidence, innovative thinking and other comprehensive qualities, laying a solid foundation for their future career development.

2. For the teachers: In terms of the project-based teaching.

2.1 It encourages teachers to transform from knowledge transmitters to guides and monitors, promoting innovative teaching and enhancing their professional competence. For example, keeping up with industry trends in project design and guidance.

2.2 During the teaching process, teachers can have a deep understanding of students and provide individualized guidance based on their performance in projects.

2.3 Meanwhile, the high-quality project outcomes of students can enrich teachers' teaching achievements, which can be used for display and evaluation, enhance teachers' sense of professional accomplishment, motivate them to continuously improve teaching quality, and better fulfill their educational responsibilities.

3. For the university: The project-based learning approach is of great significance to the universities where the undergraduate film and video post-production course is offered.

3.1 In terms of talent cultivation, it can enhance students' overall quality and make them better fit the industry needs, thereby boosting their employability and enhancing the reputation of the school. From the perspective of teaching reform, it can drive the reform of courses and related teaching modes, promote the construction of the discipline.

3.2 The university can stimulate innovation in multiple courses and enhance academic levels. In terms of resource integration, it can optimize the utilization of internal resources and expand cooperation between industry, academia and research. In addition, can leverage enterprise resources to enrich project content, enhance technical exchanges, and attract resources for the development of the school, thereby elevating the comprehensive strength of the university in film and video education.

Definition of Terms

Project-Based Learning Method was a teaching strategy that is student-centered and highly practical. Teachers closely align their lessons with the curriculum, deeply integrate real-life scenarios, meticulously design learning projects, and simulate real and complex problem situations to give learning tasks practical meaning. Students acquired knowledge and skills through hands-on activities and personal experiences while working on projects. allowing students to understand and develop their practical skills. This learning method emphasized the integration and application of knowledge, and students must draw on knowledge from multiple disciplines to complete the project. There are 7 steps as follows:

Step 1 Determining the project theme. When determining the theme, it must be closely aligned with the established learning goals.

Step 2 Setting project objectives. Setting project goals involves clearly defining specific outcomes and desired states based on the project theme. The goals should be aligned with the students' actual level of proficiency and stage of development, as goals that are too difficult may discourage students.

Step 3 Planning the project process. This step involves systematically designing the implementation steps for the entire project of the starting point until the ending point of the project.

Step 4 Organizing students into groups. This part aims to promote student collaboration and knowledge sharing, reasonable grouping principles based on students' abilities, interests, expertise and project needs.

Step 5 Project implementation. During this stage, students carry out actual actions based on the planned procedures and group assignments. Each group focuses on the project goals and actively engages in data collection, analysis, and integration. Group members communicate and collaborate continuously, adjust their roles and strategies flexibly based on actual circumstances, and work together to push the project forward steadily.

Step 6 Display and communication. Project-based learning method provides a platform for students to showcase their achievements and learn from each other. During the presentation, students clearly states the project goals, implementation process, encountered problems, and solutions, thereby improving their expressive skills and logical thinking and shared experience from a different perspective and broaden their thinking boundaries.

Step 7 Evaluation and reflection. Evaluation and reflection play a crucial role in enhancing learning outcomes. The evaluation process employs a multi-stakeholder evaluation approach, including self-evaluation by students, peer evaluation by groups, and evaluation by teachers. Evaluation by teachers provides professional judgments on the quality of project outcomes and the application of knowledge and skills from various dimensions. Reflection is based on the evaluation results, during which students think about what they did well and what they need to improve in the project.

Practice Skills of Video Post-Production Course refers to the systematic ability of learners to transform raw materials into high-quality, artistically impactful, and communicable films using professional software, tools, and creative concepts, covering video production, video editing and special effects, and post-production completion and output in the process of film and television post-production teaching and practice. The practice skill includes three aspects: 1) video production skill, 2) video editing and special effects skill, and 3) post-production finishing and output skill.

Video production skill is a comprehensive set of artistic and technical capabilities in the field of film and television creation, aiming at turning creative ideas into captivating video works. Students learned and demonstrated: (1) Video camera techniques. The technology covers the selection of lenses, lighting adjustment, and the application of shooting techniques. (2) Composition techniques. The techniques refer to a set of technical means to optimize visual effects and enhance audience experience by carefully arranging and positioning the elements in the captured scene. (3) Video shooting techniques. The techniques include operational skills of cameras, lighting application and design of shooting angles and composition. And (4) Storyboarding. The concept of a storyboard refers to a series of carefully designed illustrations and accompanying captions that are arranged in chronological order to form a visual story framework.

Video editing and special effects skill is the key creative and professional stages in post-production for film and television, imparting new life and visual impact to raw video footage. Students learned and demonstrated: (1) Material arrangement and management: The significance of video editing and management lies in the careful organization and processing of video materials to integrate original and scattered materials into organized, rhythmic and expressive video works. (2) Video editing and splicing: The significance of video editing and splicing is to creatively organize and arrange the sequence, duration and rhythm of video materials to seamlessly connect multiple segments into a coherent, smooth and infectious whole to tell a story, convey information or create a specific atmosphere. (3) 3D special effects: The significance of three-dimensional special effects lies in the use of computer technology to simulate and create three-dimensional visual elements beyond the limitations of the real world, adding shocking, realistic or surreal visual effects to the video content. And (4) Post special effects: The significance of video post-special effects lies in the secondary creation and beautification of videos by means of fine image processing, color adjustment, filter application and creative synthesis.

Post-production finishing and output skill. The completion and output of video production, as the crucial final step in the post-production process, is a meticulous process for refining the details of the work. Students learned and demonstrated: (1) Text addition: Video text addition refers to the behavior that text information is superimposed on the video screen through video editing software. (2) Sound processing: Video sound processing refers to the process of editing, adjusting, optimizing and enhancing the original audio in the video post-production.

(3) Preview and correction: Video preview refers to the preliminary playback of edited video clips in the process of video post-production to evaluate their effects and quality and adjust and optimize the problems or deficiencies found on the basis of preview to ensure that the final video work meets the expected standards. And (4) Export and distribution: Video export is the conversion of edited video into a format suitable for various playback platforms and devices to ensure that the video can be presented in high quality in different environments.

Research Framework

The title of the thesis: Using project-based learning method to improve practice skills of video post-production course of undergraduate students. The researcher studied the concepts and principles of project-based learning method from many researchers: Teng Jun, et al. (2018), Hu Jiayi (2019), Zhu Chengqi (2023), Liu Jianjun (2023), Huang Zhou (2024), and This research was synthesized 7 steps to improve practice skill of video post-production course of undergraduate students, and defined it as a framework for research concepts, as follows:

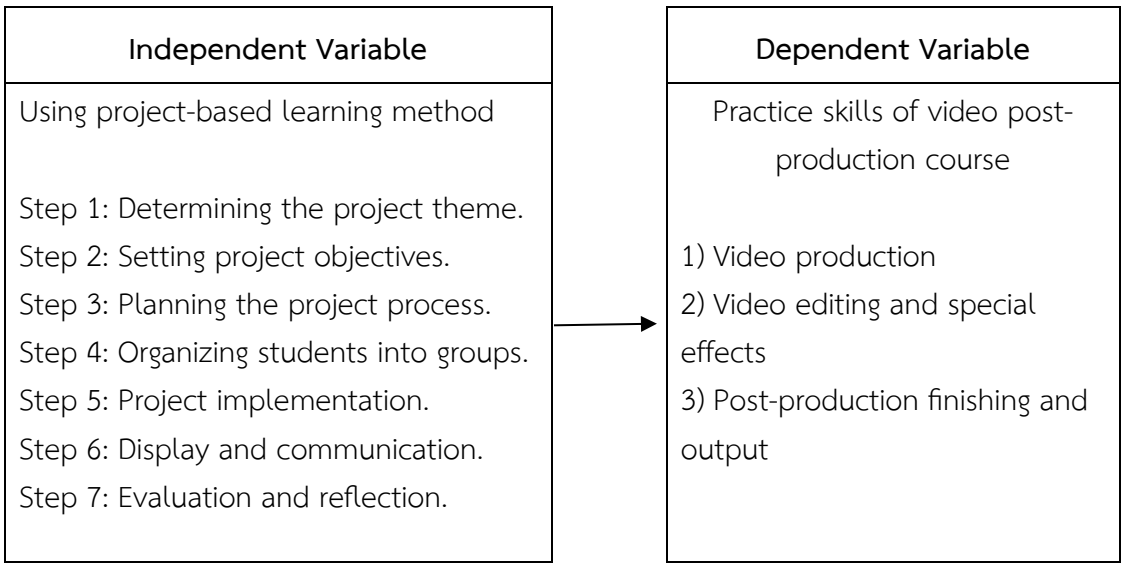

Figure 1.1 Research Framework

Chapter 2
Literature Review

In the research title "Using project-based learning method to improve practice skills of video post-production course of undergraduate students.", the researchers reviewed the literature and related research as follows:

1. Project-based learning method
2. Practice skills of video post-production course
3. Measurement and evaluation of practice skills of video post-production course
4. Related research

Project-Based Learning Method

Problem-based learning is enhance students' practical operation ability and problem-solving ability. encouraged students to take the lead in planning their progress, setting goals, and controlling the pace to advance their projects, they actively searched for information. The researcher has studied the meaning, significance and elements of project-based learning method of many academics, which will be presented in the following:

1. Meaning of Project-Based Learning Method

Zhang Yanfeng (2014) defined project-based learning as a systematic teaching method. In this learning approach, students investigated and addressed a real, engaging, and complex problem, challenge, or question over a period of time. The core of project-based learning lied in the students' active exploration, where they went through the entire process from posing a question, planning a solution, collecting and analyzing information, creating a product or outcome, to presenting and communicating their findings.

Chen Hui (2015) defined project-based learning as a learning approach based on experience. Students acquired knowledge and skills through hands-on activities and personal experiences while working on projects. He emphasized the close connection between education and life, and project-based learning was a way to simulate real-life situations, allowing students to understand the practical uses of knowledge while solving real-world problems and developing their practical skills and sense of social responsibility.

Ao Xue (2021) defined project-based learning as a problem-centered teaching strategy. Students faced a clear, challenging problem during the learning process, and then used various cognitive tools and learning resources to solve it. This learning method emphasized the integration and application of knowledge, and students must draw on knowledge from multiple disciplines to complete the project.

Lin Jie (2022) defined project-based learning as a collaborative learning experience. Students worked in groups to complete projects, during which they communicated with each other, divided tasks, and take responsibility for the results of the project together. This learning method could cultivate students' teamwork spirit, communication skills, and leadership abilities.

Zhang Jianru (2023) defined project-based learning as a comprehensive learning paradigm that aligned with the development of multiple intelligences. Education should not be limited to the exercise of a single intelligence. Project-based learning provided a platform for the display of multiple intelligences. The teacher designed projects around real-world themes, and during the process, students used verbal-linguistic intelligence to clearly articulate the project's ideas and outcomes.

In conclusion, the project-based learning as a systematic teaching method. students' active exploration, where they went through the entire process from posing a question, planning a solution, collecting and analyzing information, creating a product or outcome, to presenting and communicating their findings. Students acquired knowledge and skills through hands-on activities and personal experiences while working on projects. allowing students to understand and develop their practical skills. This learning method emphasized the integration and application of knowledge, and students must draw on knowledge from multiple disciplines to complete the project.

2. The Significance of Project-Based Learning Method

Han Hongyang (2015) stated that project-based teaching method granted students the right to control the goals and progress of the project, while teachers transformed into guides and monitors. In the project of post-production for film and television, for example, producing a commercial with a specific theme and style, students first needed to clarify the goal of the project, whether it was to highlight the product features, attract the target audience, or convey certain emotions or ideas. Based on this goal, they needed to autonomously plan the project schedule, determine the tasks and time nodes at each stage. In this process, students actively explored relevant knowledge to achieve the project goal, integrate and apply the knowledge of post-production for film and television. They were no longer passively

receiving the knowledge taught by teachers, but actively learning and understanding the connections between different knowledge modules, such as the coordination between editing and special effects, and the coordination between audio and visuals. For example, to create a specific atmosphere in the commercial, students needed to autonomously research how to achieve the result through color correction, music selection, and special effects addition. In this autonomous exploration and practice process, students gradually built their own knowledge system, achieve autonomous construction of meaningful knowledge, and their understanding and mastery of post-production for film and television become deeper and more comprehensive. Thirdly, enhance students' cooperative and communication skills.

Qiu Ping (2016) pointed out that project-based learning was often conducted in groups, and in the film and video post-production course, group collaboration to complete projects was a common model. For example, in a large documentary project, group members needed to take on different roles and tasks, such as director, editor, special effects artist, audio engineer, and subtitle editor. In the early stages of the project, group members needed to work together to discuss the creative ideas and overall planning of the project, which required them to clearly express their ideas and opinions, and listened attentively to others' opinions. Through active communication and exchange, they could reach consensus on the project's theme, style, narrative structure, etc. During the implementation of the project, members with different roles needed to work closely together. The editor needed to communicate with the special effects artist to determine the position and effects of special effects, and the audio engineer needed to provide appropriate sound effects and background music based on the content of the video. The director needed to coordinate with all parties to ensure that the overall style of the project was consistent and the progress was smooth. In this process, students not only learned how to utilize their strengths in a team, but also developed their interpersonal skills and oral expression skills, cultivating a strong sense of teamwork. By working with group members, students could learn different skills and ways of thinking from others and work together to overcome difficulties in the project, achieving the project goals. This experience of teamwork had a positive and far-reaching impact on their future career development.

Wang Decai & Jiang Lingyun (2017) pointed out that traditional teaching methods often fell into the limitation of theoretical knowledge transmission, and this tendency was especially evident in the undergraduate film and television post-production course. Film and television post-production was a discipline with

extremely strong practical nature, and students needed to have advanced practical skills and innovative thinking. However, the ambiguous teaching goals made students confused. They didn't know how to transform the theoretical knowledge they had learned into practical application, and they often felt lost when faced with real film and television post-production projects. For example, they didn't know how to assemble shots according to the style and narrative needs of the film in the editing practice; they had difficulty applying the theoretical principles of special effects to specific scene creation in the production of special effects. This not only hindered the improvement of students' practical abilities, but also reduced the learning effect and efficiency, causing students to spend a lot of time studying but unable to achieve the expected professional skills level. Firstly, the discrepancy between teaching content and market demand. Undergraduate education had higher requirements for students, requiring them to have solid and in-depth theoretical knowledge as well as broad and practical experience that was relevant to reality. However, traditional teaching content often had a large gap with the actual work needs of the market. Secondly, backwardness of teaching procedures. Traditional teaching methods had poor flexibility and were unable to adapt to the individual differences and interests of students. In the undergraduate film and television post-production course, each student had different interests and aptitudes in different sections.

Zeng Zhu & Xiao Lan (2017) pointed out that the benefits of applying project-based learning method to the undergraduate film and video post-production course included the following aspects: Firstly, enhance students' practical operation ability and problem-solving ability. In the undergraduate film and television post-production course, the project-based learning method provided students with an excellent practical platform. Taking the project of producing a complete film and television short film as an example, students needed to start from the material shooting in the early stage, apply the photography skills they had learned, choose suitable shooting equipment, scene setting and camera language to obtain high-quality raw materials. Entering the post-production stage, they needed to be proficient in professional software such as Adobe Premiere Pro for editing, and in the editing process, they needed to select, trim, and splice the materials based on the plot rhythm and narrative logic, which greatly enhanced their practical operation ability. At the same time, during the project progress, students were bound to encounter various problems, such as lighting problems during material shooting leading to poor picture quality, which needed to be compensated for through color correction in the post-editing process; or problems encountered in the special effects

production, such as unfamiliarity with software operation and unsatisfactory special effects. Faced with these problems, students had no choice but to actively think, refer to materials, and try different solutions. Through continuous exploration and practice, their ability to handle problems had been effectively improved. Secondly, encourage students to construct meaningful knowledge autonomously.

Wu Ailing (2019) pointed out that traditional teaching tended to favor standard answers, which could easily restrict students' thinking. Project-based learning was quite different, as it encouraged open exploration without predetermined formulas. Students were able to break free from conventional thinking and design project processes and outcomes based on their own insights. Failure was not something to worry about, as it could be reviewed and improved upon. Continuous free exploration could activate students' innovative potential, enabling them to challenge established beliefs and develop divergent, flexible thinking patterns, which were beneficial for contributing unique ideas in an era driven by innovation.

Fan Xiaotian (2021) emphasized that the key to project-based learning was giving students the power to lead their own learning. Traditional teaching often involved a one-way lecture by the teacher and passive learning by the students. However, project-based learning encouraged students to take the lead in planning their progress, setting goals, and controlling the pace. To advance their projects, they actively searched for information, overcame knowledge gaps, and learned to self-assess and adjust. This exercise in autonomy could help students become independent thinkers and proactive learners, which was beneficial for long-term learning and personal development.

Yang Liu (2021) stated that real-world problems were complex and difficult to address with knowledge from a single discipline. Project-based learning method broke down barriers between subjects and built bridges for knowledge integration. When students worked on projects, they needed to call on knowledge from multiple disciplines, such as language, math, and science, and linked them together. Through this process, students built a comprehensive knowledge system and clarified the logical connections between different disciplines. In the future, when faced with diverse and interdisciplinary real-world problems, they could quickly mobilize knowledge resources and provide suitable solutions.

Gao Hongqi (2024) pointed out that project-based learning was often conducted in groups, creating an environment for students to work together. Group members had a common goal and must clearly define their roles based on their strengths to work together effectively. During this process, they exchanged ideas,

shared resources, and refined their communication skills. When conflicts arose, they must reasonably negotiate and reach a consensus. Long-term experience in teamwork allowed students to master the process and methods of cooperation, develop a sense of collective identity, and effectively integrate into teams in the future, whether in the workplace or in social activities, to help achieve their goals.

Zhao Qiaoyan (2024) stated that there was a gap between book knowledge and real-world application, and project-based learning effectively filled this gap. Students immersed themselves in projects and faced real-world problems head-on, applying the theoretical knowledge they had learned. Through hands-on experience, they accurately grasped the scope and application of the knowledge they had learned, and tested their learning outcomes; they could also have a direct sense of the practical value of knowledge and overcome the drawbacks of rote learning. This encouraged knowledge internalization and enhanced students' practical skills in solving real-world problems, laying a foundation for their future life and work.

To sum up, project-based learning method emphasizes the development of autonomous learning skills by giving students the power to learn and allowing them to break away from the passive listening mode. It also effectively promotes the integration of interdisciplinary knowledge, breaking down barriers between subjects, and helping students build a comprehensive knowledge system to tackle complex problems.

3. The Elements of Project-Based Learning Method

Project-based learning method is a step-by-step method designed to guide students from perception to creation through a series of careful steps to fully grasp knowledge and develop their practice skills. Project-based learning method includes the following components:

Teng Jun, et al. (2018) pointed out that the seven steps of project-based learning method included:

Step 1: Determining the project theme

Determining the project theme is the first step in project-based learning, which requires careful consideration of various factors. Teachers should first study the curriculum and accurately grasp the core knowledge points and ability training directions. At the same time, they should closely follow the trends of social development and the frontier dynamics of the industry to select popular topics that are in line with the current situation, making the project highly relevant to the times. They should also conduct research on the students' interest preferences to ensure that the theme can stimulate their desire to explore. The theme should be accurately

aligned with the teaching needs, helping to facilitate knowledge transmission and skill training, but it cannot be too broad or obscure, leaving enough operational space for subsequent planning and implementation, laying a solid foundation for the successful implementation of the project.

Step 2: Establishing project objectives

The project goals serve as a beacon, guiding the entire project forward and must be clear, specific, and measurable. On the knowledge level, it should be clear what concepts and theories the students need to master and consolidate. In the skills domain, it should be specified what practical skills the students need to achieve, such as research, data analysis, and proposal writing skills. In the area of emotions and attitudes, the goals should be set to cultivate students' teamwork, problem-solving awareness, and resilience in the face of challenges. Each goal should have a completion deadline to facilitate monitoring of progress, align with the teaching plan, and enable teachers to adjust their teaching strategies to guide students steadily towards their predetermined goals.

Step 3: Planning the project process

Planning the project workflow is a key to efficient project progress, which should be carried out systematically, meticulously, and flexibly. Teachers should break down the project into several stages based on the theme and objectives, sort out the sequence, clarify the key tasks and deliverables for each stage, and draw a flow chart to visually present the start and end times of tasks, the responsible person, and facilitate teachers and students to control the progress. The process planning should not be too rigid, and buffer time should be reserved to deal with unexpected situations, such as equipment failure and missing materials. Regular checkpoints should be interspersed, and group reports should be organized to promptly identify deviations and adjust unreasonable links to maintain the project running in accordance with the plan.

Step 4: Organizing students into groups

Effective grouping is a good way to stimulate team energy. Before grouping, it is necessary to have a comprehensive understanding of the students' situation. Knowing the students' academic performance can help accurately locate their strengths in subjects. Understanding their personality traits can distinguish between outgoing communication types and introverted research types. Knowing their special skills can clarify their abilities in hands-on, planning, and writing. Adhering to the principle of complementary advantages, different traits of students can be combined, and the number of people in each group should be properly controlled to facilitate

full communication and cooperation. After the group is formed, the division of labor should be clarified immediately, a group leader should be appointed to supervise and coordinate, and a communication mechanism should be standardized. The roles should be rotated periodically to exercise students' abilities in all aspects and create a good team atmosphere, thus injecting momentum into the project implementation.

Step 5: Project implementation

The implementation phase is the core stage where the preliminary planning is put into practice, and the roles of teachers and students are more focused in this stage. Teachers shift to the background to provide guidance and monitor the overall progress in real time, while closely observing the dynamics of the groups. When students encounter technical bottlenecks or knowledge gaps, they provide timely answers, precise guidance, and provide professional materials and resources support. Students are the main characters in the project, strictly following the process, accurately recording their progress and difficulties every day, and trying to solve them independently. Each group exchanges their achievements regularly, learning from each other's experiences, maintaining a moderate level of competition, and stimulating exploration enthusiasm to ensure the project progresses steadily and achieves the expected results.

Step 6: Display and communication

The presentation and exchange session aims to elevate the project outcomes and expand the depth and breadth of learning. The form should be diverse and tailored to the project characteristics, and may include academic reports, result boards, online presentations, etc. The presentation content should not only showcase the final results, but also trace the project journey, detailing the difficulties overcome, clever ideas used, etc. Students can use this opportunity to improve their expressive skills, confidently and fluently presenting the value of the project. An interactive session should be set up to accept audience questions and suggestions, where different groups can evaluate and score each other, drawing on the ideas of others to reflect on their own shortcomings and achieve knowledge internalization and capacity enhancement through the process of thought collision.

Step 7: Evaluation and reflection

Evaluation and reflection are the wrap-up tasks that summarize project experiences and fill in gaps, which are related to the optimization and upgrading of subsequent projects. Teachers take the lead in building a comprehensive evaluation system, quantifying scores from various dimensions such as the quality of outcomes, teamwork, and individual performance. The evaluation of outcomes focuses on

innovation, practicality, and completion rate; the evaluation of teamwork examines the degree of smooth communication and the rationality of division of labor; the evaluation of individual performance looks at the size of contributions and the growth of abilities. Students also reflect on themselves and write detailed insights, analyzing the causes of their mistakes. A class sharing meeting is organized to exchange reflection results, consolidate experience, and accumulate wisdom for the next round of project-based learning.

Hu Jiayi (2019) paid attention to the seven important aspects of project-based learning method:

Step 1: Selecting the theme

At the beginning of a project, choosing a topic is a crucial first step. Teachers should guide students to focus on societal hot topics, cutting-edge disciplinary knowledge, or their own areas of interest to ensure that the topic is both educational and able to spark students' creativity. Through discussions and research, a specific and worthwhile topic should be determined, laying a solid foundation for subsequent work.

Step 2: Setting project objectives

Clearly defining project goals is crucial to project success. Based on the selected topic, create clear, measurable goals that include knowledge acquisition, skill development, and team collaboration skills development, among others. Goals should be challenging yet achievable to motivate students to actively participate and strive to achieve them.

Step 3: Designing the project process

When designing a project workflow, consider time planning, task allocation, and resource allocation. Break the project down into stages and set specific tasks and deadlines for each stage to ensure the project progresses in an orderly manner. Also, anticipate potential challenges and develop solutions in advance to address the uncertainty of project execution.

Step 4: Organizing students into groups

Grouping students is the foundation for project collaboration. Teachers should allocate group members based on their interests, abilities, and personality traits to promote complementary and mutual assistance. Clearly define roles within the group, such as group leader, recorder, and presenter, to enhance team cohesion and work efficiency.

Step 5: Project implementation

During the project implementation stage, students carry out research and practice based on the predetermined plan. Teachers should provide the necessary guidance and resource support to encourage students to take an active approach to exploration and cooperative communication. Regular progress checks should be conducted to adjust strategies in a timely manner to ensure the project is carried out smoothly.

Step 6: Exhibition and interaction

After the project is completed, an exhibition and interactive session will be organized to allow students to showcase their achievements and share their experiences. This not only enhances students' self-confidence and communication skills, but also promotes classroom interaction and cooperation. Through audience feedback, students can further understand the social value of the project and areas for improvement.

Step 7: Review and meditation

During the project wrap-up stage, the teacher should organize students to conduct self-evaluation and peer evaluation, reviewing the gains and losses of the project process. The teacher should guide students to deeply reflect and distill lessons learned, providing reference for future learning and project practice. Through reflection, students' critical thinking and self-development ability can be continuously enhanced.

Zhu Chengqi (2023) mentioned that the seven important aspects of project-based learning method were interrelated, which together constituted a complete teaching system. These seven areas were as follows:

Step 1: Determining the project theme

The initial step in launching a project is to identify a clear and captivating theme. This process entails guiding students to consider multiple factors such as subject matter, societal needs, and personal interests. Through discussions, research, and other means, a theme is chosen that not only sparks students' curiosity but also embodies educational value. The selected theme must possess sufficient depth and breadth to serve as a solid foundation for in-depth research and innovative practices throughout the project.

Step 2: Establishing project objectives

Once the project theme is established, the next step is to outline specific goals. These objectives should encompass various aspects including knowledge acquisition, skill enhancement, teamwork, and creativity, ensuring comprehensive

student development during the project. The objectives must be measurable to facilitate objective evaluation upon project completion. Additionally, they should pose a certain level of challenge to motivate students.

Step 3: Scheduling the project process

Crafting a comprehensive project timeline is crucial for smooth project progression. Based on the project's complexity and students' circumstances, the project should be divided into stages with clear timelines and task lists for each. When scheduling, students' extracurricular time should be considered to avoid conflicts with regular academic activities. Furthermore, buffer time should be allocated to address potential unforeseen circumstances.

Step 4: Assembling students into groups

Effective grouping is vital for enhancing project efficiency and quality. Students should be scientifically divided into groups based on their personalities, skill levels, and interests. Members within each group should complement each other to facilitate collaboration and mutual progress during project implementation. Additionally, each group's specific responsibilities and divisions of labor should be clarified to ensure each member finds their role and value within the project.

Step 5: Project fulfillment

During the implementation phase, students will follow the predetermined plan and division of labor to conduct in-depth research and practical activities. Teachers should provide necessary guidance and support, encouraging students to dare to try and innovate. Regular progress checks should be conducted to promptly identify and resolve issues. At this stage, students will fully experience the joys and challenges of teamwork, continuously enhancing their overall qualities.

Step 6: Display and communication

After project completion, organizing a presentation and exchange event is essential. By showcasing project outcomes and processes, students can better understand their performance and shortcomings. Additionally, through interactions with other groups, students can learn more knowledge and experience, broadening their horizons. During the presentation, teachers should encourage students to actively speak and share insights to foster mutual understanding and respect.

Step 7: Evaluation and reflection

The evaluation and reflection phase after project completion is crucial for enhancing students' self-awareness and development capabilities. Teachers should objectively and comprehensively evaluate students' performance based on project goals and requirements. Simultaneously, students should be guided to deeply reflect

on their learning processes and outcomes, identifying their strengths and weaknesses during project implementation. Through reflection, students can gain a clearer understanding of their growth direction and goals, laying a solid foundation for future learning and life.

Liu Jianjun (2023) stated that project-based learning method was a teaching method aimed at training teachers to practice and reflect on their teaching skills by simulating a real class environment.

Step 1: Determining the project theme

Initiating project-based learning begins with meticulously determining the project theme. Teachers must meticulously examine the curriculum to pinpoint core knowledge and skills that need fostering. Additionally, staying abreast of societal trends and industry advancements is crucial for selecting topics that resonate with current contexts, ensuring the project's relevance. Understanding students' interests is equally important to ignite their curiosity. The chosen theme should seamlessly align with educational objectives, facilitating knowledge imparting and skill development. It should neither be overly vast nor ambiguous, allowing ample scope for subsequent planning and execution, thereby establishing a robust foundation for the project's success.

Step 2: Setting project objectives

The project goals function as a guiding compass, steering the entire endeavor. They must be precise, well-defined, and measurable. On the knowledge front, they should specify the concepts and theories students must grasp and consolidate. In terms of skills, they should outline practical competencies like research, data analysis, and proposal drafting. Emotionally and attitudinally, goals should aim to nurture teamwork, problem-solving prowess, and resilience. Each goal should have a defined timeline for progress tracking, aligning with the educational timeline and enabling teachers to tweak their strategies to steer students towards their set objectives.

Step 3: Planning the project process

Efficient project progression hinges on meticulous process planning. Teachers should dissect the project into phases based on the theme and objectives, outlining the sequence, pinpointing key tasks and deliverables for each phase, and creating a flowchart for visual tracking. Flexibility is key; buffer times should be allocated for unforeseen issues like equipment malfunctions or material shortages. Regular check-ins and group reports should be scheduled to promptly identify deviations and tweak impractical elements, keeping the project on track.

Step 4: Forming student groups

Effective grouping can harness team synergy. Prior to grouping, a thorough understanding of students' profiles is vital. Academic performance helps identify subject strengths, personality traits distinguish between extroverted communicators and introverted researchers, and special skills highlight abilities in hands-on tasks, planning, and writing. Combining students' strengths based on complementary traits and maintaining an optimal group size fosters communication and collaboration. Once groups are formed, roles should be promptly defined, a leader appointed for oversight, and a communication protocol established. Rotating roles periodically nurtures diverse skills and fosters a positive team environment, propelling project execution.

Step 5: Project implementation

The implementation phase is where planning meets action. Teachers transition to a supportive role, offering guidance and monitoring progress, while closely observing group dynamics. When students encounter hurdles, timely, precise assistance, and resource provision are crucial. Students take the forefront, adhering to the process, documenting progress and challenges daily, and striving for independent resolution. Regular group showcases encourage mutual learning, healthy competition, and sustained exploration enthusiasm, ensuring steady progress and desired outcomes.

Step 6: Demonstration and exchange

The session dedicated to presenting and exchanging project outcomes is pivotal for elevating these achievements and broadening the educational experience. The presentation format should be multifaceted and aligned with the project's unique attributes, encompassing academic papers, result displays, virtual presentations, and more. Beyond showcasing the final results, the content should trace the project's evolution, highlighting challenges faced, innovative strategies employed, and lessons learned. This platform offers students an invaluable opportunity to hone their presentation skills, confidently articulating the project's worth. Additionally, an interactive Q&A session should be incorporated, allowing groups to critique and assess each other's work. By embracing diverse perspectives, students can identify their shortcomings, fostering intellectual growth and capability enhancement through intellectual exchanges.

Step 7: Critique and contemplation

Evaluation and reflection serve as the culminating phases, encapsulating project insights and identifying areas for improvement, thereby facilitating the

refinement and enhancement of future endeavors. Teachers should spearhead the establishment of a comprehensive evaluation framework, assigning quantitative scores based on various criteria such as output quality, team collaboration, and individual performance. Outcome evaluations emphasize innovation, practicality, and completion rates; teamwork assessments scrutinize communication fluidity and workload distribution rationale; and individual performance evaluations scrutinize contribution magnitude and skill development. Students should also engage in self-reflection, documenting their thoughts and analyzing the roots of their mistakes. A class discussion session is organized to share reflections, consolidate lessons learned, and amass wisdom for the next iteration of project-based learning.

Huang Zhou (2024) stated that project-based learning method was a kind of teaching method for the purpose of teacher training, which was usually used to cultivate and improve teachers' teaching skills. Project-based learning method consisted of the following seven main components:

Step 1: Fixing the theme

Precise themes that align with the curriculum and students' cognitive levels are identified, themes that are related to the key subjects of the curriculum while also considering interest, practicality, and fun. After being discussed and referenced by the teaching team, the themes are finalized, and then released to students, accompanied by a theme explanation document to help them quickly understand the direction and ignite their exploration passion.

Step 2: Setting project objectives

Stay focused on the topic and break down clear and measurable learning objectives. The objectives should cover knowledge acquisition, skill improvement, and cultivation of dispositions, such as understanding of subject concepts, refinement of practical techniques, and development of critical thinking and autonomous learning ability. List them in bullet points to make them easily understandable to students.

Step 3: Planning the project process

Coordinate the various stages of the project, divide them into start, progress, and completion phases, and allocate time accordingly. Detailed tasks for each stage should be outlined, along with operational guidelines and examples of deliverables, and a Gantt chart should be created to show progress, enabling students to maintain control of the pace and progress the project in an orderly manner, avoiding procrastination and chaos.

Step 4: Organizing students into groups

Taking into account students' grades, personality, and specialties, the groups are divided according to the principle of complementary advantages, with an appropriate number of members in each group. At the same time, the group division list is announced, and the detailed division of labor is clarified, with the establishment of positions such as group leader, record keeper, and coordinator, and the assignment of corresponding responsibilities to guide students to adjust to each other and cooperate, thus gathering the team's strength.

Step 5: Project performance

Students work in groups to carry out the project practice according to the process. During this time, they make full use of textbooks and online resources to explore and learn independently and communicate and help each other. The teacher acts as a behind-the-scenes "strategist" and answers questions as needed, guides through difficulties, and keeps a close eye on the progress to ensure that each group completes the stage results on time and of high quality.

Step 6: Display and communication

Set up a dedicated display area or use an online platform for group presentations of project products. Require members to cooperate in demonstrating the product, explaining its key features and overcoming difficulties. Students in the audience can ask questions and exchange ideas in real time, creating an open and interactive atmosphere, expanding the boundaries of thinking, and sharing diverse creative ideas.

Step 7: Evaluation and reflection

Teachers and students evaluate the results based on predetermined standards, scoring on dimensions such as quality of outcomes, teamwork, and individual contributions. They also hold a debriefing meeting, where students reflect on the entire process, analyze the key factors of success and failure, and teachers collect feedback to identify areas for improvement in their teaching, thus accumulating first-hand materials for optimizing subsequent teaching.

Table 2.1 The synthesis of project-based learning method steps

Author	Teng Jun, et al. (2018)	Hu Jiayi (2019)	Zhu Chengqi (2023)	Liu Jianjun (2023)	Huang Zhou (2024)	In this research detail
Step 1	Determining the project theme	Selecting the theme	Determining the project theme	Determining the project theme	Fixing the theme	Determining the project theme
Step 2	Establishing project objectives	Setting project objectives	Establishing project objectives	Setting project objectives	Setting project objectives	Setting project objectives
Step 3	Planning the project process	Designing the project process	Scheduling the project process	Planning the project process	Planning the project process	Planning the project process
Step 4	Organizing students into groups	Organizing students into groups	Assembling students into groups	Forming student groups	Organizing students into groups	Organizing students into groups
Step 5	Project implementation	Project implementation	Project fulfillment	Project implementation	Project performance	Project implementation
Step 6	Display and communication	Exhibition and Interaction	Display and communication	Demonstration and exchange	Display and communication	Display and communication
Step 7	Evaluation and reflection	Review and Meditation	Evaluation and reflection	Critique and Contemplation	Evaluation and reflection	Evaluation and reflection

Form the Table 2.1, the influence of project-based learning method was mainly reflected in the aspects of theme, project objectives, the project process, student groups, project implementation, display and communication, and evaluation and reflection. The researcher studied the documents and related research about project-based learning method from many researchers: Teng Jun, et al. (2018), Hu Jiayi (2019), Zhu Chengqi (2023), Liu Jianjun (2023), Huang Zhou (2024) and synthesized 7 steps to develop lesson plans: Step 1: Determining the project theme, Step 2: Setting project objectives, Step 3: Planning the project process, Step 4: Organizing students into groups, Step 5: Project implementation, Step 6: Display and communication, Step 7: Evaluation and reflection. The following steps:

Step 1 Determining the project theme.

Determining the project theme is the first and crucial step in project-based learning. Before starting, the teacher team needs to deeply study the curriculum and course standards to accurately grasp the core knowledge points and lock in directions that are consistent with the students' cognitive levels and interests. The theme should be related to the frontiers of current disciplines, highlight its practicality, and integrate interdisciplinary elements to broaden students' horizons. After finalizing the theme, it should be released to students in a detailed explanation, including the objectives and requirements to help them quickly grasp the core and ignite their participation enthusiasm. It was unified from the first step of Teng Jun, et al. (2018), Zhu Chengqi (2023), and Liu Jianjun (2023).

Step 2 Setting project objectives.

This stage focuses on the theme that has been determined, and breaks down the expected learning outcomes into clear, specific, and measurable goals. The goals cover multiple dimensions, with the knowledge dimension aiming to deepen students' understanding and mastery of key concepts; the skills dimension focuses on practical skills, training them in research, analysis, and hands-on skills; and the disposition domain emphasized the cultivation of cooperation, innovation, and critical thinking, laying a clear path for students to achieve their learning outcomes. It was unified from the second step of Hu Jiayi (2019), Liu Jianjun (2023), and Huang Zhou (2024).

Step 3 Planning the project process.

The third step of the film and television post-production course was to plan the project workflow, which referred to the process of meticulously planning and arranging the overall progress and various production stages in the film and television post-production process. This process covered various steps, including the initial cut,

the final cut, composing and selecting music, incorporating special effects, and voice synthesis, to ensure that the project proceeds according to the predetermined plan and improve production efficiency and quality, meeting the needs and expectations of the director or producer. It was unified from the third step of Teng Jun, et al. (2018), Liu Jianjun (2023), and Huang Zhou (2024).

Step 4: Organizing students into groups

This approach allowed students to learn the skills of division of labor, communication, and coordination that were essential for a career in the film and video industry. Grouping students also allowed them to take on different roles in the production process, such as editing, color correction, special effects, and sound effects, and work together to complete projects, giving them a comprehensive understanding of all aspects of film and video post-production and developing their teamwork and project management skills, which served as a solid foundation for their future careers. It was unified from the fourth step of Teng Jun, et al. (2018), Hu Jiayi (2019), and Huang Zhou (2024).

Step 5: Project implementation

The fifth step of the film and television post-production course was project implementation, where students started the process of actually executing the project. During this stage, students needed to apply the knowledge and skills they had learned, followed the planned plan and division of labor, and carried out actual operations such as material sorting, editing and synthesis, special effects addition, and audio processing. They turned their creative ideas into concrete film and television works, deepening their understanding of the film and television post-production process and enhancing their application ability. It was unified from the fifth step of Teng Jun, et al. (2018), Hu Jiayi (2019), and Liu Jianjun (2023).

Step 6: Display and communication

In the stage, students showcased their completed projects to the class or a wider audience and engaged in interactive discussions. This stage aimed to share creative ideas and technical insights through project presentations, receive feedback and suggestions from teachers and peers, promote knowledge sharing and skill exchange, enhance students' communication skills and critical thinking, and provide new inspiration and perspectives for future learning and creation. It was unified from the sixth step of Teng Jun, et al. (2018), Zhu Chengqi (2023), and Huang Zhou (2024).

Step 7: Evaluation and reflection

This process aimed to summarize the experience and lessons learned from the production process, identify the strengths and weaknesses of the work, and help students clarify their areas of improvement. Not only did this process help students improve their individual skills, but it also promoted a deeper understanding of film and video post-production techniques, providing direction for future creations and motivation to continue learning. It was unified from the seventh step of Teng Jun, et al. (2018), Zhu Chengqi (2023), and Huang Zhou (2024).

Video Post-Production Course

This article focused on video production, video editing and special effects, post-production finishing and output. Through explaining the content of these three dimensions, the influence of project-based learning method on practice skills of video post-production course of undergraduate students is analyzed.

1. Video Production

Video production is essential for laying a solid foundation for any video post-production project. In the age of digital media, video production has become an important means for college students to express their creativity and convey information. Students will learn to conceptualize, plan, and design storyboards, which is crucial in determining the direction of the video production as follow the contents: (1) video camera techniques, (2) composition techniques, (3) video shooting techniques, and (4) storyboarding.

The details are as follows:

(1) Video camera techniques.

When creating videos, camera technology is a comprehensive concept that encompasses several key elements to ensure the capture and recording of high-quality footage. These elements primarily include:

Firstly, camera lens system. The lens is the gateway through which the camera captures images, and its quality directly affects the clarity and expressiveness of the image. The camera lens system includes the type of lens (such as wide-angle, standard, and telephoto), the size of the aperture, and the zoom capability, all of which together determine the field of view, depth of field, and light control ability of the image.

Secondly, photovoltaic conversion devices. This is the core part of camera technology, responsible for converting the optical image captured by the lens into an electrical signal. Currently, the mainstream photovoltaic conversion devices include

charge-coupled devices (CCD) and complementary metal-oxide semiconductor (CMOS) sensors. The characteristics of pixel count, sensing area, dynamic range, etc. of these devices have a significant impact on the clarity, color fidelity, and low-light performance of the image.

Thirdly, image processing technology. The image processing technology integrated within the camera can preprocess and optimize the raw image signal, including noise reduction, color correction, automatic exposure, and white balance adjustment, etc. These technologies can enhance the overall quality of the image, making it more in line with the visual habits of the human eye.

Fourthly, stabilization system. To reduce shaking and blurring during filming, modern cameras are usually equipped with stabilization systems, such as optical image stabilization and electronic image stabilization technology. These technologies can effectively counteract minor vibrations during handheld shooting, ensuring stability and smoothness of the image.

Fifthly, encoding and compression techniques. To save storage space and improve transmission efficiency, cameras typically encode and compress the captured image signals. During this process, the camera uses specific encoding standards and algorithms to convert the original image data into a format suitable for storage and transmission.

Sixthly, network transmission technology. For network cameras, network transmission technology is also an essential part. These cameras can be connected to the network via wired or wireless methods, enabling remote monitoring and real-time transmission functions. The stability and bandwidth of network transmission technology directly affect the real-time and picture quality of remote monitoring.

Seventhly, camera control and operating system. Cameras are usually equipped with control and operating systems that allow users to remotely control and set up the camera using devices such as remote controls, touchscreens, or computers. These systems offer a wide range of features and options, such as zoom, focus, exposure adjustment, white balance settings, etc., to meet the needs of different shooting scenarios.

In summary, camera technology is a complex and integrated system that covers lens systems, photoelectric conversion devices, image processing technologies, stabilization systems, encoding and compression technologies, network transmission technologies, and control and operating systems, among others. These components work together to ensure the capture and recording of high-quality images.

(2) Composition techniques.

In creating video content for film and television, composition techniques are a crucial artistic tool that determine how elements in a scene are arranged to create harmonious, visually appealing, and expressive images. Specifically, composition techniques involve the following key elements:

Firstly, arrangement of the subject and the attendant.

Subject: the main subject of the scene, the focus of the viewer's vision, usually a person, an object, or a specific scene.

Complement: the secondary subject of the scene, used to complement the subject and enhance the scene's narrative and sense of depth.

Secondly, utilization of the Environment.

Foreground and Background: By properly arranging the foreground and background, you can increase the depth of the scene, guide the viewer's gaze, and create a sense of space.

Background: The selection and arrangement of the background should be coordinated with the subject, avoiding clutter and distracting from the subject's prominence.

Thirdly, use of lines and shapes.

Horizontal lines are often used to represent calm, vast scenes, such as the sea and grasslands.

Vertical lines can represent tall and upright objects, enhancing the stability of the image.

Diagonal lines are dynamic and can break the balance of the image, guiding the viewer's gaze.

Curves, such as the s-shaped composition, can show a soft and flowing feeling and are often used to photograph rivers, mountains and other natural landscapes.

Fourthly, color and Lighting.

Colors: The use of colors can convey different emotions and moods. Cold and warm tones, contrasting colors, etc. can produce a strong visual impact on the audience.

Light: Light is the soul of composition. Different light direction and intensity can shape different visual effects. Side light, backlight, and front light all have their unique expressive power.

Fifthly, visual guidance and balance.

Visual guidance. Guiding the viewer's gaze through the use of lines, colors, lighting, etc. to create a sense of depth and fluidity in the image.

Balance. The elements in the image should be distributed evenly to avoid a top-heavy or left-heavy appearance, maintaining a sense of visual stability.

Sixthly, specific composition techniques.

The rule of thirds composition: Divide the frame into thirds horizontally and vertically, and place the subject at the intersection or on a line, making the composition more harmonious and visually pleasing.

Framing composition: Use natural frames such as windows and tree branches to frame the subject, enhancing the sense of depth and mystery in the image.

Symmetrical composition: Create symmetry in the image either horizontally or vertically, giving a sense of stability and harmony, but be careful not to make it too rigid.

In conclusion, composition techniques play a crucial role in the production of film and video. By carefully arranging the various elements in the frame and using visual elements such as lines, shapes, colors, and light to create art, you can create visually impactful and expressive film and video images.

(3) Video shooting techniques.

In creating video content for film and television, video shooting techniques are a comprehensive process that involves several key elements. The following is a detailed explanation of these technical aspects:

Firstly, basic equipment preparation.

Camera: Choosing the right photography equipment is the foundation of video shooting, including DSLR cameras, mirrorless devices, or high-pixel smartphones, which can capture high-quality images.

Stabilizing Equipment: Tripods and stabilizers are essential to ensure stable footage. They effectively prevent shaking during shooting and enhance video quality.

Audio Equipment: Professional audio equipment such as microphones is the key to recording clear audio. Do not rely on the built-in audio functions of cameras.

Secondly, photography techniques.

Lens selection and use: Use different types of lenses (such as wide-angle, telephoto, and prime lenses) to capture different effects. Adjust the focal length, aperture, etc. to control depth of field and create different visual effects.

Photography techniques: Including lens movement (such as push, pull, pan, and tilt) and stabilizer use, to create dynamic and engaging footage. Reasonable camera positioning and angle selection are also important means to enhance the beauty of the image.

Thirdly, lighting design.

Lighting use: Reasonable lighting layout is the key to shooting high-quality videos. Natural light and artificial light can be selected according to the shooting environment and theme. By adjusting the brightness, color, and direction of the light, different moods and emotions can be created.

Three-point lighting: This is a basic lighting technique, including key light, fill light, and backlight. The key light is used to illuminate the subject, the fill light is used to fill in shadows, and the backlight is used to separate the subject from the background and enhance three-dimensionality.

Fourthly, sound collection and processing.

On-site recording: Use professional recording equipment to record on-site audio to ensure clarity of dialogue and sound effects.

Post-processing: In the post-production process, audio can be processed for noise reduction, mixing, etc. to enhance sound quality and enhance the auditory experience.

Music and sound design: Choosing appropriate music and sound effects to enhance emotions and mood. The music needs to match the content and atmosphere of the video, while sound effects are used to enhance the realism and immersion of the scene.

In summary, the video shooting techniques for film and video production include preparation of basic equipment, photography techniques, lighting design, sound collection and processing.

(4) Storyboarding.

In creating video content for film and television, the storyboard is a crucial step. It serves as a blueprint and visual guide for the filming process and plays a vital role in the overall production. A storyboard typically includes the following elements:

Firstly, visual elements.

Composition of the scene: The placement and arrangement of elements in each scene, including the main subject, background, and foreground.

Character presentation: The actions, expressions, and poses of characters in the scene, as well as their interactions with each other.

Scene description: The environment and setting of the story, including indoor and outdoor environments, props, and background decorations.

Secondly, cinematic language.

Camera number: The number assigned to each shot to identify and differentiate between different shots.

Camera angle: Including long shot, wide shot, medium shot, close-up, and extreme close-up, used to express different shooting ranges and subject details.

Camera movement: Such as dolly, crane, pan, and tilt, used to create dynamic and engaging visual effects.

Camera position: Such as eye level, upward angle, and downward angle, used to express different visual effects and emotional tones.

Thirdly, narrative structure.

Story progression: The storyboard arranges key scenes and shots in accordance with the development of the story to form a coherent narrative flow.

Plot twists: Identifying key plot twists and climaxes to ensure the film's narrative pace and suspense.

Fourthly, technical details.

Duration: The estimated duration of each shot to control the film's pace and total duration.

Description of scenes: A written description of the actions, dialogue, and expressions in the scene to help production personnel understand the director's intentions.

Special effects and transitions: Identifying shots and scenes that require special effects, as well as transition methods, such as fading in and out, dissolves, etc.

Fifthly, additional information.

Dialogue and sound effects: The storyboard may also include descriptions of dialogue and sound effects to help voice actors and sound effects artists understand and create the corresponding audio content.

Notes and explanations: Notes and explanations of special shots, scenes, or technical requirements to ensure that the production team can accurately understand and carry out the director's intentions.

In summary, through the storyboard, the director can more accurately express their creative intentions and communicate and collaborate effectively with team members.

2. Video Editing and Special Effects

Video editing and special effects play a vital role in modern media production, advertising campaigns, film production, television programming, social media content creation, and online education. Video editing and special effects not only enhance the visual experience, but also enhance the storytelling and the audience's immersion.

The teacher explained the concept of video editing and special effects and demonstrate: (1) Material arrangement and management, (2) Video editing and splicing (3) 3D special effects, and (4) Post special effects. The learning contents are as follows:

The details are as follows:

(1) Material arrangement and management.

Firstly, material collection.

Summary: Material collection is the starting point of the entire video production process and the basis for subsequent editing work.

Content: including raw materials such as video files, high-definition pictures, audio recordings, etc. from various sources (such as cameras, mobile phones, drones, web downloads, etc.).

Key elements: Ensure the diversity and quality of the material to meet the needs of the project creation.

Secondly, material preprocessing.

Overview: Before the formal editing, the collected material is initially processed and organized.

Classification: Categorize the material by type (video, pictures, audio), source, purpose, or subject of the content for easy subsequent finding and use.

Naming: Assign a unique and descriptive name to each material file, including key information such as the project name, date, and scene description, to reduce confusion.

Preliminary screening: Remove duplicates, ambiguities, low quality or irrelevant material to ensure that what is left is valuable to the project.

Thirdly, material storage and management.

Overview: Establish a scientific storage system to ensure the security and accessibility of materials.

Contents include two parts:

Part 1: Establish a directory structure: according to the characteristics and needs of the project, design a reasonable folder and sub-folder structure to organize the material hierarchically.

Part 2: Select the right storage media: Select the right hard disk, cloud storage, or other storage solution based on the size, quantity, and access frequency of the material.

Version control: For material or project files that require multiple revisions and iterations, implement a version control policy, recording the content and date of each change.

(2) Video editing and splicing: It plays an irreplaceable role in the process of video production. It not only improves video quality and visual effects, but also enhances narrative capabilities, optimizes audio effects, ADAPTS to multi-platform publishing, saves resources and facilitates creative expression.

Firstly, video editing.

In this process, the editor needs to carefully sift through multiple footage clips, remove useless or repetitive parts, and then arrange these clips according to the theme, story line or logical order of the video. This arrangement requires not only technical precision, but also artistic aesthetics and creativity to ensure that the final video content presented to the audience is coherent and attractive.

Through editing, the editor can control the rhythm, atmosphere and emotional direction of the video, and guide the audience to move forward according to the established narrative path. For example, showing a tense and exciting plot through rapid editing, or highlighting an important moment through slow-motion replay, can enhance the audience's sense of engagement and emotional resonance. At the same time, editing can also help solve the contradictions or fracture points that may exist between materials, making the video content more smoothly.

Secondly, video splicing.

Video splicing processing is a key task in video editing, which requires editors to cut and merge video clips accurately, and subtly adjust the transition effect between clips to achieve smooth visual transformation. The following is the video stitching method based on the given content:

1) Precise cutting and merging

Shear operation:

Determine what parts of each video clip need to be retained and removed. This usually involves a deep understanding of the content of the video, as well as anticipating the audience's attention.

Use the clipping tool in the clipping software, mark exactly where each clip starts and ends, and remove the parts that are not needed. The cutting operation should keep the key action as intact as possible and avoid breaking the continuity of the story.

Merge operation:

Arrange the cut video clips on the timeline in a predetermined order. The process is similar to a jigsaw puzzle in that each piece needs to be placed in the right place.

When merging, take care to check the connection points between fragments to make sure there are no abrupt jumps or duplicate images. If needed, fine-tuning can be done at the connection points for a more natural transition.

2) Adjust the transition effect

Selection of transition effect:

Transition effects are an important bridge between two video clips, and they are able to visually smoothly guide the viewer from one scene to another. Common transition effects include fading in and out, dissolving, erasing, and turning pages.

When choosing a transition effect, consider its fit with the theme and atmosphere of the video. For example, a romantic scene might be suitable for using a soft dissolving effect, while a fast-paced action scene might be more suitable for using a quick erasing effect.

Application of transition effects:

In the editing software, select the appropriate transition effect and drag it to the connection point between the two video clips. Most software offers a preview function that allows editors to see the effects of transitions before adding them.

Adjust the duration and intensity of the transition effect to ensure that it is neither too abrupt nor too bland. The length of duration should be determined according to the content connection between the segments and the speed of comprehension of the audience.

3) Achieve smooth visual transformation

Rhythm control:

Smooth visual transitions depend not only on the transition effect itself, but also on the rhythm control of the entire video. The editor should reasonably arrange the length and rhythm of each segment according to the content and mood changes of the video.

For important plots or key moments, the rhythm can be slowed down appropriately so that the audience can better absorb and understand; For secondary or transitional content, the pace can be accelerated to keep the audience's attention.

Screen matching:

When stitching video clips, pay attention to maintaining visual coherence between the images. If the scene, tone, or composition of the two clips is very different, you can use a transition effect at the connecting point or add some additional elements (such as subtitles, stickers, etc.) to lessen the sense of difference.

At the same time, it is also necessary to pay attention to whether the direction and speed of movement in the picture are consistent to avoid causing discomfort or confusion to the audience.

Through the above methods, editors can achieve accurate splicing of video clips, making the transition between different clips more natural, thereby improving the viewing experience of the entire video.

(3) 3D special effects.

3D special effects is a type of visual effect created by using computer graphics technology (CGI) and animation software with a three-dimensional sense of space and depth. It goes beyond the traditional two-dimensional image, through the simulation of real or fictional three-dimensional environment, objects and roles, and provide motion, deformation, light and shadow and other dynamic effects, so as to bring more realistic, shocking and immersive visual experience for film and television works, advertising, games and virtual reality and other fields.

Firstly, stereo vision enjoyment. 3D special effects present a more three-dimensional and realistic visual world for the audience. Compared to traditional two-dimensional video, 3D special effects can give viewers a stronger sense of space and depth, as if they are in a movie or game scene.

Secondly, immersive experience. Through high-quality 3D special effects, film and television works can create a more realistic scene and atmosphere, so that the audience is more deeply immersed in the story. This immersion not only

enhances the viewing experience, but also enhances the audience's memory and identification with the work.

The production process of 3D special effects usually involves modeling, mapping, lighting, animation, rendering and other links, required producers to have deep artistic skills and superb technical capabilities. Through careful design and production, 3D special effects can greatly enhance the appeal and expression of the work, become an indispensable part of modern visual art.

(4) Post special effects. It refers to the further processing and optimization of video materials through professional post-processing software and technical means after the video shooting is completed, in order to achieve the expected visual effects and artistic performance. Specifically, video post-effects can include the following aspects:

Firstly, create visual elements. In order to enhance the visual impact of the video or achieve the scene that is difficult to complete in real shooting, the post-special effects artist will use software to create a variety of virtual visual elements, such as three-dimensional models, particle effects, light and shadow effects. These elements can stand alone or be seamlessly combined with live footage to provide viewers with an unprecedented visual experience.

Secondly, set up image processing. Image processing is an important part of video post-special effects. It includes the adjustment of screen parameters such as tone, brightness and contrast, as well as the removal of defects and repair of the screen. Through fine picture processing, the producer can make the video picture clearer, more colorful, more intense atmosphere, so as to improve the overall quality of the video.

Thirdly, create special effects. Special effects are one of the highlights of video post-effects. Through the use of various special effects techniques, such as dynamic tracking, green screen matting, color gradients, it is possible to achieve surreal scenes such as explosions, flight, and time travel. These special effects not only enhance the visual impact of the video, but also enrich the expression technique and narrative ability of the video.

3. Post-Production Finishing and Output

Project-based learning method plays a significant role in improving college students' post-production completion and output. It can not only enhance students' practical ability and project experience, promote team cooperation and communication skills, cultivate innovative thinking and problem-solving skills, but also improve time management and work efficiency, broaden knowledge and

maintain learning motivation. Therefore, colleges and universities should actively promote project-based learning methods in the teaching of film and television post-production and other related majors, so as to cultivate more excellent post-production talents.

The teacher explained the concept of post-production finishing and output, demonstrate: (1) Text addition; (2) Sound processing; (3) Preview and correction; and (4) Export and distribution. The learning contents are as follows:

The details are as follows:

(1) Text addition: In the process of video post-processing and output, text addition is a crucial link, which can not only enhance the information expression of the video, but also improve the viewing experience of the audience. The content added by text mainly includes the following aspects:

Firstly, title type text.

Function: The title text in the video picture can have a better description of the theme and the content of the video, so that the presentation of the video content is clear and intuitive, and the viewer is easier to understand the theme expressed in the video.

Location: Usually added to the title position of the video, equivalent to giving the entire video a general name.

Note: The eye-catching title can better attract the attention of the viewer. When adding, choose a font, size, and color that matches the content of the video, and ensure that the title is eye-catching but not obtrusive.

Secondly, description text.

Role: In the video content, there may be some video pictures need to add some text descriptions, such as explaining the shooting location of the video, shooting time, the content of the video picture, so that the viewer has a better understanding of the presented picture.

Position: Description text is usually placed in the bottom left and right corner of the screen to avoid the text is too eye-catching.

Note: The text content should be concise and to the point, and the font size should be moderate to ensure that it does not block important information in the picture.

Thirdly, subtitles.

Role: In some videos with characters speaking, it is suitable to add subtitles for characters speaking. Subtitles allow viewers to see more clearly what the

characters are saying, especially when there are dialects, foreign languages or high ambient noise in the video.

Position: Voice-over subtitles are generally added to the bottom of the video frame, centered or left aligned.

Generation Method: Modern video editing software often supports automatic recognition of human voices in videos and generation of captions. After the generation, you can also adjust the font, size, color, style, etc. of the subtitles to achieve the best viewing effect.

Fourthly, other textual elements.

Watermarking: A watermark is sometimes added to a video for copyright protection or branding purposes. The watermark is usually placed in the corner of the picture and is designed to be translucent to avoid obscuring the content of the picture.

Special effects text: Adding special effects text to a video can increase the fun and appeal of the video. Special effects text can be dynamic, flashing or with specific animation effects, but care should be taken not to overuse, so as not to affect the viewing experience of the audience.

To sum up, the text addition content in video post-processing is rich and diverse, including title text, description text, subtitles and other text elements. When adding, it should be selected and adjusted according to the content and needs of the video to ensure that the text can accurately convey the information and improve the overall quality of the video.

(2) Sound processing: In the process of video post-processing and output, sound processing is a crucial link, which is directly related to the final auditory effect of video works. The content of sound processing can be summarized in the following aspects:

Firstly, audio clips.

Basic editing: Preliminary arrangement of the recorded original audio, removing unnecessary parts, such as silent segments, noise, etc., to make the audio more compact and coherent.

Precise tailoring: According to the needs of the video picture, the audio is finely tailored to ensure the synchronization and coordination of the audio and the picture.

Secondly, adjust the volume.

Overall volume adjustment: According to the overall atmosphere and needs of the video, the overall volume of the audio is properly adjusted to achieve a suitable auditory feeling.

Volume balance: For videos that contain multiple audio sources (such as background music, conversations, and sound effects), you need to balance the volume to ensure that the volume of each audio source is relatively balanced, so that one audio source is not too prominent or too weak.

Thirdly, audio effect processing.

Noise reduction: Use professional noise reduction tools or software to eliminate or weaken the noise in the audio and improve the clarity of the audio.

Reverberation effect: By adding reverberation effect, the sound is more spatial and three-dimensional, and the audience's hearing experience is enhanced.

EQ adjustment: Gain and attenuate the frequency band of the audio, adjust the sound color and sound quality of the audio, so that the sound is more in line with the overall style of the video.

Compression processing: The dynamic range of the audio is processed to make the sound more stable and even, and to avoid affecting the audience's hearing feelings because the sound is too large or too small.

Fourthly, audio fades in and out.

Fade in processing: Gradient processing is applied at the beginning of the audio to gradually enhance the sound and avoid the sudden start of the audio.

Fade out processing: Gradient processing is carried out at the end of the audio to gradually weaken the sound and achieve the natural end of the audio.

Fifthly, audio repair.

Repair defects: Repair and deal with defects such as noise, staccato and explosion in audio to make audio perfect and smooth.

Audio synchronization: Ensure the synchronization of audio and video images to avoid misalignment or delay between audio and picture.

Sixthly, special audio processing.

Add sound effects: According to the needs of the video, add appropriate sound elements, such as environmental sound, background music, special effects sound, etc., to enhance the expression and appeal of the video.

Sound editing: Edit and process the added sound effects to make them better integrated into the video and coordinate with the picture content.

In the process of sound processing, it is usually necessary to use professional audio editing software, such as Adobe Audition, Audacity, etc. The software provides rich audio processing functions and tools to meet the various needs of video post-sound processing. At the same time, sound processing personnel also need to have solid audio knowledge and rich practical experience to ensure the quality and effect of sound processing.

(3) Preview and correction: In the process of video post-processing completion and output, preview and correction are indispensable links, which ensure the final quality and effect of the video work. These two links mainly include the following contents:

Firstly, preview.

Preview is the process of preliminary playback and viewing of edited video clips in the process of video post-processing. Its main purpose is to evaluate the effectiveness and quality of the video and check for problems or deficiencies so that subsequent corrections and optimizations can be made. The preview session usually involves the following aspects:

Overall effect preview: Preview the overall effect of the video, including picture quality, color, sound, etc., to evaluate whether the video achieves the desired effect.

Detail preview: Preview key frames, special effects, subtitles and other details in the video to check for flaws or errors.

Multiplatform Preview: Preview videos on different devices and platforms to ensure compatibility and stability in a variety of environments.

Secondly, correction.

Correction is the process of improving and perfecting the existing problems or deficiencies in the video on the basis of preview. The revision process usually includes the following aspects:

Image correction: To repair defects in the video picture, such as removing noise, adjusting color, correcting exposure, etc., to improve the image quality.

Sound correction: Further processing of the audio, such as removing noise, enhancing the sound effect, adjusting the volume, etc., to ensure the synchronization and coordination of the audio and the picture.

Clip correction: Make corrections to video clips, such as adjusting clip points, deleting redundant clips, optimizing transition effects, etc., to make the video more compact and coherent.

Correction of subtitles and special effects: Correction and optimization of subtitles and special effects in videos to ensure the accuracy of subtitles and the fluency of special effects.

In short, preview and correction are indispensable links in the video post-processing process. Problems and shortcomings can be found through preview, while corrections can improve and perfect the video work to ensure that the final output of the video work is the best.

(4) Export and distribution. In the process of video post-processing completion and output, export and distribution are two closely linked links, which together constitute the final step of the video work presented to the audience. The following is the specific content of these two links:

Firstly, export refers to the process of exporting video projects completed in video editing software into video files that can be played on various devices and platforms. This part mainly includes the following aspects:

Choosing an output format: Choose the appropriate video output format based on the end use of the video and the requirements of the playback platform (such as TV, online video platforms, social media, etc.). Common video formats include MP4, AVI, MOV, WMV, etc.

Setting resolution and frame rate: Set the appropriate video resolution and frame rate based on video playback requirements and device compatibility. The resolution determines the sharpness of the video, while the frame rate affects the smoothness of the video.

Encoding settings: Select the appropriate video encoding method to ensure a balance between video file size, quality, and playback compatibility. Common video encoding methods include H.264, HEVC (H.265) and so on.

Output file: After completing the above Settings, click the Export or Render button to output the video project as a video file. This process may take some time, depending on the length of the video, the complexity, and the performance of the computer.

Secondly, distribution refers to the process of disseminating the exported video file to the target audience through various channels. This part mainly includes the following aspects:

Choosing a distribution channel: Choose the right distribution channel based on the type of video, content and target audience. Common distribution channels include social media platforms (such as Wechat, Weibo, Tiktok, etc.), video sharing

websites (such as YouTube, Bilibili, etc.), TV stations, and online video platforms (such as IQIYI, Tencent Video, etc.).

Uploading video: Uploads the exported video file to the selected distribution channel. During the upload process, it may be necessary to fill in the title, description, tag and other information of the video so that viewers can find and understand the video content more easily.

Promotion and publicity: In order to increase the visibility and audience of the video, promotion and publicity activities can be conducted on the distribution channel. This includes posting video teasers, sharing video links, and using social media to interact.

Monitoring and feedback: After the video is distributed, it is necessary to pay attention to the feedback and viewing data of the audience in order to adjust and optimize the video content and distribution strategy. By monitoring the number of videos played, the number of likes, the number of comments and other indicators, students can understand the audience's reaction to the video and preferences, so as to provide reference for the subsequent video creation.

In short, export and distribution are the important part of video post-processing completion and output. Through careful selection and setting of export parameters, as well as the selection of appropriate distribution channels and promotion strategies, we can ensure that the video works can be presented to the audience smoothly and achieve good communication effects.

Practice Skills of Video Post-Production Course

The course of film and television post-production mainly refers to the process of post-production and processing of materials obtained through actual shooting after the actual shooting work is completed. The researcher has reviewed the literature the meaning, importance and measurement and evaluation of practice skill of video post-production course as following:

1. The Meaning of Practice Skills of Video Post-Production Course

Deng Xinying (2017) defined the practical skills of post-production for film and television as flexible skills that were compatible with the diversity of transmission channels and audience preferences. Works were no longer limited to traditional cinemas and TV stations, but also needed to conform to the characteristics of new media platforms such as short videos, online dramas, and live streaming. The skills involved quickly cutting out eye-catching short video segments, producing lightweight special effects suitable for mobile device playback, and adjusting audio to match the

volume standards of different devices. Students should understand that they needed to optimize the presentation of works based on the fragmented and interactive characteristics of new media audiences, so that film and television content could quickly "break out" and gain popularity on new media platforms.

Fu Gang (2020) defined practical skills in post-production courses as equivalent to the key driving force for project implementation and quality assurance. In the eyes of producers, it meant that the post-production team could accurately grasp the creative intent of the project in its early stages and efficiently convert shooting materials into finished products. Practical skills were particularly evident in the ability to complete post-production tasks on time, to quality, and within budget, to edit the rhythm of the film to match the preferences of the market audience, to create realistic and cost-effective special effects, to color-match the film's overall style and tone, and to meticulously process audio to avoid any sense of "breaking the illusion" for the audience. People with these skills could quickly integrate into the film and television project production line and contribute to the commercial success and reputation accumulation of the film.

Sang Yaqiong & Hu Liangma (2020) defined practical skills as professional skills that utilized cutting-edge digital technologies to break through the boundaries of visual imagination. Special effects were no longer just a decoration, but a core force that deeply shaped the film's worldview and enhanced visual impact. Students needed to master complex special effects technologies such as particle systems, physical simulation, and digital matte painting, and understand how to write scripts and manipulate 3D models to turn their creative ideas into stunning visual effects. At the same time, they must be proficient in converting different format materials, rendering optimization, and ensuring that the special effects were smooth and high-definition on different playback platforms, creating an immersive viewing experience for the audience.

Hou Liang (2020) defined practical skills of film and television post-production courses as the ability to integrate aesthetic perception into technical operation and elevate the artistic value of film and television works. The editor controlled the rhythm and rhythm to sculpt the narrative beauty; the colorist was like a painter, using colors to create an atmosphere and convey emotions; the special effects artist was a fantastic dreamer, making virtual elements follow the aesthetic principles and integrated into the real scene. This required students to have a wide range of knowledge in art history and aesthetic theory, and to integrate artistic

concepts throughout the entire post-production process, so that every film could be sculpted into a fine work of art that combines visual beauty and profound thought.

Wu Weiwei (2022) defined the practical skills of post-production course as a set of applied abilities that had been systematically taught to enable students to master the core operations of post-production. Within the framework of the course, it covered all aspects from the basic use of software tools to the control of complex project operation processes. Students were not only familiar with the functions of industry standard software such as Premiere and After Effects, but also able to independently build their own editing ideas, special effects schemes, and color grading styles based on the creative requirements of different types of film and television works. This skill set had a clear teaching stage and progressive nature, and students could solidly accumulate post-production experience through repeated practice and project simulation, so that they could quickly meet the practical needs of basic positions in film and television companies after graduation.

In summary, the practical skills of the post-production course for film and television are a comprehensive set of applied skills system. Specialized software for editing, effects, color correction, and audio processing can accurately and efficiently process shooting materials into complete works according to the requirements of different film and television projects.

2. The Importance of Practice Skills of Video Post-Production Course

The post-production work is an important part of the film and television works. In modern film and television works, the importance of post-production is very high. Scientific and meticulous post-production work can make the corresponding film and television works closer to perfection. The post-production course is an important course for students majoring in computer-related fields.

Li Yan et al. (2015) pointed out that as society continued to progress and the public's living standards significantly improved, there was an increasing demand for spiritual and cultural entertainment. The new situation had also had an impact on the adjustment of the country's cultural industry structure. Film and television were important carriers of national spiritual and cultural life, and they should also accelerate their internal reform in order to better meet the public's needs and enhance their value. This paper conducted in-depth analysis and exploration of the reform and practice of film and television post-production course teaching, with the aim of providing some theoretical reference for continuously improving the teaching effectiveness of film and television post-production courses.

Wu Yurong & Chen Yafeng (2016) stated that with the rapid advancement of technology, the concept and technology of film and television production had been constantly innovated, and the shooting equipment had become increasingly sophisticated, from high definition to ultra-high definition, and then to naked eye 3D and holographic imaging technology, which made the picture quality delicate and realistic, and the visual effect more and more shocking; the Internet and streaming media platforms had exploded in an unprecedented manner, breaking the spatial and temporal limitations of traditional film and television broadcasting, allowing massive content to reach global audiences instantly, expanding the boundaries of the film and television market.

Pu Xiaoliang (2019) pointed out that colleges and universities, as the key battleground for talent cultivation, had keenly sensed the shift in social demand and actively adjusted their curriculum frameworks. Art majors no longer limited themselves to traditional theoretical teaching, with practical teaching becoming increasingly important. Real projects from enterprises were introduced to enable students to hone their skills through hands-on practice. Non-art majors also offered general education courses such as aesthetic appreciation and art history, to enhance students' aesthetic literacy and cultural depth.

Song Ziyu (2022) viewed that having a strong post-production ability was the basis for students to enhance their professional competitiveness and professional quality. To comprehensively enhance the students' post-production ability, it was important to pay attention to the cultivation of their practical ability. Only when students had a strong practical ability can they truly put their professional skills to use in real work and apply a series of professional technologies to make film and television works more vivid and realistic.

In summary, with the development of the film and television industry, the demand for film and television post-production talent has been growing. Through practical teaching, students can better adapt to the industry's development and meet the actual needs of enterprises.

3. Measurement and Evaluation of Practice Skills of Video Post-Production Course

Liu Rui (2018) stated that students can choose the right photography equipment for type or theme of video production and choose the lens and use different types of lenses, photography techniques and stabilizer use, to create dynamic and engaging footage, and reasonable camera positioning and angle selection. Students can select natural light and artificial light according to the shooting

environment and theme. By adjusting the brightness, color, and direction of the light, different moods. Students can collect and do sound processing, use recording equipment to record on-site audio to ensure clarity of dialogue and sound effects. Choosing appropriate music and sound effects to enhance emotions and mood. The music needs to match the content and atmosphere of the video and audio processing or audio mixing to reduce noise.

Pu Xiaoliang (2019) pointed out that students arranged the material, including material collection (summary, content, key elements) and material preprocessing (overview, classification, naming, preliminary screening). Students managed the material, including material storage and management including overview, contents (establish a directory structure; select the right storage media) and version control.

Fu Gang (2020) stated that the process of exporting video projects, including choosing an output format, setting resolution and frame rate, encoding settings and output file. The process of disseminating the exported video file to the target audience, including choosing a distribution channel, uploading video, promotion and publicity and monitoring and feedback:

In addition, the researchers also studied the multiple-choice test form and performance assessment to help teachers clearly check the practice skills as follows:

1. Multiple-Choice Test

Hughes A. (2005) pointed out that, typically, the multiple-choice section within test packets was the first part that test-takers would come across. One of the characteristics of multiple-choice testing was that its scoring could be entirely precise. When using multiple-choice methods for scoring, the process was both rapid and efficient. Moreover, this type of testing aimed to prompt a specific response from the students. Consequently, we were able to employ straightforward codes to represent the responses of test-takers. For instance, score 1 signified the correct answer, whereas score 0 denoted the wrong answer. Statistical analysis could be applied to analyze these items. Since there was only one correct response for each item, the score could promptly categorize an item as either correct or incorrect.

Roediger & Marsh (2005) pointed out that multiple-choice questions represented a distinct question format or methodology within the realm of assessment. In this format, test-takers were presented with a series of options, among which one or more were designated as the correct, or comparatively more suitable answers. Multiple-choice question was a question type or method in which one or more of the choices were selected as correct (or more appropriate) answers. Multiple-

choice questions were popular with test writers and users due to a range of advantages.

Salwa A. (2012) stated that the simplest test technique was frequently utilized by test creators. Any condition, any circumstance, and any level or degree of education could use it. Actually, the scoring and response were what made it simple.

2. Rubric and Authentic Assessment

Andrade, H. G. (2000) Rubrics are described as "assessment instruments designed to assist in identifying and evaluating qualitative differences in student performance.

Gulikers, J. T., et al. (2004) authentic assessment as "an assessment requiring students to use the same competencies, or combinations of knowledge, skills, and attitudes, that they need to apply in the criterion situation in the professional life" more accurately captures the nature of authentic assessment and the characteristics of criterion situations. The physical context, the social environment, the assessment outcome, the assessment criteria, and the actual criterion condition determines the degree of authenticity, With the use of this idea and framework, educators can examine and gauge the authenticity of assessments.

Dawson, P. (2017) holistic and analytic rubric According to their level of specificity. Generic rubrics are shaped with performance criteria designed to reflect broad learning targets. For example, a problem-solving rubric is useful in dealing with assignments on Math, Physics, Economics, and so forth; a reading rubric can be applied not only for literature courses.

Nkhoma, M. et al. (2020) Rubrics are, in part, scoring systems, that aid and direct people in making judgments on a range of categories, including the caliber of students' work, academic performance, and educational resources. The scoring criteria are listed on a rubric, which also depicts all degrees of excellence.

However, applying project-based learning method to improve practice skill of video post-production course of undergraduate students. The researchers have developed rubric assessment criteria for video post-production course for 3 units: 1) Video production, 2) Video editing and special effects, and 3) Post-production finishing and output as shown in Table 2.2-24.

Table 2.2 Developing scoring criteria of video production

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
1. Choose the right photography equipment for type or theme of video production	Students can choose to appropriate a photography equipment at a most level.	Students can choose to appropriate a photography equipment at a moderate level.	Students can choose to appropriate a photography equipment at a little level.
2. Choose the lens and use different types of lenses, photography techniques and stabilizer use, to create dynamic and engaging footage, and reasonable camera positioning and angle selection.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a most level.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a moderate level.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a little level.
3. Select natural light and artificial light according to the shooting environment and theme. By adjusting the brightness, color, and direction of the light, different moods.	Students can select natural light and artificial light according to the shooting environment and theme at a most level.	Students can select natural light and artificial light according to the shooting environment and theme at a moderate level.	Students can select natural light and artificial light according to the shooting environment and theme at a little level.

Table 2.2 (Continue)

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
4. Collect and sound processing, use recording equipment to record on-site audio to ensure clarity of dialogue and sound effects. Choosing appropriate music and sound effects to enhance emotions and mood.	Students can use recording equipment and sound effects, choose music and sound effects match atmosphere and audio processing or audio mixing to reduce noise at a most level.	Students can use recording equipment and sound effects, choose music and sound effects match atmosphere and audio processing or audio mixing to reduce noise at a moderate level.	Students can use recording equipment and sound effects, choose music and sound effects match atmosphere and audio processing or audio mixing to reduce noise at a little level.
5. Visual elements Composition of the scene: The placement and arrangement of elements in each scene. arrange the elements of each scene, including main objects, background, and foreground. Character presentation: Character of action expressions and poses of characters in the scene. Scene description: The environment and setting of the story.	Students can create composition of the scene, character presentation and scene description at a most level.	Students can create composition of the scene, character presentation and scene description at a moderate level.	Students can create composition of the scene, character presentation and scene description at a little level.

Table 2.2 (Continue)

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
6. Cinematic language Camera number: The number assigned to each shot to identify and differentiate between different shots. Camera angle: Including long shot, wide shot, medium shot, close-up, and extreme close-up. Camera movement: Such as dolly, crane, pan, and tilt. Camera position: Such as eye level, upward angle, and downward angle.	Students can create camera number, camera angle, Camera movement and camera position at a most level.	Students can create camera number, camera angle, Camera movement and camera position at a moderate level.	Students can create camera number, camera angle, Camera movement and camera position at a little level.
7. Narrative structure Story progression: The storyboard arranges key scenes and shots in accordance with the development of the story to form a coherent narrative flow. Plot twists: Identifying key plot twists and climaxes to ensure the film's narrative pace and suspense.	Students can create narrative structure, explain story progression and plot twists at a most level.	Students can create narrative structure, explain story progression and plot twists at a moderate level.	Students can create narrative structure, explain story progression and plot twists at a little level.

Table 2.2 (Continue)

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
8. Technical details Duration: The estimated duration of each shot to control the pace and total duration. Description of scenes: A written description of the actions, dialogue, and expressions in the scene. Special effects and transitions: Identifying shots and scenes that require special effects, as well as transition methods. Dialogue and sound effects: The storyboard may also include descriptions of dialogue and sound effects. Notes and explanations of special shots, scenes or technical requirements to ensure that the production team can accurately understand and carry out the director's intentions.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a most level.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a moderate level.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a little level.

Table 2.3 Developing scoring criteria of Video editing and special effects

Evaluation contents	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
1. Arrange the material, including material collection (summary, content, key elements) and material preprocessing (overview, classification, naming, preliminary screening).	Students can arrange the material at a most level.	Students can arrange the material at a moderate level.	Students can arrange the material at a little level.
2. Manage the material, including material storage and management including overview, contents (establish a directory structure; select the right storage media) and version control.	Students can set up the material storage and management at a most level.	Students can set up the material storage and management at a moderate level.	Students can set up the material storage and management at a little level.
3. Edit video through multiple footage clips, remove useless or repetitive parts, and then arrange these clips according to the theme, story line or logical order of the video.	Students can edit video and arrange clips at a most level.	Students can edit video and arrange clips at a moderate level.	Students can edit video and arrange clips at a little level.

Table 2.3 (Continue)

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
4. Splice video through precise cutting and merging (Shear operation, merge operation), adjust the transition effect (selection of transition effect, application of transition effects) and achieve smooth visual transformation (rhythm control, screen matching).	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a most level.	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a moderate level.	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a little level.
5. Make 3D special effects. Firstly, stereo vision enjoyment. Secondly, immersive experience.	Students can make 3D special effects at a most level.	Students can make 3D special effects at a moderate level.	Students can make 3D special effects at a little level.
6. Make post special effects. Firstly, create visual elements. Secondly, set up image processing. Thirdly, create special effects.	Students can make post special effects at a most level.	Students can make post special effects at a moderate level.	Students can make post special effects at a little level.

Table 2.4 Developing scoring criteria for post-production finishing and output

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
1. Text addition. Firstly, title type text, including function, location and note. Secondly, description text, including role, position. Thirdly, subtitles, including role, position and Generation Method. Fourthly, other textual elements.	Students are most able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a most level.	Students are moderate able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a moderate level.	Students are little able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a little level.
2. Sound processing: Firstly, audio clips. Secondly, adjust the volume. Thirdly, audio effect processing. Fourthly, audio fades in and out. Fifthly, audio repair. Sixthly, special audio processing.	Students use professional audio editing software at a most level.	Students use professional audio editing software at a moderate level.	Students use professional audio editing software at a little level.

Table 2.4 (Continue)

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
3. Preview and correction: Firstly, preview, including overall effect preview, detail preview and multiplatform preview. Secondly, correction, including image correction, sound correction, clip correction, correction of subtitles and special effects:	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a most level.	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a moderate level.	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a little level.

Table 2.4 (Continue)

Evaluation contents	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
4. The process of exporting video projects, including choosing an output format, setting resolution and frame rate, encoding settings and output file:	Students can choose and build the proper output, resolution and output file at a most level.	Students can choose and build the proper output, resolution and output file at a moderate level.	Students can choose and build the proper output, resolution and output file at a little level.
5. The process of disseminating the exported video file to the target audience, including choosing a distribution channel, uploading video, promotion and publicity and monitoring and feedback:	Students can choose the proper distribution channel, and manage the feedback at a most level.	Students can choose the proper distribution channel, and manage the feedback at a moderate level.	Students can choose the proper distribution channel, and manage the feedback at a little level.

Related Research

Han Hongyang (2015) Application of project-based teaching method in film and video post-production course, which selected 70 undergraduates and divided them into two groups, with 35 students in each group. The experimental group adopted a project-based learning approach, with the theme of "Science Fiction Microfilm Special Effects Production." Students formed teams to draft scripts, apply special effects, and fine-tune videos. Teachers provided guidance as needed and organized technical sharing. The control group continued to receive conventional classroom instruction. Before and after the teaching, both groups completed the same type of short film. A professional team scored the films based on the dimensions of visual effects, editing fluidity, and creativity. The scores were entered into the SPSS software, and an independent sample t-test revealed that the experimental group's scores significantly improved after the teaching, with a $P<0.05$. In contrast, the mean value of the control group changed minimally, highlighting the outstanding effect of the project-based learning method on improving teaching quality.

Qiu Ping (2016) pointed out that this teaching case involved 80 undergraduates who were randomly divided into an experimental group and a control group, with 40 students in each group. The experimental group adopted a project-based learning approach, focusing on the "post-production of urban promotional short videos" project. Students were divided into groups to practice, from selecting materials, editing and color grading to adding effects and formatting for output. Teachers provided guidance throughout the process and regularly organized showcases and exchanges of achievements. The control group followed the traditional theoretical teaching model. Before and after the teaching, students in both groups made urban-themed short videos. Professionals were invited to score them based on dimensions such as picture quality, editing logic, and output effects. Data analysis was conducted using SPSS, and the results showed that the average score of the experimental group significantly improved, while the analysis of variance indicated that the teaching effect was remarkable; the scores of the control group showed little fluctuation, highlighting the advantages of project-based learning.

Zheng Zhu & Xiao Lan (2017) made an experiment on the improvement of video production skill in the process of applying project-based learning method. This teaching experiment selected 60 undergraduates and randomly divided them into an experimental group and a control group, with 30 students in each group. The experimental group adopted a project-based learning method and conducted

teaching around "creating urban intangible cultural heritage short videos." They went through the process of selecting topics, shooting, and editing, with the teacher providing guidance throughout and organizing peer reviews on a regular basis. The control group continued with traditional lecture-based teaching. Before and after the teaching, we collected the students' works from both groups and invited professional evaluators to score them based on creativity, technology, and picture quality, etc. We then input and analyzed the data by using SPSS. The results showed that the average scores of the experimental group students significantly improved, with $P<0.05$, and the analysis of variance indicated a significant teaching intervention effect; the scores of the control group fluctuated little and improved insignificantly, fully confirming the high efficiency of the project-based learning method in improving the quality of video production teaching.

Zhang Jie (2017) pointed out that this teaching experiment divided 80 undergraduates at random into an experimental group and a control group, with 40 students in each group. The experimental group adopted a project-based learning approach, with the project titled "Design and Manufacturing of Small Intelligent Warehouse and Logistics Equipment." Students were divided into groups to complete the mechanical structure design, part processing, and electrical control integration. The teacher guided and organized discussions throughout the process. The control group followed the traditional lecture-based mode of instruction. Before and after the teaching, both groups of students participated in professional practical exams that covered dimensions such as design rationality, processing accuracy, and equipment stability. The results were entered into the SPSS software, and the independent sample t-test showed that the average score of the experimental group significantly increased, with $p<0.05$, indicating a significant teaching effect; the control group's scores fluctuated little, highlighting the advantages of project-based learning.

Ao Xue (2021) an analysis of project-based learning in high school information technology teaching and select two classes of the same grade as the experimental objects, with 40 students in each class. Before the experiment, an IT foundation level test was conducted for the two classes, including computer basics, basic software operation, etc. The test results showed that there was no significant difference between the two classes in IT foundation ($p > 0.05$), ensuring the feasibility and comparability of the experiment.

Xu Yi (2024) a practical study on project-based learning to develop computational thinking abilities. All students showed significant improvement in computational thinking after going through a project-based learning experience that

was delivered through graphical programming. Firstly, there was a particularly large increase in the ability to decompose and abstract problems, with an average increase of more than 10 people compared to before the project. In particular, the ability to draw flowcharts increased from 3 people before the project to 11 people after the project, and the ability to transform abstract problems into computer-recognizable program commands also increased from 3 people before the project to 14 people after the project. These two abilities are key core parts of computational thinking. Secondly, there was also a certain improvement in algorithm design, with an increase from 6 people before the project to 17 people after the project. Finally, there was an increase in the ability to apply and transfer knowledge from 10 people before the project to 17 people after the project.

Mao Shujuan & Yuan Yuan. (2024) application of project-based learning teaching model integrated with OBE concept, this study selected 80 undergraduate students from Class 1 and Class 2 of the 2022 cohort of a public undergraduate college majoring in preschool education as the experimental subjects. The two classes had the same curriculum, teaching hours, and textbooks. Among them, Class 1 of the 2022 cohort of preschool education was set as the experimental group, where the "one core, four steps, five stages" project-based learning teaching model integrating the OBE concept was implemented. Class 2 of the 2022 cohort of preschool education was set as the control group, where the traditional lecture method was used for teaching, i.e., the teacher dominated the teaching, and the students pre-read before class, the teacher lectured in class, and the students practiced after class. This study, based on the OBE concept, divides the achievement goals of the "Preschool Games" course into three goals: knowledge goals, ability goals, and quality goals. It further subdivides 14 ability indicators points based on the training objectives, graduation requirements, and matrix relationship of preschool education majors. To verify the progress and effectiveness of the experimental group in achieving the six competency targets (C1 - C6) in terms of ability indicators, this study conducted a paired sample t-test between the experimental group and the control group's test scores. The P-value of C1 and C4 in the control group was less than 0.05, indicating that the students' autonomous learning ability and communication and expression ability had significant changes before the class. The P-value of C1 - C6 in the experimental group was less than 0.05, indicating that the project-based learning teaching model integrating the OBE concept has a more significant impact on improving the six indicators of students' competency targets.

Han Lin (2024) stated with the rapid development of artificial intelligence technology, computer-assisted deep learning ability has become one of the essential skills for students. Traditional teaching methods focus on theoretical indoctrination and simple practice, while students lack opportunities for in-depth exploration and project practice, making it difficult for them to flexibly apply knowledge to solve complex problems. In contrast, project-based learning emphasizes driving learning with real projects, allowing students to learn by doing and actively acquire and integrate knowledge, deeply tapping into the technical potential. Two classes of 40 students from the same grade and with similar computer foundation were selected. One class was designated as the experimental group, while the other was the control group. The post-test data statistics showed that the average score of the experimental group was 85, while the average score of the control group was 70. The results of the independent sample t-test showed that the t value satisfied $p < 0.05$, indicating that there was a significant difference in computer-assisted deep learning ability between the experimental group and the control group, and the students' ability in the experimental group was significantly improved, verifying the advantages of the project-based learning method.

In summary, the project-based learning method has many advantages. Firstly, it is driven by real-life projects, allowing students to actively explore knowledge in practice and changing the traditional passive learning mode, which can greatly enhance students' autonomy and motivation. Secondly, by collaborating in groups to complete projects, it helps to cultivate students' team spirit and communication and interpersonal skills, making them better adapt to future work scenarios. Thirdly, projects often involve the integration of knowledge from multiple fields, prompting students to integrate what they have learned and break down the boundaries of academic disciplines, deepening their understanding and mastery of knowledge, and enhancing the flexibility of knowledge application. Fourthly, in the process of project practice, students constantly face and solve problems, which can effectively train their problem-solving ability and creative thinking, enabling them to better cope with the complex and changing actual situation. In summary, project-based learning has a positive and significant impact on the overall development of students.

Chapter 3
Research Methodology

Using project-based learning method to improve practice skills of video post-production course of undergraduate students, the contents included the following procedures:

1. The population/ sample group
2. Research instruments
3. Data collection
4. Data analysis

The Population/ Sample Group

The Population

There were 60 freshmen students, majoring in fine arts with 2 classes from Chongqing Vocational College of Media, Chongqing city, China, in the first semester of the academic year 2024. (There were mixed abilities in each class: high level, medium level and low level.)

The Sample Group

Through a cluster random sampling, there were 30 freshmen students, majoring in fine arts with 1 class from Chongqing Vocational College of Media, Chongqing city, China, in the first semester of the academic year 2024.

Research Instrument

Using project-based learning method to improve practice skill of video post-production course of undergraduate students. The research instruments are as follows:

1. Lesson plan based on project-based learning method

The researcher applied the teaching mode based on project-based learning method to create the lesson plans details were as follows:

1.1 Study the proposal of practice skill of video post-production course to serve as a guideline for developing the lesson plan in this research and study guidelines for teaching based on project-based learning method from many academics: Teng Jun, et al. (2018), Hu Jiayi (2019), Zhu Chengqi (2023), Liu Jianjun (2023), and Huang Zhou (2024) to designed details in the teaching method.

1.2 Create 3 lesson plans on the subject about 3 units. Unit 1: Video production (11 hours); Unit 2: Video editing and special effects (11 hours); and Unit 3: Post-production finishing and output (11 hours). By designing lesson plan using project-based learning method, each lesson plan specified the details of the topics as follows: 1) Determining the project theme, 2) Setting project objectives, 3) Planning the project process, 4) Organizing students into groups, 5) Project implementation, 6) Display and communication, and 7) Evaluation and reflection. The project-based learning method was as follows:

Step 1: Determining the project theme. The first step in project-based learning is to identify a central theme that should inspire student interest, connect with subject matter, and have real-world relevance. This can be achieved through discussion, research, or teacher guidance in selecting a theme that covers a broad range of learning content and promotes the development of students'

Step 2: Setting project objectives. After the theme is determined, the project goals need to be refined, including knowledge acquisition, skill development, shaping of attitudes, emotions, and values. The goals should be specific, measurable, achievable, and aligned with the students' personal development goals and course standards. Clear goal setting helps guide students' learning direction and ensures that project activities are targeted.

Step 3: Planning the project process. Based on the goals, a detailed project implementation plan is developed, including time allocation, task division, required resources, etc. This step emphasizes logicality and operability, ensuring that every step of the project from initiation to completion is clearly guided, helping students develop systematic thinking and effectively manage time and resources.

Step 4: Organizing students into groups. Divide students into groups based on the project's characteristics and their individual strengths and weaknesses. The goal is to promote complementary collaboration among students and encourage learning from students with different backgrounds and abilities. Through group discussions, role assignments, and other methods, enhance students' teamwork skills and create conditions for the successful implementation of the project.

Step 5: Project implementation. Students begin to execute the project according to the plan, and teachers provide necessary guidance and support during the process, but do not directly intervene in the students' decision-making process. This stage emphasizes hands-on exploration, encouraging students to deepen their understanding and solve problems through various means such as hands-on practice, data collection, and experimentation.

Step 6: Display and communication. After the project is completed, organize students to present their achievements, which can take the form of reports, presentations, model displays, etc. This stage is not only a test of learning outcomes, but also a valuable opportunity for students to express themselves and share their experiences. Through exchanging ideas, students can learn from each other, broaden their horizons, and stimulate creative thinking.

Step 7: Evaluation and reflection. After the project is completed, a multi-dimensional evaluation is conducted, including self-evaluation, peer evaluation, and teacher evaluation, with a focus on process and outcome equally. The reflection activities encourage students to reflect on their project experiences, think about what they have learned, challenges they have faced, and improvement measures. Through evaluation and reflection, students can not only recognize their learning achievements but also clarify their future efforts and promote sustainable development.

1.3 The finished lesson plan was submitted to the thesis advisor for the verification of the content's suitability and consistency. Subsequently, the teaching effect was improved based on the advisor's suggestions.

1.4 Following the revision of the lesson plans, the researcher had them reviewed by 3 experts to confirm the accuracy of the content and the comprehensiveness of the plans. Additionally, the Index of Item Objective Congruence (IOC) was calculated, and the standards for gauging the consistency of the learning management plan were as follows:

Rating is +1 There is an opinion that "Consistent to relevant. "

Rating is 0 There is an opinion that "Not sure it consistent to relevant."

Rating is -1 There is an opinion that "Inconsistent with relevant."

Each lesson plan had an IOC consistency index greater than or equal to 0.50, so it was considered suitable for use in research. The result of the Index of Item Objective Congruence (IOC) analysis of this lesson plan had an IOC=1.00 for all questions. And using project-based learning method assess the suitability of the lesson plans, the result found that the most suitable ($\bar{x}$=5.00, SD=0.00) for all contents: 1) Unit 1: Video production (11 hours); Unit 2: Video editing and special effects (11 hours); Unit 3: Post-production finishing and output (11 hours).

1.5 Improve the lesson plan received from the review according to the suggestions of experts to achieve more accuracy before actually applying it to the sample group.

2. Practice skills test of video post-production course

The video post-production course by using project-based learning method to improve practice skills of video post-production course of undergraduate students: 1) Video production: video camera techniques, composition techniques, video shooting techniques, and storyboarding. 2) Video editing and special effects: material arrangement and management, video editing and splicing, 3D special effects, and post special effects. 3) Post-production finishing and output: text addition, sound processing, preview and correction, and export and distribution. The researcher created the multiple-choice test for evaluation students' understand concept of each content and performance assessment for students' practice skills. The steps in creating and determining the quality of achievement test are as follows:

2.1 Multiple-choice test

2.1.1 Studied the theory about how to create multiple-choice questions for concept knowledge of each content were 1) Video production, 2) Video editing and special effects, and 3) Post-production finishing and output. Next, created 60 items questions to measure the concept knowledge of video post-production course of undergraduate students. The scoring criteria 1 point for correct answer and 0 point for wrong answer.

2.1.2 Suggest the multiple-choice test to the advisor and check for accuracy and make improvements as suggested.

2.1.3 The multiple-choice test is handed over to 3 experts for measurement and evaluation. Check the content validity and calculated the Index of Item Objective Congruence (IOC). The criteria for judging the consistency of the test are as follows:

Rating is +1. There is an opinion that "Consistent to objective of learning."

Rating is 0. There is an opinion that "Not sure it consistent to objective of learning"

Rating is -1. There is an opinion that "Inconsistent with objective of learning."

Each question had an IOC consistency index greater than or equal to 0.50, so it was considered suitable for use in research. The result of the Index of Item Objective Congruence (IOC) at 1.00 for all questions.

2.1.4 Improve and revise items test that have been verified by experts. Then take it to try out with students who were not a sample group for 30 freshmen students to calculate the quality of the test. The difficulty value (p) was

selected in the range 0.20–0.80 and discrimination power (r) was selected in the range 0.20–1.00 (Landis, J. R., & Koch, G. G. 1977). The results of the question quality analysis found that 30 questions were of good quality as follows: 1) Video production for 20 items, there were 11 quality items (p=0.57-0.80, r=0.20-0.53), 2) Video editing and special effects for 20 items, there were 9 quality items (p=0.37-0.77, r=0.20-0.80), and 3) Post-production finishing and output for 20 items, there were 10 quality items (p=0.33-0.80, r=0.20-0.73). And reliability of the test by Kuder Richardson's method (KR-20) at 0.94.

2.2 Performance assessment of video post-production course

Procedures for creating the performance assessment, which is a practical test, included 3 contents and 19 items with steps to create and find quality as follows:

2.2.1 Studied the theory, principles, and methods of performance assessment from documents, textbooks, and created the performance assessment by authentic assessments on 3 criterial scores: Good (3), Medium (2) and Low (1) for practice skills: 1) Video production, 2) Video editing and special effects, and 3) Post-production finishing and output. The distribution is as follows in Table 3.1-3.3

Table 3.1 Scoring criteria of video production

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
1. Choose the right photography equipment for type or theme of video production	Students can choose to appropriate a photography equipment at a most level.	Students can choose to appropriate a photography equipment at a moderate level.	Students can choose to appropriate a photography equipment at a little level.
2. Choose the lens and use different types of lenses, photography techniques and stabilizer use, to create dynamic and engaging footage, and reasonable camera positioning and angle selection.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a most level.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a moderate level.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a little level.
3. Select natural light and artificial light according to the shooting environment and theme. By adjusting the brightness, color, and direction of the light, different moods.	Students can select natural light and artificial light according to the shooting environment and theme at a most level.	Students can select natural light and artificial light according to the shooting environment and theme at a moderate level.	Students can select natural light and artificial light according to the shooting environment and theme at a little level.

Table 3.1 (Continue)

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
4. Collect and sound processing, use recording equipment to record on-site audio to ensure clarity of dialogue and sound effects. Choosing appropriate music and sound effects to enhance emotions and mood.	Students can use recording equipment and sound effects, choose music and sound effects match atmosphere and audio processing or audio mixing to reduce noise at a most level.	Students can use recording equipment and sound effects, choose music and sound effects match atmosphere and audio processing or audio mixing to reduce noise at a moderate level.	Students can use recording equipment and sound effects, choose music and sound effects match atmosphere and audio processing or audio mixing to reduce noise at a little level.
5. Visual elements Composition of the scene: The placement and arrangement of elements in each scene. arrange the elements of each scene, including main objects, background, and foreground. Character presentation: Character of action expressions and poses of characters in the scene. Scene description: The environment and setting of the story.	Students can create composition of the scene, character presentation and scene description at a most level.	Students can create composition of the scene, character presentation and scene description at a moderate level.	Students can create composition of the scene, character presentation and scene description at a little level.

Table 3.1 (Continue)

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
6. Cinematic language Camera number: The number assigned to each shot to identify and differentiate between different shots. Camera angle: Including long shot, wide shot, medium shot, close-up, and extreme close-up. Camera movement: Such as dolly, crane, pan, and tilt. Camera position: Such as eye level, upward angle, and downward angle.	Students can create camera number, camera angle, Camera movement and camera position at a most level.	Students can create camera number, camera angle, Camera movement and camera position at a moderate level.	Students can create camera number, camera angle, Camera movement and camera position at a little level.
7. Narrative structure Story progression: The storyboard arranges key scenes and shots in accordance with the development of the story to form a coherent narrative flow. Plot twists: Identifying key plot twists and climaxes to ensure the film's narrative pace and suspense.	Students can create narrative structure, explain story progression and plot twists at a most level.	Students can create narrative structure, explain story progression and plot twists at a moderate level.	Students can create narrative structure, explain story progression and plot twists at a little level.

Table 3.1 (Continue)

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
8. Technical details Duration: The estimated duration of each shot to control the pace and total duration. Description of scenes: A written description of the actions, dialogue, and expressions in the scene. Special effects and transitions: Identifying shots and scenes that require special effects, as well as transition methods. Dialogue and sound effects: The storyboard may also include descriptions of dialogue and sound effects. Notes and explanations of special shots, scenes or technical requirements to ensure that the production team can accurately understand and carry out the director's intentions.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a most level.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a moderate level.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a little level.

Table 3.2 Scoring criteria of Video editing and special effects

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
1. Arrange the material, including material collection (summary, content, key elements) and material preprocessing (overview, classification, naming, preliminary screening).	Students can arrange the material at a most level.	Students can arrange the material at a moderate level.	Students can arrange the material at a little level.
2. Manage the material, including material storage and management including overview, contents (establish a directory structure; select the right storage media) and version control.	Students can set up the material storage and management at a most level.	Students can set up the material storage and management at a moderate level.	Students can set up the material storage and management at a little level.
3. Edit video through multiple footage clips, remove useless or repetitive parts, and then arrange these clips according to the theme, story line or logical order of the video.	Students can edit video and arrange clips at a most level.	Students can edit video and arrange clips at a moderate level.	Students can edit video and arrange clips at a little level.

Table 3.2 (Continue)

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
4. Splice video through precise cutting and merging (Shear operation, merge operation), adjust the transition effect (selection of transition effect, application of transition effects) and achieve smooth visual transformation (rhythm control, screen matching).	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a most level.	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a moderate level.	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a little level.
5. Make 3D special effects. Firstly, stereo vision enjoyment. Secondly, immersive experience.	Students can make 3D special effects at a most level.	Students can make 3D special effects at a moderate level.	Students can make 3D special effects at a little level.
6. Make post special effects. Firstly, create visual elements. Secondly, set up image processing. Thirdly, create special effects.	Students can make post special effects at a most level.	Students can make post special effects at a moderate level.	Students can make post special effects at a little level.

Table 3.3 Scoring criteria of post-production finishing and output

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
1. Text addition. Firstly, title type text, including function, location and note. Secondly, description text, including role, position. Thirdly, subtitles, including role, position and Generation Method. Fourthly, other textual elements.	Students are most able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a most level.	Students are moderate able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a moderate level.	Students are little able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a little level.
2. Sound processing: Firstly, audio clips. Secondly, adjust the volume. Thirdly, audio effect processing. Fourthly, audio fades in and out. Fifthly, audio repair. Sixthly, special audio processing.	Students use professional audio editing software at a most level.	Students use professional audio editing software at a moderate level.	Students use professional audio editing software at a little level.

Table 3.3 (Continue)

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
3. Preview and correction: Firstly, preview, including overall effect preview, detail preview and multiplatform preview. Secondly, correction, including image correction, sound correction, clip correction, correction of subtitles and special effects:	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a most level.	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a moderate level.	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a little level.

Table 3.3 (Continue)

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
4. The process of exporting video projects, including choosing an output format, setting resolution and frame rate, encoding settings and output file:	Students can choose and build the proper output, resolution and output file at a most level.	Students can choose and build the proper output, resolution and output file at a moderate level.	Students can choose and build the proper output, resolution and output file at a little level.
5. The process of disseminating the exported video file to the target audience, including choosing a distribution channel, uploading video, promotion and publicity and monitoring and feedback:	Students can choose the proper distribution channel, and manage the feedback at a most level.	Students can choose the proper distribution channel, and manage the feedback at a moderate level.	Students can choose the proper distribution channel, and manage the feedback at a little level.

2.2.2 Submit the assessment standards that have been formulated to the thesis supervisor, have their precision checked, and make corresponding changes accordingly.

2..2.3 The performance assessment criteria are submitted to three experts for measurement and examination. These experts conduct a check on the content validity and work out the Index of Item Objective Congruence (IOC). The benchmarks for determining the consistency of the performance assessment are as follows:

Rating is +1 There is an opinion that "consistent to objective of learning. "

Rating is 0 There is an opinion that "Not sure it consistent to objective of learning"

Rating is -1 There is an opinion that "Inconsistent with objective of learning. "

Each performance assessment had an Index of Item Objective Congruence (IOC) greater than or equal to 0.50. The result of the Index of Item Objective Congruence (IOC) at 1.00 for all questions.

2.2.4 Update and improve the performance assessment that has been verified by experts. Then tried out with students who were not a sample group for 30 freshmen students and calculated the quality of confidence values in performance assessment analysis the reliability by Cronbach's Coefficient Alpha method at 0.77.

Data Collection

The data collection was as follows:

1. Collaborate with three professional academic experts who are affiliated with Bansomdejchaopraya Rajabhat University. Provide them with the official documents from the university, along with detailed information regarding the data collection process and research instruments, namely the lesson plan, multiple choice test, and performance assessment form, for their evaluation (with the Index of Objective Consistency: IOC taken into account). Subsequently, gather data from these three experts and conduct a comprehensive analysis of the collected data for further consideration.

2. This research was of experimental design and was carried out in line with the One Group Pretest-Posttest Design (Fitz-Gibbon, 1987) as Table 3.4.

Table 3.4 One Group Pretest-Posttest Design

Group	Pretest	Experimental	Posttest
R	T_1	X	T_2

The meaning of the symbols used in the experimental design

R mean Random Sampling

X mean Experimental

T_1 mean Pretest

T_2 mean Posttest

This research the data collection was as follows:

1. Keep contact with Bansomdejchaopraya Rajabhat University to request an official letter for an expert to inspect research equipment.

2. Organize a test before starting the experiment to understand students how to study student role learning objectives evaluation method and the benefits that will be gained from taking the ability test and learning activities during the experiment.

3. Test before teaching (Pretest) with 30 freshmen students, majoring in fine arts from Chongqing Vocational College of Media in China, which was a sample group, and checked the score record to analyze the data.

4. The experiment used the lesson plans of practice skills of video post-production course based on project-based learning method. The course was divided into 3 units, total 33 hours in July 2024, and it's not counting the days of pretest and posttest are shown in Table 3.5.

Table 3.5 Practice skills of video post-production course based on project-based learning method

Contents	Activity
	- Introduction
	- Learning content
1. Video production	- Learning activity: Using project-based learning method based on teaching with 7 steps
2. Video editing and special effects	Step 1: Determining the project theme.
	Step 2: Setting project objectives.
	Step 3: Planning the project process.
3. Post-production finishing and output	Step 4: Organizing students into groups.
	Step 5: Project implementation.
	Step 6: Display and communication.
	Step 7: Evaluation and reflection.

5. Testing again after teaching (Posttest) with 30 freshmen students, majoring in fine arts from Chongqing Vocational College of Media in China, which was a sample group, and checked the score record to analyze the data.

Data Analysis

The researchers analyzed the data by program computer, and the order in which the data were analyzed was as follows:

1. Verify and analyze the effectiveness of practice skill of video post-production course based on the consistency index (Index of Items Objective Congruence: IOC).

2. Quantitative data were analyzed through descriptive statistics; means, and standard deviation.

3. Quantitative data were analyzed through inferential statistics; next calculated the different scores of learning ability before and after using project-based learning method through t-test for dependent samples.

Chapter 4
Results of Analysis

Using project-based learning method to improve practice skills of video post-production course of undergraduate students. The objectives consist of two parts: 1) to use project-based learning method to improve practice skills of video post-production course of undergraduate students, and 2) to compare students' practice skills of video post-production course before and after the implementation based on project-based learning method. The data analysis results are as follows:

1. Symbol and abbreviations
2. Results of data analysis

The details are as follows:

Symbol and Abbreviations

Represent data analysis results based on symbols and semantics. The details are as follows:

n mean the number of students

$\bar{X}$ mean the average

SD. mean the standard deviation.

D mean the difference in scores between before and after learning.

df mean degree of freedom

t mean the statistical value to be used in the t-test

p mean p-value

** mean statistical significance at the level .01

Results of Data Analysis

Using project-based learning method to improve practice skills of video post-production course. The researcher conducted the research in the following order:

Part 1: To use project-based learning method to improve practice skills of video post-production course of undergraduate students

The application of project-based learning method in video post - production course can have a significant impact on students. The influence of project-based learning method on practical skills of video post-production course is mainly reflected in the aspects of planning the project process, organizing students into groups, and conducting project implementation.

Firstly, researchers studied the documents and related research about project-based learning method to improve practice skill of video post-production course from many researchers: Teng Jun, et al. (2018), Hu Jiayi (2019), Zhu Chengqi (2023), Liu Jianjun (2023), and Huang Zhou (2024). In the research, the researcher synthesized into 7 steps used in 3 lesson plans to improve video post-production: Step 1: Determining the project theme, Step 2: Setting project objectives, Step 3: Planning the project process, Step 4: Organizing students into groups, Step 5: Project implementation, Step 6: Display and communication, and Step 7: Evaluation and reflection. The steps were as follows:

Step 1: Determining the project theme

The first crucial step in the project-based learning method involves identifying a compelling and relevant theme for the project. This theme should be intriguing enough to capture students' interest and motivation, ensuring they remain engaged throughout the process. It is imperative to choose a theme that aligns with the educational goals and curriculum standards, thereby ensuring that the learning outcomes are meaningful and purposeful. The theme selection should also consider the availability of resources, the feasibility of the project within the given timeframe, and its potential to foster critical thinking, creativity, and collaboration among students. Once a theme is chosen, it sets the tone for the entire project, guiding all subsequent steps and decisions. Thoughtful consideration of the theme ensures that the project is not only educational but also engaging and memorable for the students.

Step 2: Setting project objectives

After determining the project theme, the next step is to establish clear and measurable objectives. These objectives serve as the roadmap for the project, outlining what students need to achieve by the end of the process. They should be specific, achievable, relevant, and time-bound (SMART), ensuring that there is a clear understanding of the expected outcomes. Setting objectives involves breaking down the broader theme into manageable tasks and goals, each contributing to the overall success of the project. These objectives help maintain focus, provide direction, and allow for assessment of progress. By clearly defining the objectives, educators can ensure that the project is aligned with educational standards and that students are developing the necessary skills and knowledge. This step is essential for maintaining a structured and purposeful learning environment.

Step 3: Planning the project process

Planning the project process is a vital stage that involves outlining the sequence of activities, timelines, and responsibilities required to complete the project. This step ensures that all necessary steps are considered and organized in a logical and efficient manner. It involves developing a detailed project plan that includes milestones, deadlines, and resource allocations. The plan should also incorporate risk management strategies to anticipate and address potential challenges. Clear communication channels and roles should be established to facilitate collaboration among students and between students and teachers. By meticulously planning the project process, educators can create a supportive and structured learning environment that promotes productivity and organization. This thorough preparation helps in maintaining momentum and ensures that the project stays on track, meeting its objectives within the specified timeframe.

Step 4: Organizing students into groups

Organizing students into groups is a fundamental aspect of project-based learning, as it fosters collaboration, communication, and teamwork. This step involves carefully considering the size and composition of each group to ensure that all students have an equal opportunity to contribute and learn. Diversity in group membership can bring varied perspectives and strengths, enhancing creativity and problem-solving abilities. Group dynamics should be carefully monitored to ensure that all members feel included and valued. Roles within the group should be clearly defined, with regular rotations to provide all students with opportunities to develop different skills. Establishing clear group guidelines and expectations helps maintain a positive and productive working environment. By thoughtfully organizing students into groups, educators can create a supportive and inclusive learning community that maximizes the benefits of collaborative learning.

Step 5: Project implementation

Project implementation is the stage where the planning and preparation come to life. This is where students actively engage in the project, applying the knowledge and skills they have acquired to bring their ideas to fruition. It involves carrying out the activities outlined in the project plan, from research and design to construction and testing. During this phase, students work independently and collaboratively, guided by the teacher's support and feedback. The implementation stage is often the most exciting and rewarding for students, as they see their ideas take shape and experience the thrill of creating something tangible. It is crucial for teachers to provide ongoing support and encouragement, offering guidance and

resources as needed. This hands-on, practical experience is essential for deepening understanding and fostering a sense of accomplishment.

Step 6: Display and communication

The display and communication step involve presenting the project's findings and results to a wider audience. This stage is critical for refining students' communication skills and fostering a sense of pride in their work. It provides an opportunity for students to articulate their ideas, processes, and outcomes clearly and confidently. The display can take various forms, such as presentations, exhibitions, or digital portfolios, depending on the nature of the project. It is important to create an inclusive and supportive environment where students feel encouraged to share their work and receive constructive feedback. This step also encourages critical reflection, as students evaluate the effectiveness of their communication strategies and consider areas for improvement. By showcasing their projects, students gain valuable experience in presenting their ideas to others, an essential skill for both academic and professional success.

Step 7: Evaluation and reflection

The final step in the project-based learning method is evaluation and reflection. This stage involves assessing the project's success in achieving its objectives and identifying areas for improvement. It is crucial for fostering a growth mindset and promoting continuous learning. Evaluation should be comprehensive, incorporating both self-assessment and peer feedback, as well as input from teachers and other stakeholders. Reflection prompts should guide students in considering what they learned, how they learned it, and what they would do differently in the future. This process helps students consolidate their understanding and apply their new knowledge and skills to future projects. By focusing on both the outcomes and the process, evaluation and reflection ensure that project-based learning leads to meaningful and lasting learning. It also provides valuable insights for educators, guiding future curriculum development and instructional practices.

Secondly, the researcher created lesson plans with elements: 1) Content, 2) Objective, 3) Main point/Concept, 4) Introduction, 5) Learning content, 6) Teaching activities, 7) Measurement and Evaluation, and 8) Teaching media were as follows:

Introduction (20 minutes)

The teacher introduces this lesson's teaching contents and learning objectives and explains the importance of video production. Through these steps, students can clearly understand the teaching objectives. Moreover, the teacher will

also introduce the seven stages of the project-based learning method to help students achieve the expected teaching effect.

Learning content (2 hours and 40 minutes)

The teacher explained the concept of practice skill of video post-production course:

Unit 1: Video production. (1) Video camera techniques, (2) Composition techniques, (3) Video shooting techniques, and (4) Storyboarding.

Unit 2: Video editing and special effects. (1) Material arrangement and management, (2) Video editing and splicing, (3) 3D special effects, and (4) Post special effects.

Unit 3: Post-production finishing and output. (1) Text addition, (2) Sound processing, (3) Preview and correction, and (4) Export and distribution.

Teaching Activities (8 hours)

The teacher explained the step of project-based learning method, and practiced seven stages of practice skill of video post-production course.

Step 1: Determining the project theme

Step 2: Setting project objectives

Step 3: Planning the project process

Step 4: Organizing students into groups

Step 5: Project implementation

Step 6: Display and communication

Step 7: Evaluation and reflection

Thirdly, after completed 3 lesson plans: 1) video production, 2) video editing and special effects, and 3) post-production finishing and output, they were presented to the thesis advisor to verify the suitability and consistency of the contents. According to the suggestion and lesson plans from 3 experts, consider the Index of Item Objective Congruency (IOC). The data analysis was assessment of the quality of the lesson plan according to the project teaching to improve practice skill of video post-production course for undergraduate students. The results were shown in Table 4.1- 4.5.

Table 4.1 Assessment of the quality of video production lesson plan

Assessment Item	$\bar{X}$	SD.	Interpretation
1. The content is related to the learning	5.00	0.00	Most suitable
2. The learning processes are related to teaching.	5.00	0.00	Most suitable
3. The learning objectives are consistent with the subject matter.	5.00	0.00	Most suitable
4. The learning activities are related by using project-based learning method.	5.00	0.00	Most suitable
5. The assignment of the practical skills in the video production is related to the learning content.	5.00	0.00	Most suitable
6. There are various assessments related with learning objectives.	5.00	0.00	Most suitable
7. The measurement and evaluation are related with learning objectives.	5.00	0.00	Most suitable
Total	**5.00**	**0.00**	**Most suitable**

From Table 4.1 the assessment of the quality of video production lesson plan by experts overall, the suitability of the research objectives had the most suitable ($\bar{X}$=5.00, SD.=0.00). When experts considered the assessment item, it's found the most suitable ($\bar{X}$=5.00, SD.=0.00) for all assessment items and could be used for teaching.

Table 4.2 Assessment of the quality of video editing and special effects lesson plan

Assessment Item	$\bar{X}$	SD.	Interpretation
1. The content is related to the learning	5.00	0.00	Most suitable
2. The learning processes are related to teaching.	5.00	0.00	Most suitable
3. The learning objectives are consistent with the subject matter.	5.00	0.00	Most suitable
4.The learning activities are related by using project-based learning method.	5.00	0.00	Most suitable
5. The assignment of the practical skills in the video editing and special effects is related to the learning content.	5.00	0.00	Most suitable
6.There are various assessments related with learning objectives.	5.00	0.00	Most suitable
7.The measurement and evaluation are related with learning objectives.	5.00	0.00	Most suitable
Total	**5.00**	**0.00**	**Most suitable**

From Table 4.2, the assessment of the quality of video editing and special effects lesson plan by experts overall and its suitability for the research objectives was rated as the most suitable ($\bar{X}$=5.00, SD.=0.00). When experts considered the assessment item, it's found the most suitable ($\bar{X}$=5.00, SD.=0.00) for all assessment items and could be used for teaching.

Table 4.3 Assessment of the quality of post-production finishing and output lesson plan

Assessment Item	$\bar{X}$	SD.	Interpretation
1.The content is related to the learning objectives.	5.00	0.00	Most suitable
2.The learning processes are related to teaching.	5.00	0.00	Most suitable
3. The learning objectives are consistent with the subject matter.	5.00	0.00	Most suitable
4.The learning activities are related by using project-based learning method.	5.00	0.00	Most suitable
5. The assignment of the practical skills in the post-production finishing and output is related to the learning content.	5.00	0.00	Most suitable
6.There are various assessments related with learning objectives.	5.00	0.00	Most suitable
7.The measurement and evaluation are related with learning objectives.	5.00	0.00	Most suitable
Total	**5.00**	**0.00**	**Most suitable**

From Table 4.3, the assessment of the quality of post-production finishing and output lesson plan by experts overall and its suitability of the research objectives had the most suitable ($\bar{X}$=5.00, SD.=0.00). When experts considered the assessment item, it's found the most suitable ($\bar{X}$=5.00, SD.=0.00) for all assessment items and could be used for teaching.

After learning according to the lesson plans completely, the researcher conducted a test of the students' practice skills of the video post-production course. 30 freshmen students majoring in fine art from Chongqing Vocational College of Media in Chongqing city, China, were chosen as the sample group. The scores of practice skills of video post-production before and after learning were shown in Table 4.4.

Table 4.4 Practice skills score of video post-production course of undergraduate students before and after using project-based learning method

Student ID	Pretest (87)	Posttest (87)	Difference Scores (D)	Student ID	Pretest (87)	Posttest (87)	Difference Scores (D)
1	30	58	28	16	38	64	26
2	34	65	31	17	33	61	28
3	40	64	24	18	39	64	25
4	33	62	29	19	37	60	23
5	34	62	28	20	38	58	20
6	42	64	22	21	39	61	22
7	37	65	28	22	34	55	21
8	36	63	27	23	33	60	27
9	34	57	23	24	34	60	26
10	35	64	29	25	40	55	15
11	31	58	27	26	34	60	26
12	36	62	26	27	31	60	29
13	31	60	29	28	35	66	31
14	35	60	25	29	31	64	33
15	35	59	24	30	35	66	31
				$\bar{X}$	35.13	61.23	
				SD.	3.03	3.04	

From Table 4.4, the practice skills score of video post-production course before and after using project-based learning method, the average score before learning was 35.13, the average score after learning was 61.23. The scores after learning were higher than those before learning. It shows that teaching by using the project-based learning method could improve students' scores of practical skills in the video post-production course.

Part 2: The comparison of students' practical skills of the video post-production course before and after the implementation based on project-based learning method.

The researcher implemented practical skills by using project-based learning method. The experimental sample consisted of 30 freshmen majoring in fine art from Chongqing Vocational College of Media in Chongqing, China. We compared students'

practical skills of video post-production course before and after learning and analyzed the data by using average statistics, standard deviation, and t-test for dependent samples. The data analysis results are shown in Table 4.5.

Table 4.5 The comparison of students' practice skills of video post-production course before and after implementation based on project-based learning method.

(n=30)

Practice skills	Testing	Full score	$\bar{X}$	SD.	df	t	p
Video production	Pre-test	35	14.23	1.55	29	25.83**	.00
	Post-test	35	23.80	1.58			
Video editing special effects	Pre-test	27	11.47	1.41	29	28.46**	.00
	Post-test	27	19.53	1.11			
Post-production finishing and output	Pre-test	25	9.43	1.70	29	22.47**	.00
	Post-test	25	17.90	1.71			
Total	**Pre-test**	**87**	**35.13**	**3.03**	**29**	**37.53****	**.00**
	Post-test	**87**	**61.23**	**3.04**			

**Statistically significant at the level .01 ($p \leq .01$)

From Table 4.5, the result indicated that the scores on practice skills of students after learning were higher than before learning statistically significant at the level .01. When considering the results of data analysis classified by contents: video production, video editing and special effects, and post-production finishing and output. The result found that the practice skills score of students after learning is higher than before learning statistically significant at the level .01 for all contents. Therefore, learning by using project-based learning method could improve students' practice skills of video post-production course.

Chapter 5
Conclusion Discussion and Recommendations

The purpose of this research were 1) to use project-based learning method to improve practice skills of video post-production course of undergraduate students and 2) to compare students' practice skills of video post-production course before and after the implementation based on project-based learning method. Through cluster random sampling, there were 30 freshmen students, majoring in fine arts from Chongqing Vocational College of Media, Chongqing city, China, in the second semester of the academic year 2023, whose would be chosen as the sample group. The instruments of this research are as follows:

1. Studied the Chongqing Vocational College of Media Curriculum Standards for video post-production and developed practice skills. The standard was used as a guide for developing a learning program through learning objectives, content, guidelines, and teacher guidance. Additionally, researchers studied the concepts and theories associated with literature by referring to various documents, textbooks, and pertinent research, with the aim of formulating a learning management plan.

2. Developed 3 lesson plans by using project-based learning method to improve the students' practice skills of video post-production course: 1) video production; 2) video editing and special effects; and 3) post-production finishing and output. Each lesson plan specifies the details of the following elements: 1) Content, 2) Objective, 3) Main point/Concept, 4) Introduction, 5) Learning content, 6) Teaching activities, 7) Measurement and Evaluation, and 8) Teaching media. The researcher has studied documents and related research about the project-based learning method and studied information from many researchers: Teng Jun, et al. (2018), Hu Jiayi (2019), Zhu Chengqi (2023), Liu Jianjun (2023), and Huang Zhou (2024). Project-based learning method was synthesized into 7 steps used in 3 lesson plans to improve practice skills: Step 1: Determining the project theme, Step 2: Setting project objectives, Step 3: Planning the project process, Step 4: Organizing students into groups, Step 5: Project implementation, Step 6: Display and communication, and Step 7: Evaluation and reflection.

3. Create research instrument for 3 contents: 1) Multiple choice test was totally 30 items, the scoring criteria 1 point for correct answer and 0 point for wrong answer. And 2) The research created performance assessment by authentic assessments rating on 3 criterial scores for 19 items.

4. Checked the content validity and analyze the Index of Item Objective Congruence (IOC) by 3 professional scholar-experts. Then, take the research instrument to try out with 30 freshmen students who were not a sample group. Next, calculating the quality of the test was difficulty value (p), discrimination power (r) of the multiple-choice test and the reliability using Kuder Richardson's method (KR-20). Additionally, check the quality of confidence values in performance assessment by analyzing the reliability with Cronbach's Coefficient Alpha method.

5. Gather information for students by experimental research one group Pretest-Posttest design and analyzed through statistics; means, standard deviation and t-test for dependent samples.

Conclusion

Using the project-based learning method to improve the students' practice skills of video post-production course and comparing students' practice skills before and after the implementation based on project-based learning method. The researchers presented the results as follows:

1. Using project-based learning method can improve the practice skill of the video post-production course. The researcher has studied the information base on project-based learning method synthesized into 7 steps to improve practice skills: Step 1: Determining the project theme, Step 2: Setting project objectives, Step 3: Planning the project process, Step 4: Organizing students into groups, Step 5: Project implementation, Step 6: Display and communication, and Step 7: Evaluation and reflection. Quality analysis of lesson plans by 3 experts, shown that the overall results were most suitable. After sample group students have learned according to the lesson plans the result showed that, the practice skills score of video post-production course before and after using project-based learning method, the average score before learning was 35.13, the average score after learning was 61.23. The scores after learning were higher than those before learning. It shows that teaching by using the project-based learning method could improve students' scores of practice skills in the video post-production course.

2. The comparison of students' practice skills of video post-production course before and after the implementation based on the project-based learning method. The result indicated that the scores on practice skills of students after learning were higher than before learning statistically significant at the level .01. When considering the results of data analysis classified by contents: video production, video editing and special effects, and post-production finishing and output. The result

found that the practice skills score of students after learning is higher than before learning, statistically significant at the level .01 for all contents. Therefore, learning by using project-based learning method could improve students' practice skills of video post-production course. Researchers considered the results of data analysis which were classified by contents, namely video production, video editing and special effects, post-production finishing and output. Therefore, learning by using project-based learning method could improve students' practice skills.

Discussion

The research resulted from using project-based learning method to improve practice skills of the video post-production course on 30 freshmen students from Chongqing Vocational College of Media, China. The researcher could be discussed as follows:

1. The improvement of practice skills by using project-based learning method. The researcher studied documents and related research on project-based learning method theory from many researchers and synthesized them into 7 steps which were used for 3 lesson plans. The practice skills score of video post-production course before and after using project-based learning method, the average score before learning was 35.13, the average score after learning was 61.23. The scores after learning were higher than those before learning. It's because the project-based learning method was very important to practical operation and problem-solving, this is because project-based learning as a learning approach based on experience. Students acquired knowledge and skills through hands-on activities and personal experiences while working on projects. He emphasized the close connection between education and life, and project-based learning was a way to simulate real-life situations, allowing students to understand the practical uses of knowledge while solving real-world problems and developing their practical skills and sense of social responsibility (Chen Hui, 2015). It's consistent with Zeng Zhu & Xiao Lan (2017) pointed out that the benefits of applying project-based learning method to the undergraduate film and video post-production course enhance students' practical operation ability and problem-solving ability. And consistent with Lin Jie (2022) project-based learning as a collaborative learning experience, students worked in groups to complete projects, during which they communicated with each other, divided tasks, and take responsibility for the results of the project together. This learning method could cultivate students' teamwork spirit, communication skills, and leadership abilities. Because of this, during the project implementation process, faced

with the challenges of lighting and composition in shooting and the complex tasks of material selection, editing rhythm, and special effects synthesis in post-production, students must actively learn and apply various professional knowledge and software tools, thereby effectively improving their film and television post-production practical skills. At the same time, in the display and exchange, evaluation and reflection stages, students can gain new inspiration from others' works and opinions and continuously improve their work.

2. The comparison of students' practice skills before and after the implementation based on project-based learning method. The result indicated that the scores on practice skills of students after learning were higher than before learning statistically significant at the level .01. It's consistent with Han Hongyang (2015) application of project-based teaching method in film and video post-production course, which selected 70 undergraduates and divided them into two groups, with 35 students in each group. The experimental group adopted a project-based learning approach, with the theme of "Science Fiction Microfilm Special Effects Production." Students formed teams to draft scripts, apply special effects, and fine-tune videos. The control group continued to receive conventional classroom instruction. Before and after the teaching, both groups completed the same type of short film. A professional team scored the films based on the dimensions of visual effects, editing fluidity, and creativity. The scores of the experimental group's scores significantly improved after the teaching, with a $P<0.05$. In contrast, the mean value of the control group changed minimally, highlighting the outstanding effect of the project-based learning method on improving teaching quality. Qiu Ping (2016) pointed out that this teaching case involved 80 undergraduates who were randomly divided into an experimental group and a control group, with 40 students in each group. The experimental group adopted a project-based learning approach, focusing on the "post-production of urban promotional short videos" project. Teachers provided guidance throughout the process and regularly organized showcases and exchanges of achievements. The control group followed the traditional theoretical teaching model. Before and after the teaching, students in both groups made urban-themed short videos. Professionals were invited to score them based on dimensions such as picture quality, editing logic, and output effects. The results showed that the average score of the experimental group significantly improved, while the analysis of variance indicated that the teaching effect was remarkable; the scores of the control group showed little fluctuation, highlighting the advantages of project-based learning. And consistent with Han Lin (2024) the project-based learning emphasizes driving learning with real

projects, allowing students to learn by doing and actively acquire and integrate knowledge, deeply tapping into the technical potential. Two classes of 40 students from the same grade and with similar computer foundation were selected. One class was designated as the experimental group, while the other was the control group. The post-test data statistics showed that the average score of the experimental group was 85, while the average score of the control group was 70. The results of the independent sample t-test showed that the t value satisfied $p < 0.05$, indicating that there was a significant difference in computer-assisted deep learning ability between the experimental group and the control group, and the students' ability in the experimental group was significantly improved, verifying the advantages of the project-based learning method.

In summary, the project-based learning was integration of knowledge from multiple fields, prompting students to integrate what they have learned, effectively train their problem-solving ability and creative thinking, enabling them to better cope with the complex and changing actual situation. In addition, collaborating in groups to complete projects helps to cultivate students' team spirit and communication and interpersonal skills, making them better adapt to future work scenarios.

Recommendations

General recommendation

1. Design project themes and processes carefully, the project theme should be closely related to the hot topics and actual needs of the film and television industry, including the stages of preliminary planning, material collection, editing and synthesis, special effects addition, and post-production debugging. Clearly define the students' learning objectives and tasks at each stage and guide them to gradually master the skills of film and television post-production.

2. Strengthen team collaboration and communication mechanisms. Divide students into groups to work on projects, with group size limited to 4-6 people, and ensure that members have complementary skills. Set up regular group discussion meetings, where students report on project progress, share problems encountered and solutions. Encourage team members to evaluate each other's work and offer constructive feedback.

3. The evaluation system should cover team collaboration evaluation focuses on the degree of coordination between team members and the rationality of their roles. The personal growth evaluation evaluates the students' skill improvement and problem-solving ability during the project process.

Suggestions for the Future Research

1. Expand project dimensions by integrating cutting-edge technologies stay up-to-date with emerging technologies in the film and television industry, such as virtual reality (VR), augmented reality (AR), and artificial intelligence-assisted editing using project-based learning.

2. Study cross-disciplinary collaboration enriches between the post-production course in film and television and other disciplines, such as collaborating with computer science to optimize film rendering projects using project-based learning.

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Appendixes

Appendix A
List of Specialists and Letters of Specialists Invitation for IOC Verification

List of Specialists and Letters of Specialists Invitation for IOC Verification

Name of Experts

1. Assistant Professor Dr.Wasan Dueanchaeng
   Ph.D., Program in Research and Statistics in Cognitive Science

2. Assistant Professor Dr. Krongthip Neamthanom
   Ph.D., Program in Research and Statistics in Cognitive Science

3. Associate Professor Dr. Huang Peng
   Ph.D., Program in film and TV production

Appendix B
Official Letter

Ref.No. MHESI 0643.14/32

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

15 January 2023

RE: Invitation to validate research instrument

Dear Assistant Professor Dr.Wasan Dueanchaeng

Mr.Wang Tianqi is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. He is undertaking research entitled "Using Project-based Learning Method to Improve Practice Skill of Video Post-Production Course of Undergraduate Students"

The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

We respectfully request your assistance in validating a research instrument that is attached to this message. We would be grateful for any help you can provide in this matter. We would like to express our sincere appreciation for your time and expertise. If you have any questions or concerns, please do not hesitate to contact Mr.Wang Tianqi at 276179289@qq.com

Thank you for considering our request.

Sincerely,

Nainapas I.

(Dr.Nainapas Injoungjirakit)
Vice Dean, For Dean of the Graduate School

Bansomdejchaopraya Rajabhat University
Tel.+662-473-7000 ext. 1814
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Ref.No. MHESI 0643.14/33

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

15 January 2023

RE: Invitation to validate research instrument

Dear Assistant Professor Dr.Krongthip Neamthanom

Mr.Wang Tianqi is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. He is undertaking research entitled "Using Project-based Learning Method to Improve Practice Skill of Video Post-Production Course of Undergraduate Students"

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Thank you for considering our request.

Sincerely,

Nainapas I.

(Dr.Nainapas Injoungjirakit)
Vice Dean, For Dean of the Graduate School

Ref.No. MHESI 0643.14/34

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

15 January 2023

RE: Invitation to validate research instrument

Dear Professor Dr.Huang Peng

Mr.Wang Tianqi is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. He is undertaking research entitled "Using Project-based Learning Method to Improve Practice Skill of Video Post-Production Course of Undergraduate Students"

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Appendix C
Research Instruments

Lesson Plan I

Contents

Video production

Objective of learning

1. Students understand concept of video production. (K)
2. Students are able to shoot video. (P)
3. Students are able to create storyboarding. (P)

Main ideas/concepts

Video production is essential for laying a solid foundation for any video post-production project. In the age of digital media, video production has become an important means for college students to express their creativity and convey information. Students will learn to conceptualize, plan, and design storyboards, which is crucial in determining the direction of the video production as follow the contents: (1) video camera techniques, (2) composition techniques, (3) video shooting techniques, and (4) storyboarding.

Introduction

The teacher introduces the learning objectives and contents about producing storyboarding and explains the significance and application of project-based learning in seven stages: (1) Determining the project theme. (2) Setting project objectives. (3) Planning the project process. (4) Organizing students into groups. (5) Project implementation. (6) Display and communication. (7) Evaluation and reflection.

Learning contents

The teacher explained the concept of Video production and demonstrated: (1) video camera techniques, (2) composition techniques, (3) video shooting techniques, and (4) storyboarding. The learning contents are as follows:

(1) Video camera techniques. The technology covers the selection of lenses, lighting adjustment, and the application of shooting techniques, to ensure that the captured images meet the needs of post-editing, special effects production, and sound processing, thus jointly forming a complete and high-quality video work.

(2) Composition techniques. The techniques refer to a set of technical means to optimize visual effects and enhance audience experience by carefully arranging

and positioning the elements in the captured scene. It involves adjustments to various aspects of the elements in the scene, such as their position, size, proportion, and angle, with the aim of making the scene look more harmonious and aesthetically pleasing, while highlighting the main subject and guiding the viewer's gaze to convey the information and emotions the author wants to express.

(3) Video shooting techniques. The techniques include operational skills of cameras (such as lens selection, exposure control, and stable shooting), lighting application (the combination of natural light and artificial light, the creation of light and shadow effects), and design of shooting angles and composition (such as the choice of different perspectives, including aerial, bird's eye, and ground-level views, as well as the arrangement and placement of elements in the frame).

(4) Storyboarding. The concept of a storyboard refers to a series of carefully designed illustrations and accompanying captions that are arranged in chronological order to form a visual story framework. Storyboards not only help team members to clearly understand the overall structure of the video and the specific requirements of each scene, but also serve as a foundation for reference during the post-production work, such as editing, special effects, and sound design.

The details are as follows:

(1) Video camera techniques.

When creating videos, camera technology is a comprehensive concept that encompasses several key elements to ensure the capture and recording of high-quality footage. These elements primarily include:

Firstly, camera lens system. The lens is the gateway through which the camera captures images, and its quality directly affects the clarity and expressiveness of the image. The camera lens system includes the type of lens (such as wide-angle, standard, and telephoto), the size of the aperture, and the zoom capability, all of which together determine the field of view, depth of field, and light control ability of the image.

Secondly, photovoltaic conversion devices. This is the core part of camera technology, responsible for converting the optical image captured by the lens into an electrical signal. Currently, the mainstream photovoltaic conversion devices include charge-coupled devices (CCD) and complementary metal-oxide semiconductor (CMOS) sensors. The characteristics of pixel count, sensing area, dynamic range, etc. of these devices have a significant impact on the clarity, color fidelity, and low-light performance of the image.

Thirdly, image processing technology. The image processing technology integrated within the camera can preprocess and optimize the raw image signal, including noise reduction, color correction, automatic exposure, and white balance adjustment, etc. These technologies can enhance the overall quality of the image, making it more in line with the visual habits of the human eye.

Fourthly, stabilization system. To reduce shaking and blurring during filming, modern cameras are usually equipped with stabilization systems, such as optical image stabilization and electronic image stabilization technology. These technologies can effectively counteract minor vibrations during handheld shooting, ensuring stability and smoothness of the image.

Fifthly, encoding and compression techniques. To save storage space and improve transmission efficiency, cameras typically encode and compress the captured image signals. During this process, the camera uses specific encoding standards and algorithms to convert the original image data into a format suitable for storage and transmission.

Sixthly, network transmission technology. For network cameras, network transmission technology is also an essential part. These cameras can be connected to the network via wired or wireless methods, enabling remote monitoring and real-time transmission functions. The stability and bandwidth of network transmission technology directly affect the real-time and picture quality of remote monitoring.

Seventhly, camera control and operating system. Cameras are usually equipped with control and operating systems that allow users to remotely control and set up the camera using devices such as remote controls, touchscreens, or computers. These systems offer a wide range of features and options, such as zoom, focus, exposure adjustment, white balance settings, etc., to meet the needs of different shooting scenarios.

In summary, camera technology is a complex and integrated system that covers lens systems, photoelectric conversion devices, image processing technologies, stabilization systems, encoding and compression technologies, network transmission technologies, and control and operating systems, among others. These components work together to ensure the capture and recording of high-quality images.

(2) Composition techniques.

In creating video content for film and television, composition techniques are a crucial artistic tool that determine how elements in a scene are arranged to create harmonious, visually appealing, and expressive images. Specifically, composition techniques involve the following key elements:

Firstly, arrangement of the subject and the attendant.

Subject: the main subject of the scene, the focus of the viewer's vision, usually a person, an object, or a specific scene.

Complement: the secondary subject of the scene, used to complement the subject and enhance the scene's narrative and sense of depth.

Secondly, utilization of the Environment.

Foreground and Background: By properly arranging the foreground and background, you can increase the depth of the scene, guide the viewer's gaze, and create a sense of space.

Background: The selection and arrangement of the background should be coordinated with the subject, avoiding clutter and distracting from the subject's prominence.

Thirdly, use of lines and shapes.

Horizontal lines are often used to represent calm, vast scenes, such as the sea and grasslands.

Vertical lines can represent tall and upright objects, enhancing the stability of the image.

Diagonal lines are dynamic and can break the balance of the image, guiding the viewer's gaze.

Curves, such as the s-shaped composition, can show a soft and flowing feeling and are often used to photograph rivers, mountains and other natural landscapes.

Fourthly, color and Lighting.

Colors: The use of colors can convey different emotions and moods. Cold and warm tones, contrasting colors, etc. can produce a strong visual impact on the audience.

Light: Light is the soul of composition. Different light direction and intensity can shape different visual effects. Side light, backlight, and front light all have their unique expressive power.

Fifthly, visual guidance and balance.

Visual guidance. Guiding the viewer's gaze through the use of lines, colors, lighting, etc. to create a sense of depth and fluidity in the image.

Balance. The elements in the image should be distributed evenly to avoid a top-heavy or left-heavy appearance, maintaining a sense of visual stability.

Sixthly, specific composition techniques.

The rule of thirds composition: Divide the frame into thirds horizontally and vertically, and place the subject at the intersection or on a line, making the composition more harmonious and visually pleasing.

Framing composition: Use natural frames such as windows and tree branches to frame the subject, enhancing the sense of depth and mystery in the image.

Symmetrical composition: Create symmetry in the image either horizontally or vertically, giving a sense of stability and harmony, but be careful not to make it too rigid.

In conclusion, composition techniques play a crucial role in the production of film and video. By carefully arranging the various elements in the frame and using visual elements such as lines, shapes, colors, and light to create art, you can create visually impactful and expressive film and video images.

(3) Video shooting techniques.

In creating video content for film and television, video shooting techniques are a comprehensive process that involves several key elements. The following is a detailed explanation of these technical aspects:

Firstly, basic equipment preparation.

Camera: Choosing the right photography equipment is the foundation of video shooting, including DSLR cameras, mirrorless devices, or high-pixel smartphones, which can capture high-quality images.

Stabilizing Equipment: Tripods and stabilizers are essential to ensure stable footage. They effectively prevent shaking during shooting and enhance video quality.

Audio Equipment: Professional audio equipment such as microphones is the key to recording clear audio. Do not rely on the built-in audio functions of cameras.

Secondly, photography techniques.

Lens selection and use: Use different types of lenses (such as wide-angle, telephoto, and prime lenses) to capture different effects. Adjust the focal length, aperture, etc. to control depth of field and create different visual effects.

Photography techniques: Including lens movement (such as push, pull, pan, and tilt) and stabilizer use, to create dynamic and engaging footage. Reasonable camera positioning and angle selection are also important means to enhance the beauty of the image.

Thirdly, lighting design.

Lighting use: Reasonable lighting layout is the key to shooting high-quality videos. Natural light and artificial light can be selected according to the shooting environment and theme. By adjusting the brightness, color, and direction of the light, different moods and emotions can be created.

Three-point lighting: This is a basic lighting technique, including key light, fill light, and backlight. The key light is used to illuminate the subject, the fill light is used to fill in shadows, and the backlight is used to separate the subject from the background and enhance three-dimensionality.

Fourthly, sound collection and processing.

On-site recording: Use professional recording equipment to record on-site audio to ensure clarity of dialogue and sound effects.

Post-processing: In the post-production process, audio can be processed for noise reduction, mixing, etc. to enhance sound quality and enhance the auditory experience.

Music and sound design: Choosing appropriate music and sound effects to enhance emotions and mood. The music needs to match the content and atmosphere of the video, while sound effects are used to enhance the realism and immersion of the scene.

In summary, the video shooting techniques for film and video production include preparation of basic equipment, photography techniques, lighting design, sound collection and processing.

(4) Storyboarding.

In creating video content for film and television, the storyboard is a crucial step. It serves as a blueprint and visual guide for the filming process, and plays a vital role in the overall production. A storyboard typically includes the following elements:

Firstly, visual elements.

Composition of the scene: The placement and arrangement of elements in each scene, including the main subject, background, and foreground.

Character presentation: The actions, expressions, and poses of characters in the scene, as well as their interactions with each other.

Scene description: The environment and setting of the story, including indoor and outdoor environments, props, and background decorations.

Secondly, cinematic language.

Camera number: The number assigned to each shot to identify and differentiate between different shots.

Camera angle: Including long shot, wide shot, medium shot, close-up, and extreme close-up, used to express different shooting ranges and subject details.

Camera movement: Such as dolly, crane, pan, and tilt, used to create dynamic and engaging visual effects.

Camera position: Such as eye level, upward angle, and downward angle, used to express different visual effects and emotional tones.

Thirdly, narrative structure.

Story progression: The storyboard arranges key scenes and shots in accordance with the development of the story to form a coherent narrative flow.

Plot twists: Identifying key plot twists and climaxes to ensure the film's narrative pace and suspense.

Fourthly, technical details.

Duration: The estimated duration of each shot to control the film's pace and total duration.

Description of scenes: A written description of the actions, dialogue, and expressions in the scene to help production personnel understand the director's intentions.

Special effects and transitions: Identifying shots and scenes that require special effects, as well as transition methods, such as fades in and out, dissolves, etc.

Fifthly, additional information.

Dialogue and sound effects: The storyboard may also include descriptions of dialogue and sound effects to help voice actors and sound effects artists understand and create the corresponding audio content.

Notes and explanations: Notes and explanations of special shots, scenes, or technical requirements to ensure that the production team can accurately understand and carry out the director's intentions.

In summary, through the storyboard, the director can more accurately express their creative intentions and communicate and collaborate effectively with team members.

Teaching activities

Project-based learning methods usually include the following instructional steps: (1) Determining the project theme. (2) Setting project objectives. (3) Planning the project process. (4) Organizing students into groups. (5) Project implementation. (6) Display and communication. (7) Evaluation and reflection.

Step 1: Determining the project theme

In the process of creating video storyboards, determining the project theme is a crucial part of the process. Teachers and students each play a key role in collaborating to ensure that topics are identified that meet both pedagogical needs and student interest.

First, the role of the teacher.

1) Determine teaching objectives: Teachers first need to clarify the purpose of video production and teaching objectives. This includes but is not limited to the teaching of knowledge points, the cultivation of students' ability, the guidance of emotional values and so on.

2) Choose the appropriate topic: According to the teaching objectives and student characteristics, teachers need to choose a topic that is both educational and can stimulate students' interest. Topics can be knowledge points related to disciplines, social hot spots, historical stories, scientific experiments, etc.

3) Analyze the audience (students): Teachers need to understand the age, cognitive level, interests and learning habits of students in order to choose topics that can attract students' attention and promote their learning.

4) Provide guidance and feedback: In the process of determining the topic, teachers should give students appropriate guidance and feedback to help students understand the importance and relevance of the topic and how to present these elements in the video.

Second, the role of the students.

1) Participation in discussion and feedback: Students should actively participate in the discussion process of the topic and make comments and suggestions according to their own interests and learning needs. They can think about problems from different perspectives, providing a diversity of perspectives for determining topics.

2) Research and data collection: After determining the theme, students need to conduct research and data collection around the theme. This helps them gain a deeper understanding of the subject matter, providing rich material and inspiration for subsequent video production.

3) Propose ideas and view: Students can combine their imagination and creativity to come up with ideas and ideas on how to present the theme. These ideas can be reflected in the story, character design, visual effects, and so on.

4) Make a preliminary plan: Under the guidance of teachers, students can make a preliminary video production plan, including the idea of story plot, role

division, time arrangement, etc. This will help them move forward with the subsequent video production work in an orderly manner.

Through the joint efforts of teachers and students, it is possible to ensure that the project topics are determined in accordance with the teaching requirements and stimulate the interest and creativity of students. In the follow-up video production process, both parties can continue to deepen cooperation and communication, and jointly create excellent video works.

Step 2: Setting project objectives

In the process of creating video storyboards, setting project goals is an important step to ensure that the video production is clear and focused. Teachers and students each play a key role in this process, and collaboration and communication between them is essential to the successful setting of program objectives.

First, the role of the teacher.

1) Clear overall goal: Teachers need to first clarify the overall goal of video production. This includes, but is not limited to, the purpose of teaching, the message conveyed, the intended effect, etc. For example, if the video is for educational purposes, then the teacher needs to be clear about what knowledge or skills students are expected to learn by watching the video.

2) Lead discussion: Organize students to have a discussion and guide them to think about the purpose and significance of video production. Through discussion, teachers can understand students' understanding and expectations of the project, so as to better adjust and improve the project objectives.

3) Refine goals: Refine the overall goal into specific, actionable sub-goals. These sub-goals can relate to video content, presentation, technical requirements, etc. For example, a teacher may set a sub-goal of "making students understand and remember a certain knowledge point through vivid pictures and engaging storylines".

4) Provide guidance and feedback: Teachers should provide necessary guidance and feedback when students set individual or group goals. Help students identify the feasibility and challenge of the goal, ensuring that the goal is neither too simple nor too complex.

5) Monitor progress: After setting goals, teachers should monitor the progress of students to ensure that they are moving forward with the video production according to the set goals.

Second, the role of the students.

1) Participate in discussions: Actively participate in discussions organized by

teachers to share their understanding and views on the project objectives. Deepen understanding of project objectives through communication with classmates and faculty.

2) Set individual or group goals: Under the guidance of the teacher, set specific goals for the individual or group. These goals should be consistent with the overall goals and reflect the characteristics and strengths of the individual or group.

3) Make a plan: Make a detailed video production plan according to the set goals. The plan should include time arrangement, task allocation, resource requirements, etc., to ensure that the goal can be successfully achieved.

4) Execution and adjustment: Execute the video production according to the plan, and constantly check and adjust the target during the execution process. If you find that the goal is difficult to achieve or does not match the actual situation, you should communicate with the teacher in time and adjust the goal.

5) Summary and reflection: After the completion of the video, summary and reflection. Review the achievement of project objectives, analyze the reasons for success and failure, and accumulate experience for similar projects in the future.

Through the joint efforts and close cooperation of teachers and students, clear, concrete and actionable project goals can be developed to provide powerful guidance for video production. This will help ensure that the video production is directed in the right direction, the content is focused, and ultimately the desired effect is achieved.

Step 3: Planning the project process

Planning the project flow is a key step to ensure that the video production work is organized and completed efficiently. Teachers and students play different roles in this phase, working closely together to ensure the smooth planning of the project process.

First, the role of the teacher.

1) Determine the overall process framework: Teachers need to determine a clear overall process framework for students according to the professional process of video production, such as creative conception, script writing, shooting plan, post-production, etc. This framework should include the main tasks, expected results and completion dates for each phase.

2) Guide discussion and decision-making: Organize students to discuss and guide them to know and understand all aspects of the project process. Engage students in the decision-making process through discussion, such as determining

whether training in specific skills is needed or whether additional resources are needed.

3) Assign tasks and resources: Assign tasks suitable for students according to their abilities and interests. At the same time, coordinate and allocate the required resources, such as shooting equipment, props, venues, etc., to ensure the smooth progress of the project process.

4) Provide guidance and supervision: During the implementation of the project process, the teacher needs to provide necessary guidance and supervision to the students. Answer students' questions in time, provide necessary technical support, and help students solve the problems encountered in the production process.

5) Progress control and evaluation: Regularly check the progress of the project and assess whether the student's work results meet expectations. If deviation or problem is found, timely adjustment and optimization are made to ensure that the project is completed on time and in good quality.

Second, the role of the students.

1) Understand and follow the process: Students need to carefully study and understand the project process framework provided by the teacher, and clarify their roles and tasks in it. Carry out the work in an orderly manner according to the process requirements, and ensure that the results of each stage can meet the needs of the next work.

2) Actively participate in discussion and decision-making: Under the guidance of the teacher, actively participate in the discussion and decision-making process of the project process. Express your own opinions and suggestions, communicate with classmates and teachers, and jointly determine the best plan and strategy.

3) Complete assigned tasks: Conscientiously fulfill the tasks assigned by teachers, complete and submit work results on time. In the process of completing tasks, I should be proactive and diligent, and give full play to my ability and creativity.

4) Feedback and communication: In the implementation of the project process, timely feedback to teachers encountered problems and difficulties, and seek help and support. At the same time, maintain good communication and cooperation with classmates to solve problems and make progress together.

5) Summary and reflection: After the completion of the project, I will conscientiously summarize my work experience and lessons, and reflect on the

problems and shortcomings in the process of implementation. By summing up the experience and lessons, constantly reflecting and improving the level of self-ability to better prepare for future participation in similar projects.

Through the clear division of labor and close cooperation of the above work, teachers and students can jointly plan a reasonable, efficient and orderly video production project process to ensure the smooth progress of video production work and the successful realization of the final result.

Step 4: Organizing students into groups

Organizing project groups is an important part of the process of creating video storyboards. It helps clarify the responsibilities of team members, promote team collaboration, and improve project efficiency. The roles and responsibilities of teachers and students in this process are as follows:

First, the role of the teacher.

1) Grouping principles.

Teachers need to develop reasonable grouping principles based on students' abilities, interests, expertise and project needs. For example, you can ensure that each team has the talent needed for key roles such as screenwriting, directing, videography, editing, etc.

2) Group implementation.

When grouping, teachers can use student self-recommendation, teacher assignment or free combination of students. At the same time, teachers should pay attention to balance the strength of each group to avoid excessive differences between groups affecting the progress of the project.

3) Role assignment and guidance.

After the grouping is completed, the teacher needs to assist the groups in internal role allocation to ensure that each student can find a suitable position. At the same time, teachers also need to provide necessary guidance and training to the members of each group to help them clarify their responsibilities and tasks.

4) Coordination and supervision.

During the implementation of the project, teachers should pay close attention to the progress of each group and coordinate to solve the problems between or within the group in time. At the same time, teachers are also required to regularly check and evaluate the work of each team to ensure that the project goes smoothly as planned.

Second, the role of the students.

1) Active participation in groups

Students are required to actively participate in the grouping process and choose the right post and group according to their interests and abilities. At the same time, students also need to fully communicate with group members to jointly develop the group's work plan and division of labor.

2) Clarifying responsibilities and task

After the completion of the group, students need to clarify their responsibilities and tasks in the group, and maintain close cooperation with other members to promote the progress of the project. Students are also required to develop a detailed work plan according to their responsibilities and tasks to ensure that the task is completed on time and in good quality.

3) Active learning and improvement

During the implementation of the project, students need to continuously learn and improve their professional skills and comprehensive qualities. For example, by learning video production related knowledge and skills, improve their shooting, editing and post-production ability; By participating in group discussions and collaboration, I will improve my communication skills and teamwork skills.

4) Feedback and improvement

Students are required to provide regular feedback to teachers and group members on their work progress and problems encountered, and actively seek solutions. At the same time, students are also required to improve and optimize their work methods and the quality of their results based on the feedback of teachers and classmates.

To sum up, teachers and students each have their own unique roles and responsibilities in organizing project grouping. Through close cooperation and joint efforts of both parties, the smooth progress and successful completion of video planning and storyboard production projects can be ensured.

Step 5: Project implementation

Implementing a project is a key stage in the process of creating a video storyboard, which involves turning the plan and storyboard into an actual work. Teachers and students play different roles in this stage, each bearing corresponding responsibilities and tasks. Here are the specific tasks that teachers and students need to do:

First, the role of the teacher.

1) Guidance and supervision

Teachers should pay close attention to the implementation process of the project and give students necessary guidance and suggestions in time. This includes technical guidance, creative stimulation, problem solving and other aspects of support.

Monitor the progress of students' work to ensure that they are on track with predetermined plans and schedules. For students or groups whose progress is lagging behind, teachers should give timely reminders and supervision.

2) Coordination and communication

Teachers should be the bridge between students, coordinate the relationship between them, and resolve the contradictions and conflicts that may arise.

Maintain close communication with students to understand the problems and difficulties they encounter during the implementation of the project, and jointly find solutions.

3) Evaluation and feedback

Regularly evaluate students' work results and give objective and specific feedback. This helps students to understand their own strengths and weaknesses, and further improve and improve.

Encourage mutual evaluation and discussion among students to promote mutual learning and progress.

4) Resource support

Provide students with necessary resources, such as shooting equipment, editing software, material library, etc. Teachers ensure that students have adequate tools and equipment to complete the project.

Second, the role of the students.

1) Execution plan

Execute the project according to the predetermined plan and schedule. This includes shooting video, dubbing music and other aspects of the work.

Shoot and edit in strict accordance with the requirements of the storyboard to ensure the coherence and consistency of the video content.

2) Teamwork

Work closely with team members to complete project tasks. In the process of collaboration, we should actively communicate, support each other and solve problems together.

Students assign their own work tasks and ensure that they are completed on time and on quality. For tasks that cannot be completed independently, seek help from group members or teachers in a timely manner.

3) Creative play

Give full play to your creativity and imagination in the process of executing the project. Try different shooting techniques, editing techniques and special effects to make video works more innovative and attractive.

4) Learning and improvement

Continue to learn and improve my skills during the project implementation. Accumulate experience through practice, master more video production skills and methods.

Humbly accept the feedback of teachers and classmates, seriously reflect on their shortcomings, and strive to improve and enhance.

Through the joint efforts and collaboration of teachers and students, the smooth implementation and successful completion of video planning and storyboarding projects can be ensured. In this process, students can not only learn valuable practical experience and technical knowledge, but also develop teamwork spirit and innovation ability.

Step 6. Display and communication

In the early stages of college students recording videos, when they first practice recording techniques, teachers and students have different tasks.

First, the role of the teacher.

1) Guiding theoretical learning

Teachers need to provide students with learning materials and guidance related to audio recording technology, and help students understand the basic principles and importance of audio recording technology.

Answer students' questions during their learning process and ensure that students can grasp the basic knowledge of audio recording technology.

2) Equipment selection and usage guidance

Based on the students' needs and actual situation, provide suggestions on the selection of recording equipment and guide students on how to properly choose and prepare recording equipment.

Teach students how to correctly connect and use recording equipment to ensure that they can operate the equipment smoothly during the recording process.

3) Recording environment suggestions

Provide suggestions for setting up the recording environment to help students choose or create an environment suitable for recording.

Emphasize the importance of the recording environment on the quality of the recording and guide students on how to evaluate and improve the recording environment.

4) Recording techniques training

Teach students basic recording techniques and help them master these techniques through a combination of demonstrations and practice.

Encourage students to practice recording frequently and provide timely feedback and guidance to improve their recording skills.

5) Recording file handling guidance

Teach students how to use audio editing software to perform basic processing on recorded files.

Provide real-life cases and exercises to enable students to master audio processing skills through hands-on practice.

6) Assessment and feedback

Evaluate students' recorded works, and highlight their strengths and weaknesses, and provide specific improvement suggestions.

Encourage students to evaluate and learn from each other, and promote mutual progress.

Second, the role of the student.

1) Basic theory learning

Students need to study or learn about the basic principles of recording technology through self-study or learning materials, including the principles of sound wave propagation, the operation principles of recording equipment, the formats of audio files, and the basic operation of processing software.

2) Equipment selection and preparation

Students need to understand the characteristics and applicable scenarios of different types of recording equipment (such as microphones, audio recorders, audio interfaces, etc.) and choose suitable equipment for practice based on actual needs.

Prepare the recording equipment and ensure that it is in good working condition. Learn how to correctly connect and use these devices.

3) Recording environment setup

Learn how to choose a suitable recording environment to reduce the influence of background noise and echo on recording quality. This includes choosing

the right room, using sound-absorbing materials, controlling indoor humidity and temperature, etc.

4) Recording technique practice

Master basic recording techniques, such as maintaining an appropriate distance and angle, controlling breathing and speech speed, and avoiding popping the microphone.

Perform multiple recording practice exercises, trying different recording methods and parameter settings to find the recording style that best suits you.

5) Processing of recorded files

Learn to use audio editing software to perform basic processing of recorded files, such as trimming, noise reduction, and volume adjustment.

Practice synchronizing and integrating processed audio files with video materials.

Through the joint efforts and cooperation of teachers and students, we can ensure the smooth progress of the recording activities and achieve good results.

Step 7. Evaluation and reflection

In the process of creating video plans and storyboards, evaluation and reflection are important parts of ensuring project quality, promoting personal growth and team collaboration. Teachers and students have different roles and tasks at this stage.

First, the role of the teacher.

1) Develop evaluation criteria:

Teachers need to formulate clear evaluation criteria and index system according to teaching objectives and project requirements. These criteria should cover the creativity, feasibility, and integrity of the video plan, as well as the clarity, logic, and visual presentation of the storyboard.

2) Implement the evaluation process

Teachers should organize student presentations and sharing for collective evaluation of video plans and storyboards. The evaluation process can include student self-evaluation, mutual evaluation and teacher comments to ensure the comprehensiveness and objectivity of the evaluation.

In the assessment process, teachers should guide students to focus on the core elements and key issues of the project and encourage them to put forward constructive comments and suggestions.

3) Feedback and guidance

After the evaluation, teachers should give students specific feedback and guidance in time. Feedback should clearly point out the student's strengths and weaknesses and make specific suggestions for improvement. At the same time, teachers should also help students realize their growth and progress in the project, and enhance their self-confidence and learning motivation.

4) Summary and reflection

Teachers need to summarize and reflect on the whole evaluation process, analyze the rationality of the evaluation standards, and the implementation effect of the evaluation process. By summarizing and reflecting, teachers can continuously improve and perfect the evaluation methods, and improve the accuracy and effectiveness of the evaluation.

Second, the role of the students.

1) Self-assessment

Students should start with a self-assessment of their video plan and storyboard. They can examine the performance of their work in terms of creativity, content, structure, presentation, etc. according to the teacher's assessment criteria, and identify existing problems and deficiencies.

2) Participation in collective assessment

Students should actively participate in the collective assessment process and listen to the opinions and suggestions of other students and teachers. They should keep an open mind, accept others' criticism and correction humbly, and draw useful experience and lessons from it.

3) Reflection and improvement

At the end of the assessment, students should reflect deeply on their own work. They should think hard about the problems and shortcomings identified during the evaluation process and think about how to avoid similar mistakes in the next project. At the same time, students should also develop specific improvement plans based on the assessment results, and implement them in subsequent learning and practice.

4) Learning and growth

Students should view assessment and reflection as a process of learning and growth. They should learn from the experience and lessons, and constantly improve their video production ability and creative level. At the same time, students should also pay attention to industry trends and technological development trends, and constantly expand their vision and knowledge.

In conclusion, in the process of making video plans and storyboards, assessment and reflection are an important part of the participation of teachers and students. Through evaluation and reflection, teachers can timely understand students' learning situation and project progress, and provide effective guidance and support for students; Students can better understand their own strengths and weaknesses, develop specific improvement plans, and constantly improve their ability and level in practice.

Learning schedule: Video production (11 hours)

Date/time	Teaching Process	Time
Day 1 09:00-09:20	Introduction: The teacher introduces this lesson's teaching contents and learning objectives and explains the importance of video production. Students can clearly understand the teaching objectives to achieve the expected teaching effect.	20 minutes
09:20-12:00	Learning content: The teacher explained the concept of video production and demonstrated: (1) video camera techniques, (2) composition techniques, (3) video shooting techniques, and (4) storyboarding.	2 hours and 40 minutes
12:00-13:00	**Lunch Time**	
13:00-14:00	Teaching activities: Step 1 Determining the project theme: Choose the appropriate topic, Students should actively participate in the discussion process of the topic and learning needs. students conduct data collection around the theme. Students combine their imagination and creativity to come up with ideas theme. Teachers provide guidance and help students choose topics for video production. Step 2 Setting project objectives: This step is an important step to ensure that the video production is clear, making a detailed video production plan according to include time	1 hour

Date/time	Teaching Process	Time
	arrangement, task allocation, resource requirements, etc., and watching a video production preview.	
14:00-15:00	Step 3 Planning the project process: planning the project flow is a key step in video production. Teachers guide discussion, decision-making and planning a reasonable, efficient and orderly video production project process as follow: planning about video camera, composition, video shooting, and storyboarding. Step 4: Organizing students into groups: teachers divide students into group implementation and guidance for responsibilities and tasks. Each group of students plan to develop a detailed work plan according to their responsibilities and tasks to ensure that the task is completed on time.	1 hour
15:00-15:30	Summary and prepare to learn on step 5 Project implementation	30 minutes
Day 2 09:00-11:00	Step 5 Project implementation: students execute the project according to plan schedule. In the process of video production, teachers guide shooting video technic accordance with the requirements of the storyboard, creative stimulation, problem solving and other aspects.	2 hours
11:00-12:00	Step 6 Display and communication: after students created and shooting video accordance with the requirements of the storyboard. Students present the result in class and explain the concept and shooting video technic.	1 hour
12:00-13:00	**Lunch Time**	
13:00-13:30	Step 6 Display and communication (continue)	30 minutes
13:30-15:00	Step 7 Evaluation and reflection: Teachers formulate clear evaluation criteria the video shooting, as well as the clarity, logic, and visual presentation of the storyboard. Teachers feedback clearly point out the result's strengths and weaknesses and make	1 hour and 30 minutes

Date/time	Teaching Process	Time
	specific suggestions for improvement.	
15:00-15:30	Summary and prepare to learn the video editing and special effects.	30 minutes

Assessment Form for Validity of the multiple choices Test

Objective of Leaning	The Item Questions
Students understand concepts of video production. (K)	1. When shooting videos, which of the following is a commonly used auxiliary device to achieve a more stable image? A. Flash **B. Tripod** C. Shutter Release Remote D. Filter
	2. What is the main purpose of "white balance" in video camera? A. Adjusting the exposure time of the video **B. Adjusting the color balance of the image to ensure natural color representation in different light sources** C. Adjusting the frame rate of the video D. Adjusting the focal length of the lens different light sources.
	3. Which of the following shooting modes automatically adjusts the shutter speed to capture fast-moving subjects and reduce blur in sports scenes? A. Manual mode (M) B. Aperture priority mode (Av/A) **C. Shutter priority mode (Tv/S)** D. Scene mode (such as Sports mode)

Objective of Leaning	The Item Questions
	4. When using a wide-angle lens to shoot video, what effect can typically be achieved? A. Narrowing the depth of field, blurring the background **B. Widening the field of view, including more scenery** C. Increasing the brightness of the image D. Making distant objects appear closer
	5. When editing a video, what is a common technical technique used to smoothly transition between different scenes? A. Color correction B. Audio overlay C. Speed effects **D. Fade in/fade out**
	6. What is the main purpose of using the "rule of thirds" composition in video shooting? A. To increase the exposure of the image **B. To balance the visual elements in the frame and make the image more appealing** C. To improve the frame rate of the video D. To change the playback speed of the video.
	7. Which of the following composition techniques is often used to emphasize a main subject in a scene while using the remaining parts as a background to complement it? A. Symmetrical Composition B. Leading Line Composition C. Frame Composition **D. Central Composition**

Objective of Leaning	The Item Questions
	8. What effect can the technique of "foreground composition" increase in a video? A. Color saturation **B. Spatial depth perception** C. Exposure time D. Frame rate stability
	9. When shooting landscape videos, what composition techniques can be used to avoid making the scene look empty or monotonous? A. Narrow the field of view and only capture local details B. Use a low angle of shooting, increase the sky's proportion **C. Introduce natural elements such as trees and mountains as foreground** D. Increase the shutter speed to reduce blur
	10. Which of the following composition techniques helps guide the viewer's eye along a specific path, enhancing visual guidance? A. Grid Composition B. Circular Composition **C. Leading Line Composition** D. Balance Composition

Objective of Leaning	The Item Questions
	11. When shooting dynamic scenes, what shooting speed (frame rate) is typically used to capture smooth movements? A. Lower frame rate (e.g. 24fps) B. Medium frame rate (e.g. 30fps) **C. Higher frame rate (e.g. 60fps or higher)** D. Frame rate is not related to the scene, mainly depends on the camera performance.
	12. What is the most effective method to reduce camera shake when shooting handheld? A. Increasing the exposure time B. Using a wide-angle lens **C. Using a handheld stabilizer or performing body stabilization exercises** D. Adjusting ISO to improve image quality
	13. How should camera settings be adjusted to maintain a balance of brightness and contrast in video footage shot under different lighting conditions? A. Adjust only the shutter speed. B. Adjust only the ISO. **C. Comprehensively adjust the shutter speed, ISO, and aperture.** D. Use filters without adjusting camera settings.
	14. When shooting an interview video, what position should the cameraman take to maintain good eye contact with the interviewee? A. Stand directly in front of the interviewee. B. Stand to the side of the interviewee. C. Stand behind the interviewee at an angle, observing the scene through a monitor. **D. Stand to the side of the interviewee at an angle, slightly leaning to face the interviewee's eyes.**

Objective of Leaning	The Item Questions
	15. When shooting outdoor videos using natural light, which of the following methods is most effective in avoiding shadows and overexposure caused by strong sunlight? A. Using a flashlight to supplement lighting **B. Choosing to shoot in the evening or morning** C. Always using a wide-angle lens to reduce the impact of light D. Increasing ISO to increase the brightness of the image.
	16. What is the main function of a storyboard in the video production process? A. Determine the resolution and frame rate of the video **B. Plan and preview the sequence of shots and visual effects in the video** C. Adjust the color and contrast of the video D. Edit the audio portion of the video
	17.) What typically represents each grid (or frame) when creating a storyboard? A. Every second of the video B. The camera's focal length setting when it's being filmed. C. The overall story outline of the video **D. A shot or scene in the video**

Objective of Leaning	The Item Questions
	18. Using a storyboard can help the team solve which of the following problems? A. Ensure that the camera battery is fully charged B. Avoid unnecessary repetition of shots during the shooting process C. Improve the efficiency of post-production editing **D. All of the above**
	19. What are the less commonly used elements when creating a storyboard? A. Sketches of character actions and expressions **B. Detailed dialogue scripts** C. Markings of camera types and angles D. Preliminary ideas for colors and lighting
	20. Why is the iterative and revision of storyboards a common process for a complex video project? A. Because the director's ideas change over time B. To ensure more efficient communication and feedback with the client C. Because storyboards cannot accurately reflect the actual shooting effects **D. All of the above are reasons.**

Assessment Form for Validity of the Performance Assessment

Objective of learning: Students are able to shoot video (P).

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
1. Students can choose the right photography equipment for type or theme of video production	Students can choose to appropriate a photography equipment at a most level.	Students can choose to appropriate a photography equipment at a moderate level.	Students can choose to appropriate a photography equipment at a little level.
2. Students can choose the lens and use different types of lenses, photography techniques and stabilizer use, to create dynamic and engaging footage, and reasonable camera positioning and angle selection.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a most level.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a moderate level.	Students can choose the lens and use different types of lenses, photography techniques, and stabilizer use, reasonable camera positioning and angle at a little level.

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
3. Students can select natural light and artificial light according to the shooting environment and theme. By adjusting the brightness, color, and direction of the light, different moods. Including key light, fill light, and backlight.	Students can select natural light and artificial light according to the shooting environment and theme at a most level.	Students can select natural light and artificial light according to the shooting environment and theme at a moderate level.	Students can select natural light and artificial light according to the shooting environment and theme at a little level.
4. Students can collect and sound processing, use recording equipment to record on-site audio to ensure clarity of dialogue and sound effects. Choosing appropriate music and sound effects to enhance emotions and mood. The music needs to match the content and atmosphere of the video and audio processing or audio mixing to reduce noise.	Students can use recording equipment and sound effects, choose music and sound effects match the content and atmosphere and audio processing or audio mixing to reduce noise at a most level.	Students can use recording equipment and sound effects, choose music and sound effects match the content and atmosphere and audio processing or audio mixing to reduce noise at a moderate level.	Students can use recording equipment and sound effects, choose music and sound effects match the content and atmosphere and audio processing or audio mixing to reduce noise at a little level.

Objective of learning: Students are able to create storyboarding (P).

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
1. Visual elements Composition of the scene: The placement and arrangement of elements in each scene, including the main subject, background, and foreground. arrange the elements of each scene, including main objects, background, and foreground. Character presentation: Character of action expressions, and poses of characters in the scene, as well as their interactions with each other. Scene description: The environment and setting of the story, including indoor and outdoor environments, props, and background decorations.	Students can create composition of the scene, character presentation and scene description at a most level.	Students can create composition of the scene, character presentation and scene description at a moderate level.	Students can create composition of the scene, character presentation and scene description at a little level.

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
2. Cinematic language Camera number: The number assigned to each shot to identify and differentiate between different shots. Camera angle: Including long shot, wide shot, medium shot, close-up, and extreme close-up, used to express different shooting ranges and subject details. Camera movement: Such as dolly, crane, pan, and tilt, used to create dynamic and engaging visual effects. Camera position: Such as eye level, upward angle, and downward angle, used to express different visual effects and emotional tones.	Students can create camera number, camera angle, Camera movement and camera position at a most level.	Students can create camera number, camera angle, Camera movement and camera position at a moderate level.	Students can create camera number, camera angle, Camera movement and camera position at a little level.
3. Narrative structure Story progression: The storyboard arranges key scenes and shots in accordance with the development of the story to form a coherent narrative flow. Plot twists: Identifying key plot twists and climaxes to ensure the film's narrative pace and suspense.	Students can create narrative structure, explain story progression and plot twists at a most level.	Students can create narrative structure, explain story progression and plot twists at a moderate level.	Students can create narrative structure, explain story progression and plot twists at a little level.

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
4. Technical details Duration: The estimated duration of each shot to control the pace and total duration. Description of scenes: A written description of the actions, dialogue, and expressions in the scene. Special effects and transitions: Identifying shots and scenes that require special effects, as well as transition methods. Dialogue and sound effects: The storyboard may also include descriptions of dialogue and sound effects. Notes and explanations of special shots, scenes or technical requirements to ensure that the production team can accurately understand and carry out the director's intentions.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a most level.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a moderate level.	Students can create the estimated duration of each shot, write description of scenes, dialogue and sound effects, notes and explanations of special shots, scenes or technical requirements at a little level.

Lesson Plan II

Contents

Video editing and special effects

Objective of learning

1. Students understand concept of video editing and special effects
2. Students are able to produce video editing and special effects

Main ideas/concepts

Video editing and special effects play a vital role in modern media production, advertising campaigns, film production, television programming, social media content creation, and online education. Video editing and special effects not only enhance the visual experience, but also enhance the storytelling and the audience's immersion.

Introduction

Project-based learning is of great significance to college students in the process of making video editing and special effects. It not only helps to enhance students' practical ability and professional skills, but also develops their teamwork, communication, innovative thinking, problem solving and project management skills. At the same time, the portfolio and experience accumulated through project-based learning can also increase the competitiveness of students' future employment.

Learning contents

The teacher explained the concept of video editing and special effects and demonstrate: (1) Material arrangement and management, (2) Video editing and splicing (3) 3D special effects, and (4) Post special effects. The learning contents are as follows:

(1) Material arrangement and management: The significance of video editing and management lies in the careful organization and processing of video materials to integrate original and scattered materials into organized, rhythmic and expressive video works, while ensuring the efficient operation of projects and the effective use of resources, so as to enhance the attractiveness of video content and the viewing experience of the audience.

(2) Video editing and splicing: The significance of video editing and splicing is to creatively organize and arrange the sequence, duration and rhythm of video materials to seamlessly connect multiple segments into a coherent, smooth and infectious whole to tell a story, convey information or create a specific atmosphere, thus enhancing the expressiveness of the video and the emotional resonance of the audience.

(3) 3D special effects: The significance of three-dimensional special effects lies in the use of computer technology to simulate and create three-dimensional visual elements beyond the limitations of the real world, adding shocking, realistic or surreal visual effects to the video content, thereby greatly enriching and enhancing the visual experience, allowing the audience to immerse in a more vivid, three-dimensional and immersive narrative environment.

(4) Post special effects: The significance of video post-special effects lies in the secondary creation and beautification of videos by means of fine image processing, color adjustment, filter application and creative synthesis, so as to make the pictures more exquisite, fuller emotions, and more accurate and powerful information transmission, thereby enhancing the viewing value, artistic expression and market appeal of videos.

The details are as follows:

(1) Material arrangement and management.

Firstly, material collection.

Summary: Material collection is the starting point of the entire video production process and the basis for subsequent editing work.

Content: including raw materials such as video files, high-definition pictures, audio recordings, etc. from various sources (such as cameras, mobile phones, drones, web downloads, etc.).

Key elements: Ensure the diversity and quality of the material to meet the needs of the project creation.

Secondly, material preprocessing.

Overview: Before the formal editing, the collected material is initially processed and organized.

Classification: Categorize the material by type (video, pictures, audio), source, purpose, or subject of the content for easy subsequent finding and use.

Naming: Assign a unique and descriptive name to each material file, including key information such as the project name, date, and scene description, to reduce confusion.

Preliminary screening: Remove duplicates, ambiguities, low quality or irrelevant material to ensure that what is left is valuable to the project.

Thirdly, material storage and management.

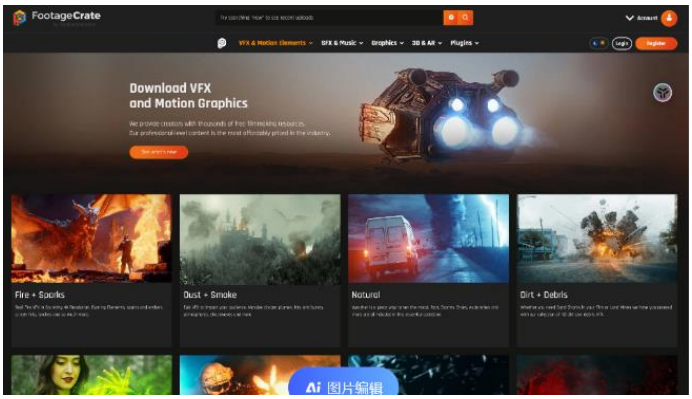
Overview: Establish a scientific storage system to ensure the security and accessibility of materials.

Contents include two parts:

Part 1: Establish a directory structure: according to the characteristics and needs of the project, design a reasonable folder and sub-folder structure to organize the material hierarchically.

Part 2: Select the right storage media: Select the right hard disk, cloud storage, or other storage solution based on the size, quantity, and access frequency of the material.

Version control: For material or project files that require multiple revisions and iterations, implement a version control policy, recording the content and date of each change.



(2) Video editing and splicing: It plays an irreplaceable role in the process of video production. It not only improves video quality and visual effects, but also enhances narrative capabilities, optimizes audio effects, ADAPTS to multi-platform publishing, saves resources and facilitates creative expression.

Firstly, video editing.

In this process, the editor needs to carefully sift through multiple footage clips, remove useless or repetitive parts, and then arrange these clips according to the theme, story line or logical order of the video. This arrangement requires not only technical precision, but also artistic aesthetics and creativity to ensure that the final video content presented to the audience is coherent and attractive.

Through editing, the editor can control the rhythm, atmosphere and emotional direction of the video, and guide the audience to move forward according to the established narrative path. For example, showing a tense and exciting plot through

rapid editing, or highlighting an important moment through slow-motion replay, can enhance the audience's sense of engagement and emotional resonance. At the same time, editing can also help solve the contradictions or fracture points that may exist between materials, making the video content more smoothly.

Secondly, video splicing.

Video splicing processing is a key task in video editing, which requires editors to cut and merge video clips accurately, and subtly adjust the transition effect between clips to achieve smooth visual transformation. The following is the video stitching method based on the given content:

1) Precise cutting and merging

Shear operation:

Determine what parts of each video clip need to be retained and removed. This usually involves a deep understanding of the content of the video, as well as anticipating the audience's attention.

Use the clipping tool in the clipping software, mark exactly where each clip starts and ends, and remove the parts that are not needed. The cutting operation should keep the key action as intact as possible and avoid breaking the continuity of the story.

Merge operation:

Arrange the cut video clips on the timeline in a predetermined order. The process is similar to a jigsaw puzzle in that each piece needs to be placed in the right place.

When merging, take care to check the connection points between fragments to make sure there are no abrupt jumps or duplicate images. If needed, fine-tuning can be done at the connection points for a more natural transition.

2) Adjust the transition effect

Selection of transition effect:

Transition effects are an important bridge between two video clips, and they are able to visually smoothly guide the viewer from one scene to another. Common transition effects include fading in and out, dissolving, erasing, and turning pages.

When choosing a transition effect, consider its fit with the theme and atmosphere of the video. For example, a romantic scene might be suitable for using a soft dissolving effect, while a fast-paced action scene might be more suitable for using a quick erasing effect.

Application of transition effects:

In the editing software, select the appropriate transition effect and drag it to the connection point between the two video clips. Most software offers a preview function that allows editors to see the effects of transitions before adding them.

Adjust the duration and intensity of the transition effect to ensure that it is neither too abrupt nor too bland. The length of duration should be determined according to the content connection between the segments and the speed of comprehension of the audience.

3) Achieve smooth visual transformation

Rhythm control:

Smooth visual transitions depend not only on the transition effect itself, but also on the rhythm control of the entire video. The editor should reasonably arrange the length and rhythm of each segment according to the content and mood changes of the video.

For important plots or key moments, the rhythm can be slowed down appropriately so that the audience can better absorb and understand; For secondary or transitional content, the pace can be accelerated to keep the audience's attention.

Screen matching:

When stitching video clips, pay attention to maintaining visual coherence between the images. If the scene, tone, or composition of the two clips is very different, you can use a transition effect at the connecting point or add some additional elements (such as subtitles, stickers, etc.) to lessen the sense of difference.

At the same time, it is also necessary to pay attention to whether the direction and speed of movement in the picture are consistent to avoid causing discomfort or confusion to the audience.

Through the above methods, editors can achieve accurate splicing of video clips, making the transition between different clips more natural, thereby improving the viewing experience of the entire video.

(3) 3D special effects.

3D special effects is a type of visual effect created by using computer graphics technology (CGI) and animation software with a three-dimensional sense of space and depth. It goes beyond the traditional two-dimensional image, through the simulation of real or fictional three-dimensional environment, objects and roles, and provide motion, deformation, light and shadow and other dynamic effects, so as to bring more realistic, shocking and immersive visual experience for film and television works, advertising, games and virtual reality and other fields.

Firstly, stereo vision enjoyment. 3D special effects present a more three-dimensional and realistic visual world for the audience. Compared to traditional two-dimensional video, 3D special effects can give viewers a stronger sense of space and depth, as if they are in a movie or game scene.

Secondly, immersive experience. Through high-quality 3D special effects, film and television works can create a more realistic scene and atmosphere, so that the audience is more deeply immersed in the story. This immersion not only enhances the viewing experience, but also enhances the audience's memory and identification with the work.

The production process of 3D special effects usually involves modeling, mapping, lighting, animation, rendering and other links, required producers to have deep artistic skills and superb technical capabilities. Through careful design and production, 3D special effects can greatly enhance the appeal and expression of the work, become an indispensable part of modern visual art.

(4) Post special effects. It refers to the further processing and optimization of video materials through professional post-processing software and technical means after the video shooting is completed, in order to achieve the expected visual effects and artistic performance. Specifically, video post-effects can include the following aspects:

Firstly, create visual elements. In order to enhance the visual impact of the video or achieve the scene that is difficult to complete in real shooting, the post-special effects artist will use software to create a variety of virtual visual elements, such as three-dimensional models, particle effects, light and shadow effects. These elements can stand alone or be seamlessly combined with live footage to provide viewers with an unprecedented visual experience.

Secondly, set up image processing. Image processing is an important part of video post-special effects. It includes the adjustment of screen parameters such as tone, brightness and contrast, as well as the removal of defects and repair of the screen. Through fine picture processing, the producer can make the video picture clearer, more colorful, more intense atmosphere, so as to improve the overall quality of the video.

Thirdly, create special effects. Special effects are one of the highlights of video post-effects. Through the use of various special effects techniques, such as dynamic tracking, green screen matting, color gradients, it is possible to achieve surreal scenes such as explosions, flight, and time travel. These special effects not only enhance the visual impact of the video, but also enrich the expression technique and narrative ability of the video.

Teaching activities

Project-based learning methods usually include the following instructional steps: (1) Determining the project theme. (2) Setting project objectives. (3) Planning the project process. (4) Organizing students into groups. (5) Project implementation. (6) Display and communication. (7) Evaluation and reflection.

Step 1: Determining the project theme

In the process of video editing and special effects, identifying a project theme is a crucial initial step that provides clear direction and focus for subsequent video production. In this process, teachers and students each assume different roles and tasks, and the following is a detailed explanation of their specific responsibilities:

First, the role of the teacher.

1) Guidance

Teachers first need to guide students to understand the importance of the project topic and help them clarify the project objectives. Through class explanation, case analysis, etc., teachers can help students build an in-depth understanding of the project topic.

Students are encouraged to be creative, to think and conceive around the project theme. Teachers can provide some enlightening questions and suggestions to stimulate students' imagination and creativity.

2) Audit and Evaluation

After the student proposes a preliminary project topic, the teacher will review and evaluate it. This includes judging whether the topic is pedagogical, practical and attractive enough.

For topics that do not meet the requirements or have problems, teachers should give timely feedback and guidance to help students modify and improve.

3) Resources and support

Teachers should provide students with necessary resources, including reference books, Internet resources, software tools, etc. These resources help students better understand project themes, video editing, and special effects.

Second, the role of the students.

1) Theme conception and determination

Students are required to be actively involved in the process of conceptualizing and determining the project theme. They can come up with innovative and feasible project topics based on factors such as personal interests, expertise and market demand.

When determining the theme, students should fully consider the practical application value and social significance of the project to ensure that the theme has sufficient appeal and attention.

2) Research and analysis

In order to ensure the accuracy and feasibility of the project topic, students are required to carry out adequate research and analytical work. This includes gathering relevant data, understanding industry dynamics, and analyzing user needs. Through research and analysis, students can gain a deeper understanding of the background and connotation of the project theme.

3) Creative realization and expression

After determining the theme of the project, students need to work on video editing and special effects around the theme. They should make full use of the knowledge and skills they have learned to turn ideas into concrete visual effects. In the production process, students should pay attention to maintain the coherence and consistency of the video content, and ensure that the special effects are coordinated with the overall style.

In summary, teachers and students need to work closely together and support each other when determining project themes in the process of video editing and special effects. Teachers should play the role of guidance and guidance, and provide necessary support and help for students; Students should actively participate in the process of theme conception and determination, and strive to transform their ideas into video works with practical application value.

Step 2: Setting project objectives

In the teaching and practice of video editing and special effects, setting clear and specific project objectives is essential to ensure student learning and successful project completion. The specific responsibilities and cooperation of teachers and students in this link are as follows:

First, the role of the teacher.

1) Clear teaching objectives

The teacher should first clarify the teaching objectives of the course, that is, what video editing and special effects skills the students are expected to master through the project, and what qualities the students are expected to improve.

2) Analysis of students' ability

Teachers need to conduct a comprehensive analysis of students' existing skill level, learning ability, interest preferences, etc., in order to develop project objectives that are both challenging and in line with students' actual situation.

3) Combined with practical application

The project objectives should be closely integrated with the practical application scenarios of video editing and special effects to ensure that students can apply what they have learned and improve their practical operation ability during the completion of the project.

4) Set specific and measurable goals

Project objectives should be specific, clear and easy for students to understand and implement. At the same time, the goals should be measurable so that teachers and students can assess project completion together.

5) Make a detailed plan

The teacher should make a detailed plan of the project schedule, assignment of tasks, required resources, etc., to ensure that the project can be carried out in an orderly manner.

Second, the role of the students.

1) Actively participate in discussions

Students should actively participate in the discussion of the project objectives, express their ideas and opinions, and work with the faculty to develop the project objectives that are suitable for them.

2) Clear personal tasks

After the project starts, students should clarify their specific tasks and responsibilities in the project and work in an orderly manner according to the plan formulated by the teacher.

3) Active learning and practice

Students should take the initiative to learn and master the relevant knowledge and skills of video editing and special effects, and continuously improve their ability level through practical operation.

4) Timely feedback and communication

During the implementation of the project, students should timely feedback the problems and difficulties encountered by teachers, and maintain good communication with teachers in order to adjust the project plan in time.

5) Cooperation and sharing

Students should strengthen cooperation and exchanges to jointly solve problems encountered in the project. At the same time, students should actively participate in sharing activities to show their achievements and experiences to other students.

Through the teachers' scientific and reasonable project objectives and the students' active cooperation and participation, the smooth progress of video editing and special effects projects can be ensured, and the students' practical operation ability and creative thinking ability can be effectively improved.

Step 3: Planning the project process

In video editing and special effects projects, the way teachers plan the project process and the way students work together is key to ensuring that the project runs smoothly and is completed with high quality. The following are the specific practices of teachers and students in this process:

First, the role of the teacher.

1) Define project objectives and requirements

Teachers should first clarify the overall goal and specific requirements of the project, including the theme, style, length and expected effect of the video.

Develop detailed project plans according to objectives and requirements, including time nodes, task allocation, resource requirements, etc.

2) Divide phases and tasks

Divide the project into different stages, such as pre-preparation, material collection, editing, special effects addition, post-adjustment, etc.

Set specific goals and tasks for each stage to ensure that students have a clear understanding of what they need to accomplish at each stage.

3) Provide guidance and support

During the implementation of the project, teachers should regularly check and evaluate the progress and quality of students' work, and provide necessary guidance and suggestions.

Answer students' questions and puzzles in the project, and help students overcome technical difficulties.

4) Set evaluation and feedback mechanism

Establish project evaluation criteria to evaluate students' work results objectively and impartially.

Give timely feedback to students, affirm their achievements, point out deficiencies, and give suggestions for improvement.

Second, the role of the students.

1) Actively participate in project discussions

During the project initiation phase, students should actively participate in project discussions and work with teachers and other students to clarify project objectives and requirements.

Take the initiative to undertake the corresponding tasks and responsibilities according to their own interests and abilities.

2) Perform tasks as planned

Strictly follow the project plan formulated by the teacher to carry out the tasks and ensure that my work is completed on time.

Maintain communication with teachers and classmates during the implementation of tasks, and give timely feedback on problems and progress.

3) Active learning and practice

During the implementation of the project, students should take the initiative to learn the relevant knowledge and skills of video editing and special effects, and improve their ability level through practical operation.

When encountering difficulties, actively seek the help of teachers and classmates to solve problems together.

4) Participate in evaluation and feedback

Seriously participate in the evaluation and feedback of the project, listen to the opinions and suggestions of teachers and classmates.

According to the feedback results, timely adjust the working methods and ideas, and strive to improve work quality and efficiency.

Through the scientific and reasonable project process planning of teachers and the active cooperation and participation of students, the smooth progress and high-quality completion of video editing and special effects projects can be ensured. In this process, students' practical ability and teamwork ability will also be significantly improved.

Step 4: Organizing students into groups

In video editing and special effects projects, reasonable project grouping can promote cooperation and communication among students and improve the efficiency and quality of project completion. Here's how teachers group projects and how students work together:

First, the role of the teacher.

1) Know about students

Teachers should have a comprehensive understanding of students' basic knowledge, skill level, interests and hobbies before grouping, so as to better group them.

2) Determine the grouping principles

Determine the grouping principles according to the specific needs of the project and the actual situation of the students. Students can usually be grouped according to their expertise, ability level, personality characteristics, etc., to ensure that each team member can complement each other and complete the project task together.

3) Reasonable control of group size

The group size should not be too large or too small, the general recommendation is 4-6 people in a group. This not only ensures that each student has enough opportunities to participate, but also ensures the efficiency of collaboration within the group.

4) Clarify team roles and responsibilities

After grouping, teachers should define the roles and responsibilities within each group, such as directing, screenwriting, videography, editing, special effects, etc. Ensure that each student is able to identify their own tasks and responsibilities to lay the foundation for the smooth running of the project.

5) Adjustment and optimization

During the implementation of the project, teachers should pay close attention to the progress of each group and make necessary adjustments and optimizations according to the actual situation. For example, for slow-moving groups, additional guidance and support can be provided; For more capable groups, more autonomy and challenge can be given.

Second, the role of the students.

1) Actively participate in discussions

During the project start-up phase, students should actively participate in group

discussions, work with group members to determine the project direction, make plans, etc. Through discussion, students can better understand the project requirements and clarify their tasks and responsibilities.

2) Clear division of labor and cooperation

According to the division of roles and responsibilities within the group, students should identify their own tasks and maintain close collaboration with other members. Through division of labor and cooperation, students can give full play to their own advantages and complete project tasks together.

3) Maintain communication and exchange.

Students should maintain communication and exchange with team members during the project implementation. Through timely communication, students can learn about the work progress and problems encountered by other members and discuss solutions together. At the same time, students can also share their own experiences and results to promote mutual learning and progress within the group.

4) Take responsibility

As a member of a group, students should take their own responsibility to complete the task on time. At the same time, students should also pay attention to the overall progress of the group and contribute to the success of the group.

5) Accept feedback and improvement

During the project evaluation and feedback phase, students should be open to the opinions and suggestions of teachers and classmates. By reflecting on their own performance and shortcomings, students can constantly improve their working methods and ideas, improve their ability and quality.

Through reasonable project grouping arrangement of teachers and active cooperation and efforts of students, the smooth progress and high-quality completion of video editing and special effects projects can be ensured.

Step 5: Project implementation

In teaching projects for video editing and special effects, teachers need to carefully plan and implement the project, and students need to actively cooperate and participate in the practice. Here are specific steps on how teachers can implement the project and how students can cooperate:

First, the role of the teacher.

1) Project planning and preparation

Clear project objective: Teachers should clearly define the objectives,

requirements and expected outcomes of the project and ensure that the content of the project is closely related to the syllabus.

Make a detailed plan: including the project schedule, task allocation, resource requirements, etc., to ensure the orderly progress of the project.

Provide resources and support: Prepare necessary software, hardware, materials and other resources for students, and provide technical support and guidance in the project implementation process.

2) Grouping and role assignment

Group students according to their abilities and project needs to ensure that members of the group complement each other.

Clarify the roles and responsibilities of each member of the team, such as director, screenwriter, camera, editing, special effects, etc., to promote collaboration and division of labor among students.

3) Guidance and supervision

During the implementation of the project, teachers should regularly monitor the progress of students and provide necessary guidance and feedback.

Encourage students to think creatively, but at the same time ensure that the content of the project meets the teaching requirements and expected objectives.

For groups or individuals who encounter difficulties, teachers should give timely help and support.

4) Evaluation and summary

After the completion of the project, the teacher should organize the students to display and evaluate the results, and recognize the outstanding teams and individuals.

Through project summary, help students review the experience and lessons learned during the implementation of the project, improve their video editing and special effects production skills.

Second, the role of the students.

1) Actively participate in project discussions

During the project start-up phase, students should actively participate in group discussions to clarify the project objectives, task allocation and schedule.

Discuss the project plan with team members and put forward their own opinions and suggestions.

2) Define the mission

According to the division of labor, clear their own tasks and responsibilities, and complete on time and with quality.

Maintain close communication with team members to ensure that the overall project progress is not affected.

3) Active learning and practice

During the implementation of the project, students should take the initiative to learn the relevant knowledge and skills of video editing and special effects production. Master the use of video editing software and special effects plug-ins through practical operation.

When encountering problems, take the initiative to seek help and support from teachers and classmates.

4) Teamwork and communication

Maintain good cooperative relationship with team members to complete project tasks together.

Hold regular group meetings to discuss project progress and problems encountered, and discuss solutions together.

Report project progress and problems to teachers and team leaders in a timely manner.

5) Accept feedback and improvement

Carefully listen to the opinions and suggestions of teachers and classmates, and adjust my working methods and ideas in time.

Make necessary modifications and improvements to the project results according to the feedback results.

Improve my video editing and special effects production ability through project review and reflection.

Through the joint efforts and cooperation of teachers and students, the smooth implementation and high-quality completion of video editing and special effects teaching projects can be ensured.

Step 6. Display and communication

In the teaching process of video editing and special effects, teachers and students display and communicate in various ways, aiming to promote the transfer of knowledge and skills, the stimulation of innovative thinking and the sharing of learning results. The specific practices of teachers and students in this regard are described below:

First, the role of the teacher.

1) Demonstration operation

Teachers demonstrate the process, skills and methods of video editing and special effects production through practical operation, so that students can intuitively

understand the use of tools and the creative process.

Use multimedia equipment or software to display editing interface, toolbar, special effects library, etc. in real time, and explain while operating to ensure students' clear understanding.

2) Case study

Select excellent video works as cases, analyze the application skills, innovation points and existing problems of video editing and special effects, and guide students to think and learn deeply.

Help students broaden their horizons, enhance their aesthetic ability and creative thinking by comparing video works of different styles and themes.

3) Classroom interaction

Encourage students to ask questions, discuss and share in class, and provide answers and guidance for students' questions in the process of video editing and special effects production.

Promote communication and cooperation among students through group discussion, role play and other forms to stimulate innovative thinking and teamwork.

4) Assignments and feedback

Assign homework for video editing and special effects production, require students to apply their knowledge to practical creation, and submit homework for teacher's review and comment.

Give timely feedback to students, point out the advantages and disadvantages of their works, and put forward improvement suggestions to help students constantly improve their creative ability.

5) Result show

Organize students to display their own video works, and let more people know about students' creative achievements through classroom displays, campus exhibitions or online platforms.

Invite industry experts or teacher judges to review and score students' works to stimulate students' creative enthusiasm and learning motivation.

Second, the role of the students.

1) Practical creation

According to the requirements of teachers and their own interests, students use the knowledge to create practical video editing and special effects production.

In the creative process, constantly try new skills and methods to improve their creative ability and technical level.

2) Panel Discussion

Share creative ideas, problems encountered and solutions with members in the group, discuss and learn together.

Promote communication and cooperation among students through group discussions, improve teamwork and problem-solving skills.

3) Classroom Presentation

Show video works in class, introduce the creative background, ideas and process to teachers and students, and share creative experience and sentiment.

Through class presentation, I can exercise my expression skills and self-confidence, and get feedback and suggestions from teachers and classmates.

4) Network platform

Using online platforms such as social media, video sharing sites, etc., to upload your works to the Internet for more people to watch and evaluate.

Communicate and learn from other creators through the network platform, broaden my vision and ideas, and improve my creative level.

5) Enter the competition

Actively participate in various video editing and special effects production competitions to show my creative talent and strength.

Communicate and compete with creators from different regions through competitions, learn the advantages and experiences of others, and constantly improve their own creative level.

To sum up, teachers and students display and communicate through demonstration operation, case analysis, classroom interaction, homework and feedback, results display and other ways to jointly promote the in-depth development of video editing and special effects teaching and the overall growth of students.

Step 7. Evaluation and reflection

In the process of video editing and special effects, teachers and students play different roles, each taking on the task of assessment and reflection, in order to promote the quality of teaching and personal skills growth.

First, the role of the teacher.

1) Evaluation methods

Process assessment: Observe students' performance in the video editing and special effects production process, including operational proficiency, innovative thinking, teamwork, etc. Through classroom observation, homework correction and other ways to collect data, to form a comprehensive understanding of the learning

process of students.

Outcome Evaluation: Objective evaluation of students' final work, focusing on creativity, technical realization, visual effects and other aspects of the work. The evaluation can be impartial and professional by setting scoring criteria, organizing a jury or inviting industry experts to conduct the review.

Data analysis: Using data analysis tools, statistical analysis of students' learning progress, grade distribution, common errors, etc., to find out weak links in teaching and provide basis for subsequent teaching improvement.

2) Reflect on the content

Teaching content and methods: Reflect on whether the teaching content is close to the needs of the industry, and whether the teaching method is suitable for the characteristics and needs of students. Think about how to adjust and optimize the teaching content to improve students' learning interest and enthusiasm.

Student performance and needs: Focusing on students' individual differences and learning needs, analyzing students' strengths and weaknesses in video editing and special effects production. Think about how to provide students with personalized guidance and help to promote their overall development.

Teaching effect and feedback: Summarize the teaching effect, including students' learning outcomes, skills improvement and so on. Collect feedback from students, peers and industry to objectively evaluate teaching effectiveness. Consider how to improve the teaching strategy, improve the teaching quality and effect.

Second, the role of the students.

1) Evaluation methods

Self-assessment: Students can conduct self-assessment by viewing their own work, comparing excellent works, reviewing the production process, etc. Focus on your performance in video editing and special effects production to identify your strengths and weaknesses.

Peer assessment: In group work, students can evaluate each other's work and performance. Through the exchange of ideas and opinions, learn the strengths of others and discover your own weaknesses.

Teacher evaluation: Carefully listen to the comments and suggestions of teachers, pay attention to the problems pointed out by teachers and the direction of improvement. Take teacher evaluation as an important reference for your own learning and improvement.

2) Reflect on the content

Skills: Reflect on your skills in video editing and special effects production, including software operation, special effects production, color matching, etc. Think about how to strengthen skills training and improve their technical level.

Creativity and expressiveness: Pay attention to your creativity and expressiveness in your works, and think about how to improve the creative level and visual effect of your works. Learn other people's excellent creativity and expression techniques to broaden their own creative ideas.

Learning attitudes and habits: Reflect on learning attitudes and habits, including time management, teamwork, self-motivation and so on. Think about how to improve learning methods and habits to improve learning efficiency and effectiveness.

To sum up, teachers and students have their own emphasis in the evaluation and reflection of video editing and special effects. Teachers pay attention to the improvement of teaching quality and the evaluation of teaching effect; Students focus on the growth of personal skills and reflection on the learning process. Through the joint efforts and cooperation of both sides, teaching and learning can be promoted and personal skills can be continuously improved.

Learning schedule: Video editing and special effects (11 hours)

Date/time	Teaching Process	Time
Day 3 09:00-09:20	Introduction: The teacher introduces this lesson's teaching contents and learning objectives and explains the importance of video editing and special effects. Students can clearly understand the teaching objectives to achieve the expected teaching effect.	20 minutes
09:20-12:00	Learning content: The teacher explained the concept of video editing, special effects and demonstrated: (1) Material arrangement and management; (2) Video editing and splicing; (3) 3D special effects; and (4) Post special effects	2 hours and 40 minutes
12:00-13:00	**Lunch Time**	
13:00-14:00	Step 1 Determining the project theme: Teachers should guide students to explore and select a theme that is both creative and attention-grabbing such as video editing, color adjustment, and special effects addition, while meeting personal interests, course requirements, and technical presentation points. This theme should not only stimulate students' creativity, but also provide strong support for subsequent technical practice and presentation of their work. Step 2 Setting project objectives: Teachers need to guide students to clarify the specific outcomes of the project, such as completing a short film, an advertisement, an animation, or a documentary, and refine technical practice goals, such as mastering the production of specific special effects, improving editing efficiency, optimizing color and audio processing, etc. At the same time, set reasonable completion time and quality standards to ensure that the goals are both challenging and achievable, thereby motivating students to actively	1 hours

Date/time	Teaching Process	Time
	engage in creation and continuously improve their professional skills.	
14:00-15:00	Step 3 Planning the project process: Teachers should guide students to break down the entire project into several stages, including preliminary planning (such as script writing, material collection), mid-term production (such as shooting, editing, special effects addition), post-production adjustment (such as color correction, audio processing), and final review and release. Clear tasks and time points are set for each stage to ensure that the project proceeds in an orderly manner. At the same time, leave time for possible challenges and adjustments to ensure the flexibility and quality of the project. Step 4: Organizing students into groups: Teachers should consider students' skill levels, interests, and personality traits, aiming to have complementary skills and compatible personalities within each group to promote creative collisions and teamwork. A combination of voluntary team formation and teacher allocation can be used to ensure an appropriate group size for easy management and efficient communication. At the same time, it is necessary to clarify the role division within the group, such as director, photographer, editor, and special effects technician, to enhance students' professional skills and teamwork ability.	1 hour
15:00-15:30	Summary and prepare to learn on step 5 Project implementation	30 minutes

Date/time	Teaching Process	Time
Day 4 09:00-11:00	Introduction: Step 5 Project implementation: Teachers should encourage each group to follow the established plan and process in a well-organized manner to create videos. During the process, teachers should regularly check the progress, provide technical guidance and feedback, and help students solve the difficulties they encounter. At the same time, organize group discussions and sharing sessions to promote experience exchange and creative inspiration. Encourage students to try new technologies and creative ideas, ensuring that the project meets technical requirements while also being full of personality and creativity, thereby deepening their understanding and application of video editing and special effects in practice.	2 hours
11:00-12:00	Step 6 Display and communication: The teacher should organize a dedicated presentation segment, invite each group to showcase their work, share their creative ideas, technical challenges, and solutions. The teacher should display the work on a large screen, allowing students to have a direct experience of each other's achievements. Following this, the teacher should facilitate group discussions or exchanges to encourage constructive feedback and mutual learning. This segment aims to enhance students' self-confidence, broaden their horizons, promote technical exchanges and creative collisions, and accumulate valuable experience for future video creation.	1 hour
12:00-13:00	**Lunch Time**	
13:00-13:30	Step 6 Display and communication (continue)	30 minutes
13:30-15:00	Step 7 Evaluation and reflection: Teachers should establish a comprehensive evaluation system that covers technical application, creative expression,	1 hour and 30 minutes

Date/time	Teaching Process	Time
	and teamwork, guiding students to evaluate themselves, each other, and the teacher to ensure fair and objective evaluation. Encourage students to reflect on the successes and failures of their creative process, distill successful experiences, and identify areas for improvement. Through evaluation and reflection, not only do students improve their professional skills, but they also develop critical thinking and self-improvement abilities, laying a solid foundation for future creations.	
15:00-15:30	Summary and prepare to learn the video editing and special effects.	30 minutes

Assessment Form for Validity of the multiple choices Test

Objective of Leaning	The Item Questions
Students understand concept of video editing and special effects	1. In video material management, which practices can effectively improve the efficiency of post-editing and workflow smoothness? A. Import all video materials directly into the editing software without any classification or naming. **B. Use a unified naming rule (such as date + event + description) to name the footage and store it** according to the content or shooting time C. Save all materials in a folder on the computer desk, easy to find at any time. D. Save each piece individually in a folder named after the date it was shot, but without naming it.
	2. Regarding video footage editing, which of the following most accurately describes a common and important editing technique? A. Simply arrange multiple video clips in order without making any changes or adjustments **B. Use color correction to unify the tone and exposure of video clips to ensure overall visual consistency** C. In the video editing software, randomly add a large number of filters and special effects to increase the visual effect of the video D. Only perform audio processing, such as adjusting the volume and adding background music, without focusing on the editing of the video picture (D) Expected timetable and budget

Objective of Leaning	The Item Questions
	3. In a video editing project, which of the following is NOT an important aspect of material management? A. Collecting materials B. Classifying and naming materials **C. Placing materials files randomly** D. Backing up materials
	4. When you start a video editing project, what should you do first to manage your materials? A. Start editing **B. Create an organized folder structure** C. Directly import all materials into the editing software D. Publish the project
	5. Which of the following naming conventions is most helpful in quickly finding the desired footage during video editing? A. Using random numbers or letters to name files B. Using the date as the file name **C. Using descriptive and consistent file names** D. Not naming files, keeping the default
	6. When making video clips, what is the key step to ensure the flow and consistency of the video content? A. Import material **B. Edit timeline** C. Output Settings D. Add special effects

Objective of Leaning	The Item Questions
	7. With regard to video stitching, which of the following statements best describes an important consideration in the stitching process? A. Only consider the visual effects of video clips, ignoring their internal logic B. Splice video clips of different styles and themes together at will **C. Choose and arrange video clips according to the content, pace and emotional change of the video.** D. Just make sure that the video clips are consistent in length, regardless of other factors
	8. In the video editing process, which step does not involve video splicing? A. Importing the material B. Trimming excess parts **C. Adding background music** D. Combining multiple segments in sequence
	9. When two video clips need to be seamlessly combined, which operation is the most critical? A. Adjusting the volume of the clips **B. Applying transition effects** C. Adding text annotations D. Changing the resolution of the clips
	10. In the video splicing process, how should you handle if there is picture shaking? **A. Use anti-shake filter** B. Adjust the order of segments C. Add subtitles D. Change the video format

Objective of Leaning	The Item Questions
	11. In 3D special effects production, which software is widely recognized as the industry standard, offering comprehensive modeling, animation, rendering and compositing capabilities? A. Adobe Premiere Pro **B. Autodesk Maya** C. DaVinci Resolve D. Final Cut Pro X
	12. Which of the following concepts is a key technique used in 3D special effects production to simulate the reflection and refraction of light on the surface of an object? A. Texture mapping B. Material editor **C. Global lighting** D. Particle system
	13. In 3D special effects production, which of the following software is a commonly used tool? A. Adobe Premiere Pro **B. Blender** C. Canva D. Microsoft PowerPoint
	14. When creating a 3D model, which operation is typically performed to increase the model's detail and realism? A. Reduce the model's polygon count **B. Apply textures and materials** C. Use solid-color filling only D. Increase the size of the model

Objective of Leaning	The Item Questions
	15. In 3D special effects, which property needs to be manipulated to achieve movement, rotation, or scaling of objects? A. Color **B. Transform** C. Opacity D. Texture coordinates
	16. Which of the following special effects is commonly used in post-video to enhance the atmosphere of the image, by simulating camera shake or blur to create a tense or dynamic effect? A. Color correction B. Motion blur C. Lens flare **D. Camera shake**
	17. When doing video post-effects, which step typically involves superimposing multiple video or image layers in a specific order and transparency to create complex visuals? **A. Matting and compositing** B. Color grading C. Speed adjustment D. Keyframe animation
	18. In video post-production, what technique is typically used to simulate the effect of time passing in a movie? A. Video transitions **B. Time flow acceleration/deceleration** C. Color grading D. Subtitle addition

Objective of Leaning	The Item Questions
	19. Which of the following special effects is commonly used to enhance the sense of mystery or science fiction in a video? **A. Color shifting and tone mapping** B. Simple cropping and scaling C. Noise addition D. Subtitle animation
	20. In video post-production effects processing, which tool or technology is typically used to remove imperfections or unwanted objects from the scene? A. Color correction **B. Image cloning or repair tools** C. Audio enhancement D. Transition effects

Assessment Form for Validity of the Performance Assessment

Objective of learning: Students are able to deal with editing (P).

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
1. Students can arrange the material, including material collection (summary, content, key elements) and material preprocessing (overview, classification, naming, preliminary screening).	Students can arrange the material at a most level.	Students can arrange the material at a moderate level.	Students can arrange the material at a little level.
2. Students can manage the material, including material storage and management including overview, contents (establish a directory structure; select the right storage media) and version control.	Students can set up the material storage and management at a most level.	Students can set up the material storage and management at a moderate level.	Students can set up the material storage and management at a little level.

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
3. Students can edit video through multiple footage clips, remove useless or repetitive parts, and then arrange these clips according to the theme, story line or logical order of the video.	Students can edit video and arrange clips at a most level.	Students can edit video and arrange clips at a moderate level.	Students can edit video and arrange clips at a little level.
4. Students can splice video through precise cutting and merging (Shear operation, merge operation), adjust the transition effect (selection of transition effect, application of transition effects) and achieve smooth visual transformation (rhythm control, screen matching).	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a most level.	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a moderate level.	Students can splice video, adjust the transition effect and achieve smooth visual transformation at a little level.

Objective of learning: Students are able to deal with special effects

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
1. Students can make 3D special effects. Firstly, stereo vision enjoyment. Secondly, immersive experience.	Students can make 3D special effects at a most level.	Students can make 3D special effects at a moderate level.	Students can make 3D special effects at a little level.
2. Students can make post special effects. Firstly, create visual elements. Secondly, set up image processing. Thirdly, create special effects.	Students can make post special effects at a most level.	Students can make post special effects at a moderate level.	Students can make post special effects at a little level.

Lesson Plan III

Contents

Post-production finishing and output

Objective of learning

1. Students understand concept of post-production finishing and output. (K)
2. Students are able to produce post-production finishing and output. (P)

Main ideas/concepts

It not only improves the visual quality and auditory experience of the video, but also enhances the creativity and expression of the video through accurate color correction, rhythm and clip optimization, special effects and animation enhancement. At the same time, matching platform format, compression and clarity balance, and export efficiency and stability are also important guarantees to ensure smooth video playback and wide dissemination.

Introduction

Project-based learning method plays a significant role in improving college students' post-production completion and output. It can not only enhance students' practical ability and project experience, promote team cooperation and communication skills, cultivate innovative thinking and problem-solving skills, but also improve time management and work efficiency, broaden knowledge and maintain learning motivation. Therefore, colleges and universities should actively promote project-based learning methods in the teaching of film and television post-production and other related majors, so as to cultivate more excellent post-production talents.

Learning contents

The teacher explained the concept of post-production finishing and output, demonstrate: (1) Text addition; (2) Sound processing; (3) Preview and correction; and (4) Export and distribution. The learning contents are as follows:

(1) Text addition

Video text addition refers to the behavior that text information is superimposed on the video screen through video editing software in the process of video post-production. This operation aims to improve the visual effect of the video, enhance the transmission of information, and guide the attention of the audience, which is an indispensable part of the video production. With precise text additions,

video producers can convey key messages, highlight, explain content, or add interest, thereby enhancing the overall quality and appeal of the video.

(2) Sound processing

Video sound processing refers to the process of editing, adjusting, optimizing and enhancing the original audio in the video post-production. This process is designed to enhance the audio of the video, including removing noise, adjusting the volume balance, adding background music or sound effects, etc., to ensure that the sound is in harmony with the picture, resulting in a more immersive viewing experience for the viewer.

(3) Preview and correction

Video preview refers to the preliminary playback of edited video clips in the process of video post-production to evaluate their effects and quality. Video correction is to further adjust and optimize the problems or deficiencies found on the basis of preview to ensure that the final video work meets the expected standards.

(4) Export and distribution

Video export is the conversion of edited video into a format suitable for various playback platforms and devices to ensure that the video can be presented in high quality in different environments. Video distribution is to spread the exported video widely through various channels, expand the influence of the video, so that more viewers can enjoy the carefully produced video content.

The details are as follows:

(1) Text addition: In the process of video post-processing and output, text addition is a crucial link, which can not only enhance the information expression of the video, but also improve the viewing experience of the audience. The content added by text mainly includes the following aspects:

Firstly, title type text.

Function: The title text in the video picture can have a better description of the theme and the content of the video, so that the presentation of the video content is clear and intuitive, and the viewer is easier to understand the theme expressed in the video.

Location: Usually added to the title position of the video, equivalent to giving the entire video a general name.

Note: The eye-catching title can better attract the attention of the viewer. When adding, choose a font, size, and color that matches the content of the video, and ensure that the title is eye-catching but not obtrusive.

Secondly, description text.

Role: In the video content, there may be some video pictures need to add some text descriptions, such as explaining the shooting location of the video, shooting time, the content of the video picture, so that the viewer has a better understanding of the presented picture.

Position: Description text is usually placed in the bottom left and right corner of the screen to avoid the text is too eye-catching.

Note: The text content should be concise and to the point, and the font size should be moderate to ensure that it does not block important information in the picture.

Thirdly, subtitles.

Role: In some videos with characters speaking, it is suitable to add subtitles for characters speaking. Subtitles allow viewers to see more clearly what the characters are saying, especially when there are dialects, foreign languages or high ambient noise in the video.

Position: Voice-over subtitles are generally added to the bottom of the video frame, centered or left aligned.

Generation Method: Modern video editing software often supports automatic recognition of human voices in videos and generation of captions. After the generation, you can also adjust the font, size, color, style, etc. of the subtitles to achieve the best viewing effect.

Fourthly, other textual elements.

Watermarking: A watermark is sometimes added to a video for copyright protection or branding purposes. The watermark is usually placed in the corner of the picture and is designed to be translucent to avoid obscuring the content of the picture.

Special effects text: Adding special effects text to a video can increase the fun and appeal of the video. Special effects text can be dynamic, flashing or with specific animation effects, but care should be taken not to overuse, so as not to affect the viewing experience of the audience.

To sum up, the text addition content in video post-processing is rich and diverse, including title text, description text, subtitles and other text elements. When adding, it should be selected and adjusted according to the content and needs of the video to ensure that the text can accurately convey the information and improve the overall quality of the video.

(2) Sound processing: In the process of video post-processing and output, sound processing is a crucial link, which is directly related to the final auditory effect of video works. The content of sound processing can be summarized in the following aspects:

Firstly, audio clips.

Basic editing: Preliminary arrangement of the recorded original audio, removing unnecessary parts, such as silent segments, noise, etc., to make the audio more compact and coherent.

Precise tailoring: According to the needs of the video picture, the audio is finely tailored to ensure the synchronization and coordination of the audio and the picture.

Secondly, adjust the volume.

Overall volume adjustment: According to the overall atmosphere and needs of the video, the overall volume of the audio is properly adjusted to achieve a suitable auditory feeling.

Volume balance: For videos that contain multiple audio sources (such as background music, conversations, and sound effects), you need to balance the volume to ensure that the volume of each audio source is relatively balanced, so that one audio source is not too prominent or too weak.

Thirdly, audio effect processing.

Noise reduction: Use professional noise reduction tools or software to eliminate or weaken the noise in the audio and improve the clarity of the audio.

Reverberation effect: By adding reverberation effect, the sound is more spatial and three-dimensional, and the audience's hearing experience is enhanced.

EQ adjustment: Gain and attenuate the frequency band of the audio, adjust the sound color and sound quality of the audio, so that the sound is more in line with the overall style of the video.

Compression processing: The dynamic range of the audio is processed to make the sound more stable and even, and to avoid affecting the audience's hearing feelings because the sound is too large or too small.

Fourthly, audio fades in and out.

Fade in processing: Gradient processing is applied at the beginning of the audio to gradually enhance the sound and avoid the sudden start of the audio.

Fade out processing: Gradient processing is carried out at the end of the audio to gradually weaken the sound and achieve the natural end of the audio.

Fifthly, audio repair.

Repair defects: Repair and deal with defects such as noise, staccato and explosion in audio to make audio perfect and smooth.

Audio synchronization: Ensure the synchronization of audio and video images to avoid misalignment or delay between audio and picture.

Sixthly, special audio processing.

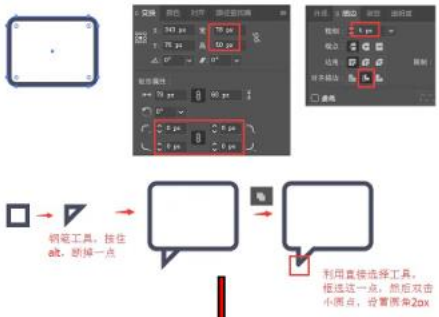
Add sound effects: According to the needs of the video, add appropriate sound elements, such as environmental sound, background music, special effects sound, etc., to enhance the expression and appeal of the video.

Sound editing: Edit and process the added sound effects to make them better integrated into the video and coordinate with the picture content.

In the process of sound processing, it is usually necessary to use professional audio editing software, such as Adobe Audition, Audacity, etc. The software provides rich audio processing functions and tools to meet the various needs of video post-sound processing. At the same time, sound processing personnel also need to have solid audio knowledge and rich practical experience to ensure the quality and effect of sound processing.

FOR EXAMPLE:

1) Create a new 800*600px canvas.



2) With the rectangle tool, draw a rounded rectangle with 78*60px, inner stroke 4px, and rounded corners 8px, fill color #fffff, stroke color #454a62. Draw another 20*20px rectangle, and use the suction pen tool to suck the rounded rectangle just made, as shown in the figure.

(3) Preview and correction: In the process of video post-processing completion and output, preview and correction are indispensable links, which ensure the final quality and effect of the video work. These two links mainly include the following contents:

Firstly, preview.

Preview is the process of preliminary playback and viewing of edited video clips in the process of video post-processing. Its main purpose is to evaluate the effectiveness and quality of the video and check for problems or deficiencies so that subsequent corrections and optimizations can be made. The preview session usually involves the following aspects:

Overall effect preview: Preview the overall effect of the video, including picture quality, color, sound, etc., to evaluate whether the video achieves the desired effect.

Detail preview: Preview key frames, special effects, subtitles and other details in the video to check for flaws or errors.

Multiplatform Preview: Preview videos on different devices and platforms to ensure compatibility and stability in a variety of environments.

Secondly, correction.

Correction is the process of improving and perfecting the existing problems or deficiencies in the video on the basis of preview. The revision process usually includes the following aspects:

Image correction: To repair defects in the video picture, such as removing noise, adjusting color, correcting exposure, etc., to improve the image quality.

Sound correction: Further processing of the audio, such as removing noise, enhancing the sound effect, adjusting the volume, etc., to ensure the synchronization and coordination of the audio and the picture.

Clip correction: Make corrections to video clips, such as adjusting clip points, deleting redundant clips, optimizing transition effects, etc., to make the video more compact and coherent.

Correction of subtitles and special effects: Correction and optimization of subtitles and special effects in videos to ensure the accuracy of subtitles and the fluency of special effects.

In short, preview and correction are indispensable links in the video post-processing process. Problems and shortcomings can be found through preview, while corrections can improve and perfect the video work to ensure that the final output of the video work is the best.

(4) Export and distribution. In the process of video post-processing completion and output, export and distribution are two closely linked links, which together constitute the final step of the video work presented to the audience. The following is the specific content of these two links:

Firstly, export refers to the process of exporting video projects completed in video editing software into video files that can be played on various devices and platforms. This part mainly includes the following aspects:

Choosing an output format: Choose the appropriate video output format based on the end use of the video and the requirements of the playback platform (such as TV, online video platforms, social media, etc.). Common video formats include MP4, AVI, MOV, WMV, etc.

Setting resolution and frame rate: Set the appropriate video resolution and frame rate based on video playback requirements and device compatibility. The resolution determines the sharpness of the video, while the frame rate affects the smoothness of the video.

Encoding settings: Select the appropriate video encoding method to ensure a balance between video file size, quality, and playback compatibility. Common video encoding methods include H.264, HEVC (H.265) and so on.

Output file: After completing the above Settings, click the Export or Render button to output the video project as a video file. This process may take some time, depending on the length of the video, the complexity, and the performance of the computer.

Secondly, distribution refers to the process of disseminating the exported video file to the target audience through various channels. This part mainly includes the following aspects:

Choosing a distribution channel: Choose the right distribution channel based on the type of video, content and target audience. Common distribution channels include social media platforms (such as Wechat, Weibo, Tiktok, etc.), video sharing websites (such as YouTube, Bilibili, etc.), TV stations, and online video platforms (such as IQIYI, Tencent Video, etc.).

Uploading video: Uploads the exported video file to the selected distribution channel. During the upload process, it may be necessary to fill in the title, description, tag and other information of the video so that viewers can find and understand the video content more easily.

Promotion and publicity: In order to increase the visibility and audience of the video, promotion and publicity activities can be conducted on the distribution channel. This includes posting video teasers, sharing video links, and using social media to interact.

Monitoring and feedback: After the video is distributed, it is necessary to pay attention to the feedback and viewing data of the audience in order to adjust and optimize the video content and distribution strategy. By monitoring the number of videos played, the number of likes, the number of comments and other indicators, students can understand the audience's reaction to the video and preferences, so as to provide reference for the subsequent video creation.

In short, export and distribution are the important part of video post-processing completion and output. Through careful selection and setting of export parameters, as well as the selection of appropriate distribution channels and promotion strategies,

we can ensure that the video works can be presented to the audience smoothly and achieve good communication effects.

Teaching activities

Project-based learning methods usually include the following instructional steps: (1) Determining the project theme. (2) Setting project objectives. (3) Planning the project process. (4) Organizing students into groups. (5) Project implementation. (6) Display and communication. (7) Evaluation and reflection.

Step 1: Determining the project theme

When it comes to video completion and output, determining the project theme is a crucial step that determines the direction, content, and final presentation of the entire video. Teachers and students each play a different role in this process, and here is what each of them needs to do:

First, the role of the teacher.

1) Guide and inspire

Teachers should first guide students to understand the process, skills and importance of video post-production, so that students can have an overall cognition of the project.

Through case studies, group discussions, etc., students are stimulated to be creative and imaginative and help them discover potential project themes.

2) Clear goals and requirements

According to the syllabus and course objectives, teachers need to clarify the specific requirements such as the subject scope, technical requirements and completion time of the project to ensure that the project can meet the teaching objectives.

3) Provide resources and guidance

Teachers should provide students with necessary resources, such as reference materials, software tools, technical guidance, etc., to support students in completing the project. In the process of determining the project theme, teachers should give

appropriate guidance and suggestions to help students solve the problems they encounter.

4) Evaluation and feedback

After the students have identified the project topic, the teacher should evaluate it to ensure that it meets the teaching requirements and has a certain degree of feasibility and innovation. Teachers provide timely feedback and suggestions to help students adjust and refine project themes.

Second, the role of the students.

1) Understanding and analysis

Students need to listen carefully to the teacher's explanation and guidance, and understand the basic knowledge and skills of video post-production.

Analyze the interests of audience, and identify potential project topics based on market needs and trends.

2) Research and discussion

Conduct market research or data collection to understand the current situation and development trend of related fields and provide basis for determining project themes.

Discuss and communicate with fellow students, teachers or industry experts to get more opinions and suggestions.

3) Determine and refine

On the basis of thorough research and discussion, students need to identify the project theme and develop a detailed project plan.

Refine the project theme to ensure that it has a clear goal, clear content and feasible implementation plan.

4) Implementation and feedback

Execute the video post-production according to the project plan to ensure the project is completed on time and on quality.

During the production process, timely report progress to teachers and seek feedback and suggestions in order to adjust and optimize the project in a timely manner.

In summary, teachers and students each have their own responsibilities and tasks in determining the project topics to be completed and output in the later stages of the video. Teachers need to do a good job of guidance, guidance, evaluation and feedback. Students, on the other hand, need active participation, careful research, clear goals and detailed plans. Through the joint efforts and cooperation of

both parties, it can ensure that the process of determining the project theme goes smoothly and achieves good results.

Step 2: Setting project objectives

In the post-video completion and output, defining the project goal is an important part of ensuring that the entire production process is orderly and the final result is in line with expectations. Teachers and students each play a different role in this process, and here is what each of them needs to do:

First, the role of the teacher.

1) Clear teaching objectives

Teachers should first clarify the overall teaching objective of the course or project, which is usually related to the technical requirements of video post-production, creative expression, teamwork, etc.

2) Set project objectives

Based on the teaching objectives, the teacher sets specific project objectives for the students. These goals should be both challenging and motivating, and at the same time appropriate to the student's actual level of ability.

Project goals can include technical (such as mastering the advanced features of a certain editing software), creative (such as creating videos with unique perspectives and stories), and teamwork (such as effective communication, division of work).

3) Guidance and evaluation

During the project, teachers should give students the necessary guidance and support to help them understand the project objectives, plan the production process, and solve problems encountered.

By regularly assessing student progress and outcomes, teachers can ensure that students are working in accordance with established project objectives and adjust teaching strategies in a timely manner to deal with problems that may arise.

4) Feedback and Improvement

Teachers should give timely feedback to students, point out their strengths and weaknesses in the project, and make suggestions for improvement.

Encourage communication and sharing among students to promote mutual learning and progress.

Second, the role of the students.

1) Understand the project objectives

Students need to listen carefully to the teacher's explanation and guidance, and understand the importance and specific requirements of the project objectives.

Gain a deep understanding of the intentions and expectations behind the project objectives through discussions and case studies.

2) Plan personal goals

On the basis of understanding the objectives of the project, students should develop personal objectives in accordance with their own interests and expertise. These goals can be mastery of technical skills, experimentation with creative expression, or improvement of teamwork.

3) Implementation and adjustment

Perform video post-production according to project objectives and personal plans. Keep in touch with teachers during the production process, report the progress in time and ask for help and suggestions.

Adjust personal goals and production strategies according to project progress and feedback to ensure that the end result meets expectations.

4) Summary and Reflection

Summarize and reflect upon the completion of the project, analyze their own performance and lessons learned in the project.

Think about how to apply the knowledge and skills that have been learned to future study and work.

To sum up, teachers and students each have their own responsibilities and tasks in the process of defining project objectives during the completion and output of the video. Teachers are responsible for defining teaching objectives, setting project objectives and providing guidance and support. Students need to understand project objectives, plan personal goals, and carefully implement and adjust them to ensure that the end result meets expectations. The joint efforts and cooperation of both parties can ensure the smooth realization of the project objectives.

Step 3: Planning the project process

When it comes to video post-completion and output, planning the project flow is the key to ensuring that the entire production process is orderly and efficient. Teachers and students have different roles and responsibilities in this process, and here is what each of them needs to do:

First, the role of the teacher.

1) Project process design

Teachers need to design a clear and reasonable project process based on the specific needs and teaching objectives of the project. This process should include everything from material preparation, preliminary editing, special effects production, audio processing to final output.

2) Clear assignment

After designing the project process, teachers need to identify specific tasks for each session and assign these tasks to different students or groups of students. This ensures that each student is aware of his or her responsibilities and work content.

3) Provide technical support

In the process of project implementation, teachers need to provide students with necessary technical support, including software operation, equipment use, skill sharing, etc.

4) Progress monitoring and evaluation

Teachers should regularly monitor the progress of the project to ensure that students are working according to established processes and schedules. At the same time, teachers also need to evaluate students' work results and give timely feedback and suggestions.

5) Coordination and communication

Various problems and challenges may arise during the implementation of the project. Teachers need to actively coordinate resources to ensure the smooth progress of the project. In addition, teachers also need to maintain good communication with students, understand their needs and difficulties, and provide necessary help and support.

Second, the role of students.

1) Understand the project process

Students first need to carefully read and understand the project process provided by the teacher, and clarify the specific tasks and requirements of each link.

2) Make a personal plan

According to the project process and assignment, students need to make their own personal plan, specifying the completion time and specific work content of each stage.

3) Perform tasks

Students are required to conscientiously execute tasks according to established procedures and plans, including material preparation, editing, special effects production, audio processing, etc. During the execution process, students need to maintain focus and patience to ensure the quality and efficiency of the work.

4) Timely feedback and communication

Students may encounter various problems and difficulties during the execution of tasks. At this time, students need to timely feedback to the teacher and ask for help and advice. At the same time, students also need to maintain good communication with team members and work together to complete the task.

5) Summary and reflection

After the completion of the project, students need to summarize and reflect on their work, analyze their performance and lessons learned in the project. This helps to improve students' professional literacy and practical ability, and to lay a solid foundation for future study and work.

To sum up, teachers and students each have their own responsibilities and tasks in the process of planning the project process during the completion and output of the video. Teachers need to design processes, define tasks, provide technical support, monitor progress and coordinate communication. Students are expected to understand processes, make plans, perform tasks, give feedback and reflect on them. Through the joint efforts and cooperation of both parties, the smooth progress of the project and the high-quality completion of the final result can be ensured.

Step 4: Organizing students into groups

In the post-video completion and output, project grouping is an effective way of working, which can improve the efficiency of team collaboration and ensure the smooth completion of tasks. Teachers and students have different roles and tasks in this process.

First, the role of the teacher.

1) Determine the grouping principles

Teachers first need to determine the basis of grouping, such as students' professional ability, interests, hobbies, special skills, etc., to ensure the rationality and balance of grouping.

2) Planning team tasks

According to the overall needs of the project, the teacher needs to divide the

task into various groups, and clarify the specific responsibilities and work content of each group. These tasks may include material collation, editing, special effects production, audio processing, adding subtitles, etc.

3) Guidance and coordination

During the implementation of the project, teachers need to guide and coordinate the work of each group to ensure smooth connection between groups and timely completion of tasks. At the same time, teachers also need to hold group meetings regularly to understand the progress of each group and the problems encountered, and provide necessary help and support.

4) Evaluation and Feedback

After the completion of the project, the teacher is required to evaluate the results of the work of the teams, give recognition and encouragement, and make suggestions for improvement. The results of the assessment can be used as part of the student's course grade and as a basis for subsequent teaching and improvement.

Second, the role of the students.

1) Understand the work content of group

Students need to know which group they are in, as well as the specific tasks and work content of that group. This helps them clarify their responsibilities and goals and prepare them for the rest of the job.

2) Collaborate to complete tasks

Within a group, students are required to collaborate with other members to complete tasks. This includes collaborating with each other to gather footage, edit videos, create special effects, manipulate audio, and more. Students need to actively use their expertise and skills to contribute to the group.

3) Communicate with group members

Students need to maintain good communication with group members, timely feedback on problems and difficulties, and jointly negotiate solutions. At the same time, students also need to keep in touch with the teacher to understand the overall progress of the project and the teacher's expectations.

4) Self-improvement

During the implementation of the project, students need to continuously learn and improve their professional abilities. This includes learning new software techniques, mastering new special effects production methods, and improving editing and audio processing capabilities. By participating in the project practice, students can accumulate valuable experience and improve their overall quality and competitiveness.

In short, teachers and students each take on different roles and tasks in the project grouping. Teachers need to formulate reasonable group principles, plan group tasks, guide and coordinate work, and evaluate and feedback results; Students need to learn about groups, work together, communicate, and improve themselves. Through the joint efforts and cooperation of both parties, they can ensure the smooth and high-quality completion of the video post-production and output work.

Step 5: Project implementation

In the specific implementation projects for video completion and output, teachers and students each assume different responsibilities and tasks. The following is a detailed description of the division of labor:

First, the role of the teacher.

1) Project planning and guidance

Teachers should first make a detailed project plan according to the teaching objectives and project needs, including the project schedule, task allocation, technical requirements and expected results.

During the implementation of the project, the teacher shall provide the necessary guidance and support to ensure that the student is able to work according to the established plan. This includes answering students' questions, providing technical advice, and helping to solve problems.

2) Skills training and improvement

Teachers should organize or provide relevant skills training courses to help students master the software operation, editing skills, special effects production and other knowledge required for video post-production.

Encourage students to participate in practical projects to enhance professional skills and comprehensive qualities through practical operations.

3) Progress monitoring and evaluation

Teachers should regularly monitor the progress of the project to ensure that all work is carried out as planned. For students or groups whose progress is lagging behind, teachers should give timely guidance and help.

After the completion of the project, the teacher should evaluate the student's work results, give recognition and encouragement, and make suggestions for improvement. The results of the assessment can be used as part of the student's course grade and as a basis for subsequent teaching and improvement.

4) Teamwork and communication

Teachers should promote teamwork and communication among students and

encourage students to share experiences, exchange ideas, and solve problems together.

Organize regular project meetings or seminars, so that students can report the progress of work, show results, raise problems, etc., in order to strengthen team cooperation and communication.

Second, the role of the students.

1) Understand project requirements

Students first need to carefully read and understand the project requirements, clear their own tasks and goals.

Communicate with faculty and other members to ensure accurate understanding of project requirements.

2) Material sorting and preparation

Students need to organize and prepare relevant materials according to the project requirements, including video, audio, pictures, etc.

Classify, annotate, and back up the material for later use.

3) Editing and special effects production

Students need to use the editing software and special effects production tools they have learned to edit and process the material.

According to the project requirements and their own creativity, adjust the rhythm of the video, color, sound, etc., to achieve the desired visual effect.

4) Audio processing and dubbing

Students process the audio in the video, such as removing noise, adjusting volume, etc.

Add background music, sound effects and voice overs to videos as needed to enhance their appeal and expressiveness.

5) Color and output

Students adjust the video color processing, adjust the video tone, brightness, contrast and other parameters to achieve the best visual effect.

Output the video to the final file format and perform the necessary compression and optimization processing for playback and sharing on different platforms.

6) Teamwork and communication

Students need to maintain close communication and collaboration with team members to solve problems and share experiences and resources.

Actively participate in team discussions and meetings, put forward their own opinions and suggestions, and contribute to the smooth progress of the project.

To sum up, teachers and students each undertake different responsibilities and tasks in the specific implementation projects of video post-completion and output. Through the joint efforts and cooperation of both parties, the smooth completion and high-quality output of the project can be ensured.

Step 6. Display and communication

In the display and communication stage of video completion and output, teachers and students each play an important role and undertake different tasks.

First, the role of the teacher.

1) Organize exhibition activities

Teachers need to plan and organize the display activities of video works, such as classroom display, school exhibition, online sharing meeting, etc., to provide a platform for students to display their own works.

2) Set display standards

Before the exhibition, teachers should clarify the standards and requirements for the exhibition, including the integrity of the work, creativity, technical realization, etc., so that students can prepare the exhibition content in a targeted way.

3) Provide feedback and guidance

During the presentation process, teachers should carefully watch students' works and give specific feedback and suggestions. This helps students to understand the strengths and weaknesses of their own work, providing direction for subsequent improvement and improvement.

4) Promote communication and interaction

Teachers should encourage communication and interaction among students and guide them to share creative experience, technical knowledge and creative inspiration. This helps to create a positive learning atmosphere that promotes mutual learning and growth among students.

5) Summary and Commendation

After the presentation, the teacher should summarize the whole activity, affirm the efforts and achievements of the students, and commend and reward the outstanding students. This helps to stimulate students' enthusiasm and creativity, and infuses them with motivation for future learning and creation.

Second, the role of the students.

1) Prepare display materials

Students need to prepare presentation materials according to the teacher's requirements and the characteristics of their own works. This includes the final version of the video work, an introduction to the creative process, an explanation of the technical implementation, etc. Students should ensure that the materials presented are clear, accurate and attractive.

2) Participate in exhibition activities

Students are required to actively participate in the exhibition activities and present their work according to the specified time and order. During the presentation, students should confidently introduce their work and creative process and interact and communicate with the audience.

3) Accept feedback and improvement

Students should carefully listen to feedback and suggestions from teachers and audiences to understand where their work is lacking and needs improvement. Students should then make targeted improvements and promotions based on feedback.

4) Sharing and communication

Students should actively participate in the exchange and sharing sessions to share their creative experience with other students. Through exchange and sharing, students can broaden their horizons, broaden their knowledge, stimulate their inspiration, and accumulate more resources and experiences for future learning and creation.

5) Reflection and summary

After the presentation and exchange, students should reflect and summarize their own creative process. This helps students to find their own strengths and weaknesses and provides useful reference for future learning and creation.

To sum up, in the display and communication stage of video completion and output, teachers and students need to work together and cooperate with each other to ensure the smooth progress of display activities and achieve good results.

Step 7. Evaluation and reflection

During the evaluation and reflection phase of video completion and output, both teachers and students play an important role, each taking on different tasks to ensure that the project is summarized and improved.

First, the role of the teacher.

1) Develop evaluation criteria

Teachers need to develop detailed assessment criteria based on curriculum objectives and project requirements. These criteria can include technical

implementation, creative expression, team collaboration, time management and other aspects to ensure that the evaluation is comprehensive and fair.

2) Organize evaluation activities

Teachers can be evaluated in a variety of ways, such as student self-assessment, group member mutual evaluation, teacher evaluation, etc. Through different evaluation perspectives, students' performance in the project is comprehensively understood.

3) Provide feedback

During the assessment process, the teacher should carefully watch the student's work and give specific feedback. These opinions should not only affirm the advantages and highlights of students, but also point out the existing problems and shortcomings, and provide clear directions for students to improve.

4) Summary of teaching experience

After the evaluation, teachers should summarize the whole teaching process and reflect on their performance in project guidance, technical support, team cooperation, etc. Through summing up experience and lessons, constantly improving their teaching level and ability.

5) Adjust the teaching plan

According to the evaluation results and feedback from students, teachers should adjust the teaching plan and optimize the teaching content and methods to adapt to the needs and changes of students.

Second, the role of the students.

1) Self-assessment

Students are required to conduct an objective self-assessment of their work, analyze their performance in the project, and identify existing problems and shortcomings. This helps students to have a clearer understanding of their own abilities and levels.

2) Be evaluated by students and teachers

Students should actively participate in activities such as group member mutual evaluation and teacher evaluation and carefully listen to the opinions and suggestions of others. These evaluations can help students understand their own work and performance from different perspectives.

3) Reflection and improvement

Students need to engage in in-depth reflection based on the results of self-assessment and evaluation by others. Analyze the causes and root causes of the problems and formulate specific improvement measures. This will help students avoid similar problems in their future study and creation.

4) Lessons learned

Students should summarize and summarize the project experience and lessons to form their own experience. These experiences and lessons can provide useful reference for students' future study and creation.

5) Sharing and communication

Students can share their works and experiences with other students and exchange creative ideas and feelings. Through sharing and exchange, students can broaden their horizons, broaden their knowledge, stimulate their inspiration, and accumulate more resources and experiences for future learning and creation.

To sum up, evaluation and reflection is an important part of the video completion and output stage. Teachers and students need to work together and cooperate with each other to fully understand students' performance and problems in the project by formulating assessment standards, organizing assessment activities, providing feedback, summing up experience and lessons, etc., so as to provide useful reference and reference for future teaching and learning.

Learning schedule: Post-production finishing and output (11 hours)

Date/time	Teaching Process	Time
Day 5 09:00-09:20	Introduction: The teacher introduces this lesson's teaching contents and learning objectives and explains the importance of project-based learning. Students can clearly understand the teaching objectives to achieve the expected teaching effect.	20 minutes
09:20-12:00	Learning content: The teacher explained the concept of post-production finishing and output and demonstrated: (1) Text addition; (2) Sound processing; (3) Preview and correction; and (4) Export and distribution.	2 hours and 40 minutes
12:00-13:00	**Lunch Time**	
13:00-14:00	Step 1 Determining the project theme: Understand the main objectives and expected learning outcomes of the course. This typically includes technical skills, creative expression, and teamwork related to video post-production. Based on the course requirements, think about how to align learning objectives with the project theme. Step 2 Setting project objectives: Based on the established project theme, further refine the theme content and clarify the core information and key points that you want to convey in the video. Based on the type and style of the video, determine the technical skills that need to be mastered and applied during the post-production process.	1 hour

Date/time	Teaching Process	Time
14:00-15:00	Step 3 Planning the project process: It should be clearly defined what tasks need to be completed at each stage of the project (preparation of materials, editing, special effects, audio processing, subtitling, rendering and output), and a detailed plan should be made, taking into account potential risks and establishing a mechanism for tracking progress and assessing quality. Step 4: Organizing students into groups: It is mainly to assign specific tasks and promote teamwork. Each group should clarify the roles of its members and jointly plan the details of the project to ensure that the project is progressing on schedule. At the same time, grouping can enhance students' communication and cooperation skills and lay a solid foundation for the successful completion of the project.	1 hour
15:00-15:30	Summary and prepare to learn on step 5 Project implementation	30 minutes

Date/time	Teaching Process	Time
Day 6 09:00-11:00	Step 5 Project implementation: Each group follows the predetermined plan and process, divides tasks and working together to carry out video editing, special effects processing, audio adjustment, and subtitle addition. During this process, constant communication and cooperation are required to solve technical difficulties and ensure the project is completed on time and of high quality.	2 hours
11:00-12:00	Step 6 Display and communication: Each group presents their project to the whole class, shares their experiences, challenges they faced, and solutions they came up with. Through this exchange, students can learn from each other, broaden their horizons, enhance their video post-production skills, and boost their communication skills and self-confidence.	1 hour
12:00-13:00	**Lunch Time**	
13:00-13:30	Step 6 Display and communication (continue)	30 minutes
13:30-15:00	Step 7 Evaluation and reflection: A comprehensive evaluation of project outcomes is conducted, including technical quality, creative expression, and team collaboration. Additionally, students reflect on the successes and challenges of the project process, summarize lessons learned, and identify areas for improvement to inform future video production projects, and foster continuous growth in individual skills and team collaboration.	1 hour and 30 minutes
15:00-15:30	Summary and prepare to learn the video post-production completion and output	30 minutes

Assessment Form for Validity of the multiple choices Test

Objective of Leaning	The Item Questions
Students understand concept of post-production finishing and output (K)	1. In video post-production, if you want to add dynamic captioning to an interview video to match the speaker's speed and content, which tool or feature should you use? **A. Keyframe animation** B. Color correction C. Filter effect D. Audio mixer
	2. When adding multilingual captions to a video, which of the following is a best practice to improve the viewing experience? A. Use only one color to display all subtitles B. Place all subtitles centrally at the bottom of the video C. Use a different font size for each language captions **D. Use different colors or borders to distinguish subtitles in different languages**
	3. When adding text to a video, which type of font is typically easier for viewers to read? A. Handwritten, with personality B. Complex decorative font, eye-catching C. Classic serif font, showcasing cultural depth. **D. Sans-serif font, clean and straightforward**
	4. How should the text in the video be positioned to ensure the best visual effect? A. Place it anywhere on the screen randomly. B. Always place it in the center of the screen and keep it fixed. **C. Arrange it reasonably based on the content and composition of the scene.** D. Stick it close to the edge of the screen to save space.

Objective of Leaning	The Item Questions
	5. In video post-production, what factors should be taken into account when adding text to maintain the professionalism of the video? A. Text color is the same as the background color and blends in seamlessly. **B. Text should not appear for too long, avoiding blocking key scenes.** C. Text size is arbitrary and adjusted based on mood. D. Text content is too complex and contains a lot of technical terms.
	6. Which of the following techniques is used to adjust the audio volume balance in post-video sound processing? A. Fade in and out B. Compression **C. Equalizer** D. Standardization
	7. If you want to add background music to your video and make sure it doesn't drown out the dialogue, which technology should you use? **A. Side chain compression** B. Audio separation C. Echo effect D. Audio fades in and out
	8. In video sound processing, what technique is typically used to eliminate background noise? **A. Noise reduction processing** B. Volume enhancement C. Echo effect D. Stereo conversion

Objective of Leaning	The Item Questions
	9. In video post-production, what type of processing is typically used to make dialogue clearer? A. Compression processing **B. Equalization processing** C. Reverb processing D. Delay processing.
	10. When the background music in a video does not match the content, what should be done? A. Increase the volume of the background music to cover up the mismatch. B. Lower the volume of the background music to emphasize the dialogue. **C. Replace or edit the background music to match the content.** D. Delete the background music and keep only the dialogue.
	11. Which of the following operations is feasible to improve the export efficiency before the video post output? **A. Reduce the preview resolution** B. Increase the number of key frames C. Use higher quality audio coding D. Add more visual effects
	12. When you find that the exported video file in some parts of the picture quality loss or stalling phenomenon, you should check the first link? A. Quality of raw material **B. Export coding settings** C. Preview resolution D. Audio track configuration

Objective of Leaning	The Item Questions
	13. When previewing a video, if you notice that the colors appear too dark, which correction method should you try first? **A. Adjust brightness** B. Change contrast C. Apply filter effects D. Adjust saturation
	14. When you notice shaky footage during the video preview, which of the following methods can effectively correct it? **A. Use a stabilization plug-in** B. Increase video volume C. Adjust video speed D. Apply color correction.
	15. In video post-production, what type of preview is typically used to check the video's playback effects on different devices? A. Real-time preview **B. Cross-platform preview** C. Zoom-in preview D. Slow-motion preview
	16. When you need to optimize your video export Settings for mobile devices, which of the following parameters is generally more important? **A. Video resolution** B. Frame rate C. Encoding format D. Color space

Objective of Leaning	The Item Questions
	17. In addition to exporting the video file, what other factors do you need to consider before you start video distribution to ensure effective video distribution? **A. Video title and description** B. Video export size C. Video color saturation D. Video encoding rate
	18. When exporting a video, the video encoding format that is typically chosen to be compatible with most playback devices is? A. AVI **B. MP4** C. MOV D. WMV
	19. When exporting a video, if you want the highest possible video quality, which resolution and bitrate should you choose? A. Low resolution, low bitrate B. Low resolution, high bitrate C. High resolution, low bitrate **D. High resolution, high bitrate**
	20. When distributing videos, which of the following actions is necessary to ensure that the video can be uploaded to an online platform smoothly? A. Only export the video file without considering the file format B. Compress the video file to the smallest possible size **C. Select the appropriate file format and resolution based on the platform requirements** D. Convert the video to all possible formats in case of need

Assessment Form for Validity of the Performance Assessment

Objective of learning: Students are able to complete post-production finishing

Assessment items	Criterial of Score		
	Good (3)	**Medium (2)**	**Low (1)**
1. Text addition. Firstly, title type text, including function, location and note. Secondly, description text, including role, position. Thirdly, subtitles, including role, position and Generation Method. Fourthly, other textual elements.	Students are most able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a most level.	Students are moderate able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a moderate level.	Students are little able to ensure that the color, font and size of the text is eye-catching and not obtrusive in the video screen at a little level.
2. Sound processing: Firstly, audio clips. Secondly, adjust the volume. Thirdly, audio effect processing. Fourthly, audio fades in and out. Fifthly, audio repair. Sixthly, special audio processing.	Students use professional audio editing software at a most level.	Students use professional audio editing software at a moderate level.	Students use professional audio editing software at a little level.

Assessment items	Criterial of Score		
	Good (3)	Medium (2)	Low (1)
3. Preview and correction: Firstly, preview, including overall effect preview, detail preview and multiplatform preview. Secondly, correction, including image correction, sound correction, clip correction, correction of subtitles and special effects:	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a most level.	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a moderate level.	Students are most able to reflect the actual video playback effect, including color, brightness, contrast and audio synchronization, and adjust the video parameters at a little level.

Objective of learning: Students are able to complete output

Assessment items	Score and criterion		
	Good (3)	Medium (2)	Low (1)
1. The process of exporting video projects, including choosing an output format, setting resolution and frame rate, encoding settings and output file:	Students can choose and build the proper output, resolution and output file at a most level.	Students can choose and build the proper output, resolution and output file at a moderate level.	Students can choose and build the proper output, resolution and output file at a little level.
2. The process of disseminating the exported video file to the target audience, including choosing a distribution channel, uploading video, promotion and publicity and monitoring and feedback:	Students can choose the proper distribution channel, and manage the feedback at a most level.	Students can choose the proper distribution channel, and manage the feedback at a moderate level.	Students can choose the proper distribution channel, and manage the feedback at a little level.

Appendix D
The Results of the Quality Analysis of Research Instruments

Assessment for Validity of Video Production Lesson Plan

No.	Questions	Expert			Total	IOC	Interpretation
		1	2	3			
1	The content is related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used
2	The learning processes are related to teaching.	+1	+1	+1	3	1.00	Suitable Can be used
3	The learning objectives are consistent with the subject matter.	+1	+1	+1	3	1.00	Suitable Can be used
4	The learning activities are related with using project-based learning.	+1	+1	+1	3	1.00	Suitable Can be used
5	The assignment of producing storyboarding is related with the content.	+1	+1	+1	3	1.00	Suitable Can be used
6	There are various assessments related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used
7	The measurement and evaluation are related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used

Assessment for Validity of Video Editing and Special Effects Lesson Plan

No.	Questions	Expert			Total	IOC	Interpretation
		1	2	3			
1	The content is related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used
2	The learning processes are related to teaching.	+1	+1	+1	3	1.00	Suitable Can be used
3	The learning objectives are consistent with the subject matter.	+1	+1	+1	3	1.00	Suitable Can be used
4	The learning activities are related with using project-based learning.	+1	+1	+1	3	1.00	Suitable Can be used
5	The assignment of video editing and special effects is related with the content.	+1	+1	+1	3	1.00	Suitable Can be used
6	There are various assessments related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used
7	The measurement and evaluation are related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used

Assessment for Validity of Post-production finishing and output Lesson Plan

No.	Questions	Expert			Total	IOC	Interpretation
		1	2	3			
1	The content is related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used
2	The learning processes are related to teaching.	+1	+1	+1	3	1.00	Suitable Can be used
3	The learning objectives are consistent with the subject matter.	+1	+1	+1	3	1.00	Suitable Can be used
4	The learning activities are related with using project-based learning.	+1	+1	+1	3	1.00	Suitable Can be used
5	The assignment of post-production finishing and output is related with the content.	+1	+1	+1	3	1.00	Suitable Can be used
6	There are various assessments related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used
7	The measurement and evaluation are related to learning objectives.	+1	+1	+1	3	1.00	Suitable Can be used

Index of Item Objective Congruence (IOC)
Analysis of the Objective Test

Video Production	Expert Person			Total	IOC	Interpretation
	1	2	3			
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
Item4	+1	+1	+1	3	1.00	can be used
Item5	+1	+1	+1	3	1.00	can be used
Item6	+1	+1	+1	3	1.00	can be used
Item7	+1	+1	+1	3	1.00	can be used
Item8	+1	+1	+1	3	1.00	can be used
Item9	+1	+1	+1	3	1.00	can be used
Item10	+1	+1	+1	3	1.00	can be used
Item11	+1	+1	+1	3	1.00	can be used
Item12	+1	+1	+1	3	1.00	can be used
Item13	+1	+1	+1	3	1.00	can be used
Item14	+1	+1	+1	3	1.00	can be used
Item15	+1	+1	+1	3	1.00	can be used
Item16	+1	+1	+1	3	1.00	can be used
Item17	+1	+1	+1	3	1.00	can be used
Item18	+1	+1	+1	3	1.00	can be used
Item19	+1	+1	+1	3	1.00	can be used
Item20	+1	+1	+1	3	1.00	can be used

Video Editing and Special Effects	Expert Person			Total	IOC	Interpretation
	1	2	3			
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
Item4	+1	+1	+1	3	1.00	can be used
Item5	+1	+1	+1	3	1.00	can be used
Item6	+1	+1	+1	3	1.00	can be used
Item7	+1	+1	+1	3	1.00	can be used
Item8	+1	+1	+1	3	1.00	can be used
Item9	+1	+1	+1	3	1.00	can be used
Item10	+1	+1	+1	3	1.00	can be used
Item11	+1	+1	+1	3	1.00	can be used
Item12	+1	+1	+1	3	1.00	can be used
Item13	+1	+1	+1	3	1.00	can be used
Item14	+1	+1	+1	3	1.00	can be used
Item15	+1	+1	+1	3	1.00	can be used
Item16	+1	+1	+1	3	1.00	can be used
Item17	+1	+1	+1	3	1.00	can be used
Item18	+1	+1	+1	3	1.00	can be used
Item19	+1	+1	+1	3	1.00	can be used
Item20	+1	+1	+1	3	1.00	can be used

Post-production finishing and output	Expert Person			Total	IOC	Interpretation
	1	2	3			
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
Item4	+1	+1	+1	3	1.00	can be used
Item5	+1	+1	+1	3	1.00	can be used
Item6	+1	+1	+1	3	1.00	can be used
Item7	+1	+1	+1	3	1.00	can be used
Item8	+1	+1	+1	3	1.00	can be used
Item9	+1	+1	+1	3	1.00	can be used
Item10	+1	+1	+1	3	1.00	can be used
Item11	+1	+1	+1	3	1.00	can be used
Item12	+1	+1	+1	3	1.00	can be used
Item13	+1	+1	+1	3	1.00	can be used
Item14	+1	+1	+1	3	1.00	can be used
Item15	+1	+1	+1	3	1.00	can be used
Item16	+1	+1	+1	3	1.00	can be used
Item17	+1	+1	+1	3	1.00	can be used
Item18	+1	+1	+1	3	1.00	can be used
Item19	+1	+1	+1	3	1.00	can be used
Item20	+1	+1	+1	3	1.00	can be used

Analysis of difficulty value (p) and discrimination power (r) of the objective test to improve video practice skills by non-sample students

Video Production	Difficulty value (p)	Discrimination power (r)	Consideration
Item1	0.93	0.13	cut off
Item2	0.77	0.20	selected
Item3	0.77	-0.07	cut off
Item4	0.67	0.27	selected
Item5	0.40	0.00	cut off
Item6	0.70	0.20	selected
Item7	0.70	0.20	selected
Item8	0.63	0.33	selected
Item9	0.73	0.13	cut off
Item10	0.73	0.27	selected
Item11	0.87	0.27	cut off
Item12	0.67	0.27	selected
Item13	0.57	0.33	selected
Item14	0.83	0.07	cut off
Item15	0.73	0.53	selected
Item16	0.67	0.13	cut off
Item17	0.80	0.13	cut off
Item18	0.80	0.27	selected
Item19	0.80	0.27	selected
Item20	0.67	0.13	cut off

From the table analyzing the difficulty value (p) and the discrimination power (r) of the objective test to improve video production, it was found that out of the 20 items. There were 11 quality items selected to be used for testing with the sample group. A difficulty value of between 0.57-0.80 and the discrimination power between 0.20-0.53, namely items 2, 4, 6, 7, 8, 10, 12, 13, 15, 18, and 19.

Video Editing and Special Effects	Difficulty value (p)	Discrimination power (r)	Consideration
Item1	0.37	0.73	selected
Item2	0.53	0.13	cut off
Item3	0.77	0.07	cut off
Item4	0.80	0.00	cut off
Item5	0.40	0.80	selected
Item6	0.63	0.33	selected
Item7	0.77	0.20	selected
Item8	0.80	0.00	cut off
Item9	0.50	0.60	selected
Item10	0.53	0.13	cut off
Item11	0.77	0.07	cut off
Item12	0.37	0.73	selected
Item13	0.57	0.07	cut off
Item14	0.80	0.13	cut off
Item15	0.37	0.73	selected
Item16	0.47	0.27	selected
Item17	0.60	0.00	cut off
Item18	0.37	0.73	selected
Item19	0.50	0.07	cut off
Item20	0.80	0.13	cut off

From the table analyzing the difficulty value (p) and the discrimination power (r) of the objective test to improve video editing and special effects, it was found that out of the 20 items. There were 9 quality items selected to be used for testing with the sample group. A difficulty value of between 0.37-0.77 and the discrimination power between 0.20-0.80, namely items 1, 5, 6, 7, 9, 12, 15, 16, and 18.

Post-production finishing and output	Difficulty value (p)	Discrimination power (r)	Consideration
Item1	0.80	0.13	cut off
Item2	0.80	0.27	selected
Item3	0.80	0.27	selected
Item4	0.67	0.13	cut off
Item5	0.37	0.73	selected
Item6	0.77	0.07	cut off
Item7	0.33	0.67	selected
Item8	0.57	0.07	cut off
Item9	0.80	0.13	cut off
Item10	0.33	0.67	selected
Item11	0.77	0.20	selected
Item12	0.67	0.13	cut off
Item13	0.33	0.67	selected
Item14	0.77	0.07	cut off
Item15	0.37	0.73	selected
Item16	0.80	0.13	cut off
Item17	0.33	0.67	selected
Item18	0.70	0.07	cut off
Item19	0.63	0.07	cut off
Item20	0.37	0.73	selected

From the table analyzing the difficulty value (p) and the discrimination power (r) of the objective test to improve post-production finishing and output, it was found that out of the 20 items. There were 10 quality items selected to be used for testing with the sample group. A difficulty value of between 0.33-0.80 and the discrimination power between 0.20-0.73, namely items 2, 3, 5, 7, 10, 11, 13, 15, 17, and 20.

Index of Item Objective Congruence (IOC) analysis of the performance assessment

	Expert Person			Total	IOC	Interpretation
	1	2	3			
Video production						
1. Students are able to shoot video						
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
Item4	+1	+1	+1	3	1.00	can be used
2. Students are able to create storyboarding						
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
Item4	+1	+1	+1	3	1.00	can be used
Video editing and special effects						
1. Students are able to deal with editing						
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
Item4	+1	+1	+1	3	1.00	can be used
2. Students are able to deal with special effects						
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Post-production finishing and output						
1. Students are able to complete post-production finishing						
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used
Item3	+1	+1	+1	3	1.00	can be used
2. Students are able to complete output						
Item1	+1	+1	+1	3	1.00	can be used
Item2	+1	+1	+1	3	1.00	can be used

The score of video post-production course before and after the project based on project-based Learning Method for undergraduate students

Student ID	Pre-test scores (87)			Post-test scores (87)			Difference Score
	Objective test (30)	Performance test (57)	Total	Objective test (30)	Performance test (57)	Total	
1	10	20	30	19	39	58	28
2	8	26	34	23	42	65	31
3	12	28	40	22	42	64	24
4	11	22	33	22	40	62	29
5	11	23	34	20	42	62	28
6	15	27	42	25	39	64	22
7	13	24	37	23	42	65	28
8	14	22	36	22	41	63	27
9	12	22	34	18	39	57	23
10	13	22	35	24	40	64	29
11	11	20	31	18	40	58	27
12	10	26	36	20	42	62	26
13	12	19	31	21	39	60	29
14	13	22	35	20	40	60	25
15	11	24	35	17	42	59	24
16	11	27	38	22	42	64	26
17	11	22	33	19	42	61	28
18	16	23	39	24	40	64	25
19	11	26	37	19	41	60	23
20	12	26	38	19	39	58	20
21	13	26	39	21	40	61	22
22	11	23	34	16	39	55	21
23	13	20	33	19	41	60	27
24	11	23	34	20	40	60	26
25	14	26	40	17	38	55	15
26	9	25	34	19	41	60	26
27	8	23	31	17	43	60	29
28	12	23	35	23	43	66	31

Student ID	Pre-test scores (87)			Post-test scores (87)			Difference Score
	Objective test (30)	Performance test (57)	Total	Objective test (30)	Performance test (57)	Total	
29	8	23	31	21	43	64	33
30	13	22	35	24	42	66	31
$\bar{X}$	11.63	23.50		20.47	40.77	61.23	
SD.	1.94	2.35		2.42	1.43	3.04	

Appendix E
Certificate of English

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This is to certify that

Mr.Tianqi Wang

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B2

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Appendix G

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30 April 2025

Acceptance of Manuscript for Publication in HRD Journal

Dear Mr. Wang Tianqi, Ms. Supaporn Srihamee, and Mr. Jittawisut Wimuttipanya,

I am pleased to inform you that after rigorous evaluation and careful consideration, your manuscript titled **"Using Project-Based Learning Method to Improve Practice Skills of Video Post-Production Course of Undergraduate Students"** has been accepted for publication in HRD Journal. Congratulations on this significant achievement!

Your submission underwent a thorough double-blind peer review process, where it was evaluated by three esteemed reviewers from different universities in the field. Their insightful feedback and constructive criticism have undoubtedly enriched the quality of your work. We are grateful for your patience and dedication throughout this process.

Upon publication, your article will be featured in Volume 16, No. 1, 2025 (January - June), ISSN: 3027-6918 (Online) under Thai-Journal Citation Index Centre (TCI) Tier 2 reaching our wide readership network and enhancing its visibility and impact within the academic community.

Best regards,

Assistance Professor Dr.Paratchanun Charoenarpornwattana
Journal Editor of HRD Journal

USING PROJECT-BASED LEARNING METHOD TO IMPROVE PRACTICE SKILLS OF VIDEO POST-PRODUCTION COURSE OF UNDERGRADUATE STUDENTS

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Abstract

The objectives of this research were 1) to use project-based learning method to improve the practice skills of video post-production courses of undergraduate students, and 2) to compare students' practice skills of video post-production course before and after the implementation based on project-based learning method. The sample group consisted of 30 freshmen students from Chongqing Vocational College of Media in China, through cluster random sampling. The research instruments included 1) lesson plans based on project-based learning, and 2) practice skills tests: multiple choices and performance assessment. The data were analyzed by mean, standard deviation, and t-test for the dependent samples.

The results revealed the following:

1. Using project-based learning method to improve the practice skills of the video post-production course. Researcher studied information based on project-based learning method and synthesized into 7 steps: Determining the project theme, Setting project objectives, Planning the project process, Organizing students into groups, Project implementation, Display and communication and Evaluation and reflection. Quality analysis of lesson plans by 3 experts, shown that the overall results were most suitable. After students have learned according to the 3 lesson plans, the average score after learning was 61.23, while the average score before learning was 35.13.

2. The comparison of students' practice skills of video post-production course before and after based on project-based learning method. The result found that students' practice skills scores after learning were higher than before learning statistically significant at the level .01. Therefore, learning by project-based learning method could improve students' practice skills of video post-production course.

Keywords: Project-based Learning Method, Video Post-production course, Undergraduate Students

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Introduction

The "General Catalogue of Undergraduate Programs of Ordinary Higher Education Institutions (2020 Edition)" and "List of New Undergraduate Programs Admitted into the Catalogue of Higher Education Institutions (2021)" mainly involve the setting and management of undergraduate majors in higher education in China, including a clear stipulation on art-related majors. They provided official and authoritative references for colleges and universities in planning their curriculum and content for related majors such as film and television production. Specifically, the film and television production major belonged to the "Broadcast, Film and Television" major under the "Art" category. This classification clearly defined the location of the film and television production major and provided guidance for college and university majors. The government stated that in this catalog, the specific setting, training objectives, and training requirements of the film and television production major must strictly follow the provisions of this major classification. The division of majors was mainly to ensure the systematic and scientific nature of higher education and to enable students to have a clearer understanding of and choose their major fields. For example, if a student had a strong interest and career planning in film and television production, he could choose relevant colleges and majors according to the provisions of this professional catalog and apply for admission and study (Ministry of Human Resources and Social Security, 2019). The professional catalog also provided a basis for the setting of related courses. Colleges and universities needed to refer to the relevant provisions in this catalog when setting related courses to ensure the rationality and advanced nature of teaching content and training objectives. In summary, this professional catalog provided important norms and guidance for the opening, development, and improvement of majors such as film and television production and was one of the basic guiding documents for higher education work (Hebei Provincial Education Examination Institute, 2023).

The significance of the undergraduate film and television post-production course lay in the fact that with the development of society and the increasing demand for high-quality films, television post-production has become a key link in improving the aesthetics and viewing experience of films. Through these courses, students could systematically learn and master the theoretical knowledge and practical skills of film and television post-production, including but not limited to video editing, color correction, special effects production, and sound synthesis (Hu Nannan, 2021). The course of film and television post-production was of paramount importance in the film and television industry today. In video production, it was the key link for integrating and optimizing the raw materials obtained in the preliminary shooting, which could integrate scattered shots into a complete, smooth, and logical film, endowing the film with vitality. For video editing and special effects, by operating professional software, one could cut, color, and add various cool special effects to the picture, greatly enhancing the visual impact and artistic appeal of the video, and making the film stand out. In the stage of completing and outputting the post-production, it could ensure that

the film was presented in the appropriate format, resolution, and quality to meet the playback requirements of different platforms. In summary, the course of film and television post-production was an indispensable guarantee for creating high-quality film and television works and had far-reaching significance in promoting the development of the film and television industry (Feng Yanyan, 2017).

The development of economic globalization promotes the progress of science and technology, and human life changes day by day. The increasing number of teaching resources and the improvement of teaching conditions have challenged the traditional teaching model, and they must be closely linked with developing students' activeness. The traditional teaching model has not aroused enough interest and attention. Applying the project-based learning method to video post-production courses cannot only enrich teachers' theoretical research on teaching mode but also bring new ideas and methods for classroom teaching. Yang Liu (2021) stated that real-world problems were complex and difficult to address with knowledge from a single discipline. The project-based learning method broke down barriers between subjects and built bridges for knowledge integration. When students worked on projects, they needed to call on knowledge from multiple disciplines, such as language, math, and science, and link them together. Through this process, students built a comprehensive knowledge system and clarified the logical connections between different disciplines. In the future, when faced with diverse and interdisciplinary real-world problems, they could quickly mobilize knowledge resources and provide suitable solutions. Wang Decai and Jiang Lingyun (2017) pointed out that traditional teaching methods often fell into the limitation of theoretical knowledge transmission, and this tendency was especially evident in the undergraduate film and television post-production course was a discipline with an extremely strong practical nature, and students needed to have advanced practical skills and innovative thinking. Zeng Zhu and Xiao Lan (2017) pointed out that the benefits of applying the project-based learning method to undergraduate film and video post-production courses enhance students' practical operation ability and problem-solving abilities. Students needed to start the material shooting in the early stage, apply the photography skills they had learned, choose suitable shooting equipment, scene setting, and camera language to obtain high-quality raw materials. Entering the post-production stage, they needed to be proficient in professional software such as Adobe Premiere Pro for editing. At the same time, during the project's progress, students were bound to encounter various problems, such as lighting problems during material shooting leading to poor picture quality, or unsatisfactory special effects. Faced with these problems, students had no choice but to actively think, refer to materials, and try different solutions. Fan Xiaotian (2021) emphasized that the key to project-based learning was giving students the power to lead their own learning. Traditional teaching often involved a one-way lecture by the teacher and passive learning by the students. However, project-based learning encouraged students to take the lead in planning their progress, setting goals, and controlling the pace. To advance their projects, they actively searched for information, overcame knowledge gaps, and learned to self-assess and

adjust. This exercise in autonomy could help students become independent thinkers and proactive learners, which was beneficial for long-term learning and personal development.

In summary, the project-based learning method improves teaching conditions and teaching models. The key to project-based learning is giving students the power to lead their own learning, encouraging students to take the lead in planning their progress, setting goals, and controlling the pace. To advance their projects, they actively searched for information, overcame knowledge gaps, and learned to self-assess and adjust. This exercise in autonomy could help students become independent thinkers and proactive learners, which was beneficial for long-term learning and personal development. Furthermore, it can enhance students' cooperation and communication abilities. The project-based learning method is of great significance in the undergraduate film and video post-production course.

Research Objective

1. To use the project-based learning method to improve practice skills of video post-production course of undergraduate students.

2. To compare students' practice skills in video post-production courses before and after implementation based on the project-based learning method.

Research Hypotheses

After implementing the project-based learning method, the students' practice skills in the video post-production course were improved obviously.

Literature review

The problem-based learning is to enhance students' practical operation ability and problem-solving ability. The method encouraged students to take the lead in planning their progress, setting goals, and controlling the pace to advance their projects, and students actively searched for information. The researcher has studied the meaning, significance, and elements of the project-based learning method of many academics, which will be presented in the following:

The significance of the project-based learning method

Fan Xiaotian (2021) emphasized that the key to project-based learning was giving students the power to lead their own learning. Traditional teaching often involved a one-way lecture by the teacher and passive learning by the students. However, project-based learning encouraged students to take the lead in planning their progress, setting goals, and controlling the pace. To advance their projects, they actively searched for information, overcame knowledge gaps, and learned to self-assess and adjust. This exercise in autonomy could help students become independent thinkers and proactive learners, which was beneficial for long-term learning and personal development.

Yang Liu (2021) stated that real-world problems were complex and difficult to address with knowledge from a single discipline. The project-based learning method broke down barriers between subjects and built bridges for knowledge integration. When students worked on projects, they needed to call on knowledge from multiple disciplines, such as language, math, and science, and link them together. Through this process, students built a comprehensive knowledge system and clarified the logical connections between different disciplines. In the future, when faced with diverse and interdisciplinary real-world problems, they could quickly mobilize knowledge resources and provide suitable solutions.

Gao Hongqi (2024) pointed out that project-based learning was often conducted in groups, creating an environment for students to work together. Group members had a common goal and must clearly define their roles based on their strengths to work together effectively. During this process, they exchanged ideas, shared resources, and refined their communication skills. When conflicts arose, they must reasonably negotiate and reach a consensus. Long-term experience in teamwork allowed students to master the process and methods of cooperation, develop a sense of collective identity, and effectively integrate into teams in the future, whether in the workplace or in social activities, to help achieve their goals.

Zhao Qiaoyan (2024) stated that there was a gap between book knowledge and real-world application, and project-based learning effectively filled this gap. Students immersed themselves in projects and faced real-world problems head-on, applying the theoretical knowledge they had learned. Through hands-on experience, they accurately grasped the scope and application of the knowledge they had learned, and tested their learning outcomes; they could also have a direct sense of the practical value of knowledge and overcome the drawbacks of rote learning. This encouraged knowledge internalization and enhanced students' practical skills in solving real-world problems, laying a foundation for their future life and work.

To sum up, the project-based learning method emphasizes the development of autonomous learning skills by giving students the power to learn and allowing them to break away from the passive listening mode. It also effectively promotes the integration of interdisciplinary knowledge, breaking down barriers between subjects, and helping students build a comprehensive knowledge system to tackle complex problems.

The elements of project-based learning method

The project-based learning method is a step-by-step method designed to guide students from perception to creation through a series of careful steps to fully grasp knowledge and develop their practice skills. Project-based learning method includes the following components:

Teng Jun, et al. (2018) pointed out that the seven steps of the project-based learning method included: Step 1: Determining the project theme. Determining the project theme is the first step in project-based learning, which requires careful consideration of various factors. Step 2: Establishing project objectives. The project goals serve as a beacon, guiding the entire project forward, and must be clear, specific,

and measurable. Step 3: Planning the project process. Planning the project workflow is key to efficient project progress, which should be carried out systematically, meticulously, and flexibly. Step 4: Organizing students into groups. Effective grouping is a good way to stimulate team energy. Step 5: Project implementation. The implementation phase is the core stage where the preliminary planning is put into practice, and the roles of teachers and students are more focused in this stage. Step 6: Display and communication. The presentation and exchange session aims to elevate the project outcomes and expand the depth and breadth of learning. Step 7: Evaluation and reflection. Evaluation and reflection are the wrap-up tasks that summarize project experiences and fill in gaps, which are related to the optimization and upgrading of subsequent projects.

Hu Jiayi (2019) paid attention to the seven important aspects of the project-based learning method: Step 1: Selecting the theme. At the beginning of a project, choosing a topic is a crucial first step. Step 2: Setting project objectives. Clearly defining project goals is crucial to project success. Step 3: Designing the project process. When designing a project workflow, consider time planning, task allocation, and resource allocation. Step 4: Organizing students into groups. Grouping students is the foundation for project collaboration. Step 5: Project implementation. Regular progress checks should be conducted to adjust strategies in a timely manner to ensure the project is carried out smoothly. Step 6: Exhibition and interaction. After the project is completed, an exhibition and interactive session will be organized to allow students to showcase their achievements and share their experiences. Step 7: Review and meditation. During the project wrap-up stage, the teacher should organize students to conduct self-evaluation and peer evaluation, reviewing the gains and losses of the project process.

Zhu Chengqi (2023) mentioned that the seven important aspects of the project-based learning method were interrelated, which together constituted a complete teaching system. These seven areas were as follows: Step 1: Determining the project theme. The initial step in launching a project is to identify a clear and captivating theme. Step 2: Establishing project objectives. Once the project theme is established, the next step is to outline specific goals. Step 3: Scheduling the project process. Crafting a comprehensive project timeline is crucial for smooth project progression. Step 4: Assembling students into groups. Effective grouping is vital for enhancing project efficiency and quality. Step 5: Project fulfillment. Regular progress checks should be conducted to promptly identify and resolve issues. Step 6: Display and communication. After project completion, organizing a presentation and exchange event is essential. Step 7: Evaluation and reflection. The evaluation and reflection phase after project completion is crucial for enhancing students' self-awareness and development capabilities.

Liu Jianjun (2023) stated that the project-based learning method was a teaching method aimed at training teachers to practice and reflect on their teaching skills by simulating a real class environment. Step 1: Determining the project theme. Initiating project-based learning begins with meticulously determining the project theme. Step 2:

Setting project objectives. The project goals function as a guiding compass, steering the entire endeavor. They must be precise, well-defined, and measurable. Step 3: Planning the project process. Efficient project progression hinges on meticulous process planning. Step 4: Forming student groups. Effective grouping can harness team synergy. Step 5: Project implementation. The implementation phase is where planning meets action. Step 6: Demonstration and exchange. The session dedicated to presenting and exchanging project outcomes is pivotal for elevating these achievements and broadening the educational experience. Step 7: Critique and contemplation. Evaluation and reflection serve as the culminating phases, encapsulating project insights and identifying areas for improvement, thereby facilitating the refinement and enhancement of future endeavors.

Huang Zhou (2024) stated that the project-based learning method was a kind of teaching method for the purpose of teacher training, which was usually used to cultivate and improve teachers' teaching skills. Project-based learning method consisted of the following seven main components: Step 1: Fixing the theme. Precise themes that align with the curriculum and students' cognitive levels are identified, themes that are related to the key subjects of the curriculum while also considering interest, practicality, and fun. Step 2: Setting project objectives. Stay focused on the topic and break down clear and measurable learning objectives. The objectives should cover knowledge acquisition, skill improvement, and cultivation of dispositions, such as understanding of subject concepts, refinement of practical techniques, and development of critical thinking and autonomous learning ability. Step 3: Planning the project process. Coordinate the various stages of the project, divide them into start, progress, and completion phases, and allocate time accordingly. Step 4: Organizing students into groups. Taking into account students' grades, personalities, and specialties, the groups are divided according to the principle of complementary advantages, with an appropriate number of members in each group. Step 5: Project performance. Students work in groups to carry out the project practice according to the process. Step 6: Display and communication. Set up a dedicated display area or use an online platform for group presentations of project products. Step 7: Evaluation and reflection. Teachers and students evaluate the results based on predetermined standards, scoring on dimensions such as quality of outcomes, teamwork, and individual contributions.

Video post-production course

1. Video production

Video production is essential for laying a solid foundation for any video post-production project. In the age of digital media, video production has become an important means for college students to express their creativity and convey information. Students will learn to conceptualize, plan, and design storyboards, which is crucial in determining the direction of the video production as follows: (1) video camera techniques, (2) composition techniques, (3) video shooting techniques, and (4) storyboarding.

2. Video editing and special effects

Video editing and special effects play a vital role in modern media production, advertising campaigns, film production, television programming, social media content creation, and online education. Video editing and special effects not only enhance the visual experience but also enhance the storytelling and the audience's immersion. The teacher explained the concept of video editing and special effects and demonstrated (1) Material arrangement and management, (2) Video editing and splicing (3) 3D special effects, and (4) Post special effects.

3. Post-production finishing and output

Project-based learning method plays a significant role in improving college students' post-production completion and output. It can not only enhance students' practical ability and project experience, promote team cooperation and communication skills, cultivate innovative thinking and problem-solving skills, but also improve time management and work efficiency, broaden knowledge and maintain learning motivation. Therefore, colleges and universities should actively promote project-based learning methods in the teaching of film and television post-production and other related majors, so as to cultivate more excellent post-production talents.

The teacher explained the concept of post-production finishing and output as follows: (1) Text addition; (2) Sound processing; (3) Preview and correction; and (4) Export and distribution.

Research Methodology

The population

There were 60 freshmen students, majoring in fine arts with 2 classes from Chongqing Vocational College of Media, Chongqing City, China, in the second semester of the academic year 2023. (There were mixed abilities in each class: high level, medium level, and low level.)

The sample group

Through a cluster random sampling, there were 30 freshmen students, majoring in fine arts with 1 class from Chongqing Vocational College of Media, Chongqing City, China, in the second semester of the academic year 2023.

Research Instrument

Using the project-based learning method to improve practice skills of video post-production course of undergraduate students.

1. Lesson plan based on project-based learning method

1.1 Study the proposal of practice skill of video post-production course to serve as a guideline for developing the lesson plan in this research and study guidelines for teaching based on project-based learning method from many academics: Teng Jun, et al. (2018), Hu Jiayi (2019), Zhu Chengqi (2023), Liu Jianjun (2023), and Huang Zhou (2024) to design details in the teaching method.

1.2 Create 3 lesson plans on the subject. Unit 1: Video production (11 hours); Unit 2: Video editing and special effects (11 hours); and Unit 3: Post-production

finishing and output (11 hours). By designing lesson plans using the project-based learning method, each lesson plan specified the details of the topics as follows: 1) Determining the project theme, 2) Setting project objectives, 3) Planning the project process, 4) Organizing students into groups, 5) Project implementation, 6) Display and communication, and 7) Evaluation and reflection.

1.3 Following the revision of the lesson plans, the researcher had them reviewed by 3 experts to confirm the accuracy of the content and the comprehensiveness of the plans. Additionally, the Index of Item Objective Congruence (IOC) was calculated, and the result of the lesson plans had an IOC=1.00 for all contents.

2. Practice skills test of video post-production course

The video post-production course uses the project-based learning method to improve the practice skills of the video post-production course of undergraduate students: 1) Video production: video camera techniques, composition techniques, video shooting techniques, and storyboarding. 2) Video editing and special effects: material arrangement and management, video editing and splicing, 3D special effects, and post-special effects. 3) Post-production finishing and output: text addition, sound processing, preview and correction, and export and distribution. The researcher created the multiple-choice test to evaluate students' understanding concept of each content and performance assessment for students' practice skills. The steps in creating and determining the quality of the practice skills test are as follows:

2.1 Multiple-choice test

2.1.1 Study the theory about how to create multiple-choice questions for the concept knowledge of each content were 1) Video production, 2) Video editing and special effects, and 3) Post-production finishing and output, which were totally 30 items to measure the concept knowledge of video post-production course of undergraduate students. The scoring criteria are 1 point for a correct answer and 0 point for a wrong answer.

2.1.2 Improve and revise items test that have been verified by experts. Then took it to try out with students who were not a sample group of 30 freshmen students to calculate the quality of the test. The difficulty value (p) was selected in the range 0.20–0.80 and discrimination power (r) was selected in the range 0.20–1.00 (Landis, J. R., & Koch, G. G. 1977). The results of the quality analysis of the questions found that there were 30 questions: 1) video production, there were 11 questions (p=0.57-0.80, r=0.20-0.53), 2) video editing and special effects, there were 9 questions (p=0.37-0.77, r=0.20-0.80), and 3) post-production finishing and output, there were 10 questions (p= 0.33-0.80, r= 0.20-0.73). And reliability of the test by Kuder Richardson's method (KR-20) at 0.94.

2.2 Performance assessment of video post-production course

Procedures for creating the performance assessment, which is a practical test, included 3 contents and 19 items with steps to create and find quality as follows:

2.2.1 Studied the theory, principles, and methods of performance assessment from documents, textbooks, and created the performance assessment by authentic assessments on 3 criterial of score: Good (3), Medium (2) and Low (1) for

practice skills: 1) Video production, 2) Video editing and special effects, and 3) Post-production finishing and output.

2.2.2 The performance assessment criteria are submitted to three experts for measurement and examination. These experts conduct a check on the content validity and work out the Index of Item Objective Congruence (IOC). The result found that at 1.00 for all questions. Then took it to try out with 30 students who were not a sample group and calculated the quality of confidence values in performance assessment analysis the reliability by Cronbach's Coefficient Alpha method at 0.77.

Data Collection

This research was experimental research according to the group pretest and posttest design, the data collection is as follows:

1. Organize a test prior to the start of the experiment to learn how students learn to evaluate student role learning objectives and the benefits of participating in practice skill tests and learning activities during the experiment.

2. Test before teaching (Pretest) with 30 freshmen students, which was a sample group, and check the score record to analyze the data.

3. The course is divided into 3 units, a total of 33 hours, and the study period was from July 2023 to December 2024.

4. Test after teaching (Posttest) with 30 freshmen students, which was a sample group, and check the score record for further data analysis.

Research Results

The purpose of the research were 1) to use project-based learning methods to improve the practice skills of video post-production courses of undergraduate students, and 2) to compare students' practice skills of video post-production courses before and after implementation based on project-based learning method.

1. Using project-based learning method can improve the practice skill of the video post-production course. The researcher has studied the information base on project-based learning method synthesized into 7 steps to improve practice skills: 1) Determining the project theme, 2) Setting project objectives, 3) Planning the project process, 4) Organizing students into groups, 5) Project implementation, 6) Display and communication, and 7) Evaluation and reflection. Quality analysis of lesson plans by 3 experts, shown that the overall results were most suitable. After sample group students have learned according to the lesson plans the result showed that, the practice skills score of video post-production course before and after using project-based learning method, the average score before learning was 35.13, the average score after learning was 61.23. The scores after learning were higher than those before learning. It shows that teaching by using the project-based learning method could improve students' scores of practice skills in the video post-production course.

2. The comparison of students' practice skills of video post-production course before and after the implementation based on the project-based learning method to analyze the data using average statistics, standard deviation, and t-test for dependent samples which the data analysis results are shown in Table 1.

Table 1 The comparison of students' practice skills scores of video post-production courses before and after implementation based on project-based learning method.

Practice skills	Testing	n	Full score	$\bar{X}$	SD.	df	t	p
Video production	pretest	30	35	14.23	1.55	29	25.83**	.00
	posttest	30	35	23.80	1.58			
Video editing special effects	pretest	30	27	11.47	1.41	29	28.46**	.00
	posttest	30	27	19.53	1.11			
Finishing and output	pretest	30	25	9.43	1.70	29	22.47**	.00
	posttest	30	25	17.90	1.71			
Total	pretest	30	87	35.13	3.03	29	37.53**	.00
	posttest	30	87	61.23	3.04			

**p≤.01

From Table 1, the result indicated that the scores on practice skills of students after learning were higher than before learning statistically significant at the level .01. When considering the results of data analysis classified by contents. The result found that the practice skills score of students after learning is higher than before learning statistically significant at the level .01 for all contents. Therefore, learning by using the project-based learning method could improve students' practice skills of video post-production courses.

Research Discussion

The research resulted from using the project-based learning method to improve the practice skills of the video post-production course on 30 freshmen students from Chongqing Vocational College of Media, China. The researcher could be discussed as follows:

1. The improvement of practice skills by using project-based learning method. The researcher studied documents and related research on project-based learning method theory from many researchers and synthesized them into 7 steps which were used for 3 lesson plans. The practice skills score of video post-production course before and after using project-based learning method, the average score before learning was 35.13, the average score after learning was 61.23. The scores after learning were higher than those before learning. It's because the project-based learning method was very important to practical operation and problem-solving, this is because project-based learning as a learning approach based on experience. Students acquired knowledge and skills through hands-on activities and personal experiences while working on projects. He emphasized the close connection between education and life, and project-based learning was a way to simulate real-life situations, allowing students to understand the practical uses of knowledge while solving real-world problems and developing their practical skills and sense of social responsibility (Chen Hui, 2015). It's consistent with

Zeng Zhu & Xiao Lan (2017) pointed out that the benefits of applying project-based learning method to the undergraduate film and video post-production course enhance students' practical operation ability and problem-solving ability. And consistent with Lin Jie (2022) project-based learning as a collaborative learning experience, students worked in groups to complete projects, during which they communicated with each other, divided tasks, and take responsibility for the results of the project together. This learning method could cultivate students' teamwork spirit, communication skills, and leadership abilities. Because of this, during the project implementation process, faced with the challenges of lighting and composition in shooting and the complex tasks of material selection, editing rhythm, and special effects synthesis in post-production, students must actively learn and apply various professional knowledge and software tools, thereby effectively improving their film and television post-production practical skills. At the same time, in the display and exchange, evaluation and reflection stages, students can gain new inspiration from others' works and opinions and continuously improve their work.

2. The comparison of students' practice skills before and after the implementation based on project-based learning method. The result indicated that the scores on practice skills of students after learning were higher than before learning statistically significant at the level .01. It's consistent with Han Hongyang (2015) application of project-based teaching method in film and video post-production course, which selected 70 undergraduates and divided them into two groups, with 35 students in each group. The experimental group adopted a project-based learning approach, with the theme of "Science Fiction Microfilm Special Effects Production." Students formed teams to draft scripts, apply special effects, and fine-tune videos. The control group continued to receive conventional classroom instruction. Before and after the teaching, both groups completed the same type of short film. A professional team scored the films based on the dimensions of visual effects, editing fluidity, and creativity. The scores of the experimental group's scores significantly improved after the teaching, with a $P<0.05$. In contrast, the mean value of the control group changed minimally, highlighting the outstanding effect of the project-based learning method on improving teaching quality. Qiu Ping (2016) pointed out that this teaching case involved 80 undergraduates who were randomly divided into an experimental group and a control group, with 40 students in each group. The experimental group adopted a project-based learning approach, focusing on the "post-production of urban promotional short videos" project. Teachers provided guidance throughout the process and regularly organized showcases and exchanges of achievements. The control group followed the traditional theoretical teaching model. Before and after the teaching, students in both groups made urban-themed short videos. Professionals were invited to score them based on dimensions such as picture quality, editing logic, and output effects. The results showed that the average score of the experimental group significantly improved, while the analysis of variance indicated that the teaching effect was remarkable; the scores of the control group showed little fluctuation, highlighting the advantages of project-based learning.

And consistent with Han Lin (2024) the project-based learning emphasizes driving learning with real projects, allowing students to learn by doing and actively acquire and integrate knowledge, deeply tapping into the technical potential. Two classes of 40 students from the same grade and with similar computer foundation were selected. One class was designated as the experimental group, while the other was the control group. The post-test data statistics showed that the average score of the experimental group was 85, while the average score of the control group was 70. The results of the independent sample t-test showed that the t value satisfied $p < 0.05$, indicating that there was a significant difference in computer-assisted deep learning ability between the experimental group and the control group, and the students' ability in the experimental group was significantly improved, verifying the advantages of the project-based learning method.

In summary, the project-based learning was integration of knowledge from multiple fields, prompting students to integrate what they have learned, effectively train their problem-solving ability and creative thinking, enabling them to better cope with the complex and changing actual situation. In addition, collaborating in groups to complete projects helps to cultivate students' team spirit and communication and interpersonal skills, making them better adapt to future work scenarios.

Research Suggestion

General recommendation

1. Design project themes and processes carefully, the project theme should be closely related to the hot topics and actual needs of the film and television industry, including the stages of preliminary planning, material collection, editing and synthesis, special effects addition, and post-production debugging. Clearly define the students' learning objectives and tasks at each stage and guide them to gradually master the skills of film and television post-production.

2. Strengthen team collaboration and communication mechanisms. Divide students into groups to work on projects, with group size limited to 4-6 people, and ensure that members have complementary skills. Set up regular group discussion meetings, where students report on project progress, and share problems encountered and solutions. Encourage team members to evaluate each other's work and offer constructive feedback.

3. The evaluation system should cover team collaboration evaluation focuses on the degree of coordination between team members and the rationality of their roles. The personal growth evaluation evaluates the students' skill improvement and problem-solving ability during the project process.

Suggestions for future research

1. Expand project dimensions by integrating cutting-edge technologies to stay up-to-date with emerging technologies in the film and television industry, such as virtual reality (VR), augmented reality (AR), and artificial intelligence-assisted editing using project-based learning.

2. Study cross-disciplinary collaboration enriches the post-production course in film and television and other disciplines, such as collaborating with computer science to optimize film rendering projects using project-based learning.

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