Application of VR virtual reality in film and television post-production

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Abstract. In recent years, VR virtual reality has gradually become a hot topic in society. As a medium integrating computer technology, imaging technology and human-computer interaction technology, VR virtual reality brings both a new interactive narrative method in the evolution of media and New means of communication in the era of text change. The purpose of this article is to analyze the current situation of the application of VR virtual reality in film and television post-production, and analyze the predicament of VR virtual reality in film and television post-production in order to help film and television post-production. In this paper, through a questionnaire survey and random selection of 50 students for digital image synthesis majors who have participated in digital film and television special effects production in a university, the survey results are collated and analyzed. 94.69% of students believe that VR virtual reality is in film and television post-production. The application makes the work more colorful. The application of VR virtual reality technology in the late stage of film and television has promoted the development of diversified creation and the development of film and television post production. At the same time, the application of VR virtual reality technology has improved the efficiency of film and television production, reduced the cost of physical setting, and saved resources.

Keywords: VR Virtual Reality, Film and Television Art, Post Production, Film and Television Works

1. Introduction

With the good word-of-mouth and display effects achieved by the broadcast of some science fiction movies around the world, people have begun to apply modern technologies such as IMAX and 4K to the production of film and television[1]. Among them, the emergence of VR virtual technology has also officially become a new entry point for film and television art application technology after 3D technology. Many well-known film and television companies apply VR virtual technology in film and television production, which fully reflects the development prospects of VR virtual technology [2]. In the exploration of VR image production and the corresponding industry talents, some domestic and foreign companies and universities have taken the lead in the industry. Although many Chinese film and television production companies use VR virtual technology, the application of VR in film is still
in the state of exploration and development [3]. Throughout the history of film development, film art and technology are closely linked. The development of virtual reality in the film field has created the glory of contemporary film. The combination of virtual reality technology and film art has changed the form and nature of film images, thereby affecting the artistic effect of films [4-5]. With the advent of the digital age, more and more films are using VR in the production process of movies, especially in surreal movies such as science fiction and magic. Virtual reality technology has made movies have an unprecedented shocking effect on the audience in terms of audiovisual experience, and even to a certain extent is more imaginative and artistically appealing than traditional movies [6]. However, compared with Hollywood in the United States, the level of industrialization of domestic films is relatively backward, and the technological innovation and application capabilities are obviously insufficient. The full advantages of virtual reality technology have not been fully utilized.

This paper analyzes the current situation and dilemma of the application of VR virtual reality in film and television post-production by conducting a questionnaire survey and randomly selecting 50 students for digital image synthesis majors who have participated in digital film special effects in a university. It is concluded that the application of VR virtual reality in film and television post-production has made the film and television industry to diversify the creation of works, further promote the development of film and television post-production, and improve the overall level of post-production. At the same time, the application of VR technology improves the efficiency of film, reduces the cost of real scene setting, and saves resources.

2. Method

2.1 VR Virtual Reality Technology

VR technology is a three-dimensional virtual environment built using computer technology. This technology can make movies, animations, and games into three-dimensional, so that the user experience will be improved. Users can have an immersive feel to movies and games [7-8]. Not only that, VR virtual reality technology can also make different changes in sound. Under the technology that realizes visual 3D, the sound also achieves 3D effects. The surrounding sound also has a 3D feel. With the support of such technology, users are very fond of film and television works processed by VR virtual reality technology, which also indirectly makes animation and digital imaging in colleges and universities. The synthesis profession has paid more and more attention to VR technology in the post-production of film and television [9]. In fact, VR virtual reality technology actually increases the human-computer interaction experience, making users more and more realistic about using machines, watching movies and playing games with an immersive feeling, such technology not only aroused people's interest in movie games and other activities can also make movie special effects and game feel more cool [10]. All in all, the emergence of VR virtual reality technology has directly subverted people's views on a series of activities such as watching movies and playing games. The previous activities were just the users watching, but the current activities are the users' feelings. Such an experience is deeply loved by people [11].

The application of VR virtual reality technology is very extensive. In addition to film post-production and 3D effects of games in the film and television industry, there are also some commonly used applications, such as virtual test makeup and dress-up applications on some shopping apps [12]. The Real Estate Chamber of Commerce applies VR virtual reality technology to simulate real estate for customers to experience. VR virtual reality technology is directly developed into the scientific field. For example, in the medical field, the human body can be simulated and allowed to be observed by medical experts. In the aerospace field, VR technology can simulate the appearance of space for scientists to study. These are the applications of VR technology. Of course, the application of this technology is far more than that, there are more applications that provide a better environment for our lives [13].

2.2 Film and Television Post Production
The post-production work of film is mainly to process the various materials that have been shot using unique technology, and cut multiple shots together into a complete film[14]. In the production of film, post-production plays a vital role. It integrates the pre-production and improves the work efficiency to ensure the quality of film and television works. The post-production of film and television needs to wait for the completion of film and television production, and then use the computer production software to complete the editing and processing of the film [15]. Film and television post-production is a relatively complicated link, which involves a lot of production processes. Use film and television post-production to add a few special effects, and edit and piece together the previously filmed video clips to finally present a complete film and television work. The main steps of film and television post-production can be divided into the following three points:

(1) Editing of the lens

In the post-production of film and television works, the editing of the lens is the most basic. This part of the work is to get the various shots in the film and television works to be clipped and then pieced together, so that the lenses in the film and television works have a rough arrangement. Drawing on the guidance of film producers, getting regular cuts of film and television productions, and then reorganizing them, arranging the shots with no central idea or order at first into a logical, orderly and organized Storytelling footage. There are many forms of editing, which are not listed here one by one. The director's ideas have a direct bearing on the pros and cons of a film and television work, and of course the editor's skills are also very important.

(2) Sound editing

An important component of film and television works is sound. In the post-production process, the sound should be processed while editing the lens, such as soundtrack and dubbing. At present, there are two kinds of dubbing methods. First, simultaneous recording, and when editing the sound later, the edited sound should match the edited picture, so that the dubbing can be complete and synchronized with the story picture and development in the work; Second, post-dubbing. This kind of dubbing does not require too much technical content. Usually, the lens is cut first and then dubbed by the dubbing staff. In the later stage, only the volume needs to be simply adjusted. The soundtrack of an excellent film and television work is often more attractive. It needs to be combined with the theme of the story to render the atmosphere of the entire play, and it will help to create a situation.

(3) Synthesis of special effects

In the post-production of film, a very important environment is the production of special effects. The development of special effects has a long history. Currently widely used is a film and television production technology that is gradually moving towards high-end. In the production process, in order to achieve the ideal artistic effect, some advanced special effects technology must be used, so 3D technology appears more and more frequently. At present, 3D technology is widely used in various film and television works. VR virtual reality technology is a three-dimensional virtual environment built using computer technology. This technology can make movies and animations into three-dimensional, give users a immersive feeling, and let the audience have a better viewing experience.

3. Experiment

Film and television post-production is one of the compulsory courses in animation production and design, digital media and other majors. Based on this background, the questionnaire surveyed in this article is for students who have participated in digital image synthesis majors in digital film in a university. A total of 136 questionnaires were distributed in this questionnaire, and 125 questionnaires were recovered, with a recovery rate of 91.91%. After screening and rejection of unqualified questionnaires, 113 valid questionnaires were used, and the effective rate was 90.4%. Then, 50 students were selected for interviews and interviews. The questionnaire relates to the status quo survey of VR virtual reality in film and television post-production. The content of the questionnaire survey mainly includes whether the virtual reality technology is helpful for shaping the role and the atmosphere of the scene, the technical advantages of virtual reality technology in film and television.
production, and the problems existing. The data of the questionnaire survey was compiled and recorded, and analyzed. According to the analysis of the problems and deficiencies in the current VR virtual reality in the application, it is better to propose solutions and constructive suggestions.

4. Discuss

4.1 Experimental Results and Analysis

Through the questionnaire survey of students who have participated in digital image synthesis majors in the special effects production of digital film and television, the results of the questionnaire are sorted and classified. The current status and problems of VR virtual reality in film and television post-production can be obtained, as shown in Table 1 and Figure 1.

**Table 1.** Survey results of VR virtual reality in film and television post-production

| Content                                                                 | Identify | Disagree | Percentage |
|------------------------------------------------------------------------|----------|----------|------------|
| VR virtual reality to the shaping of the characters for help           | 109      | 4        | 96.46%     |
| VR virtual reality is helpful to the atmosphere of the scene           | 111      | 2        | 98.23%     |
| VR virtual reality is not affected by the weather, light and other effects, improving production efficiency | 92       | 21       | 81.42%     |
| VR virtual reality reduced film and television production costs       | 97       | 16       | 85.84%     |
| The application of VR in post production makes the works more colorful | 107      | 6        | 94.69%     |

**Figure 1.** Questionnaire survey results of VR virtual reality in film and television post-production

As can be seen from Figure 1, 81.42% of students believe that VR virtual reality is not affected by weather and light, which improves the efficiency of post-production; 85.84% of students believe that the application of VR virtual reality has saved the cost of film and television production; 96.46% of students think that VR virtual reality is helpful for character formation; 98.23% of students think that VR virtual reality has an effect on the setting of the scene atmosphere; 94.69% of students believe that
the application of VR virtual reality in film makes the work more colorful.

4.2 Status Quo of VR Virtual Reality Application in Film and Television Post Production
(1) VR virtual reality improves film efficiency

The design of VR virtual scene and the application of virtual shooting system have greatly improved the shooting efficiency, saved the crew transition time, and the shooting is not affected by weather and light, which shortens the shooting cycle. In addition, the creative space for post-production has been increased. The virtual scene can be adjusted later, which changes the traditional “shoot-and-make” mode. Although the post-production workload has increased relatively, using “post-front” can also compress The post-production process can save the time of the virtual camera tracking and matching. At the same time, the on-site shooting departments can monitor the pre-compositing screen in real time to avoid scheduling confusion.

(2) VR virtual reality technology reduces movie production costs

The use of VR virtual reality technology to design virtual movie scenes can greatly save the material costs and labor costs of real scene scenes, and save resources. Because the physical setting is generally not recyclable, it is often demolished after shooting, which wastes resources and is not conducive to environmental protection. The virtual movie scene saves the achievement of physical setting.

(3) Problems in VR post-production in film and television

The design of VR virtual scenes and the application of the virtual preview shooting system have increased the technical staff of on-site shooting to a certain extent, which is relatively more complicated and demanding than the traditional shooting process, and the cost of post-production will also increase. However, as a whole, the production cost is reduced, but it is not suitable for all types of film and television production. VR virtual reality technology should be combined with the needs of the film itself, do not use VR technology as a gimmick for film and television. Only with a reasonable fusion of art and technology can VR virtual reality technology develop and progress in the film and television industry.

5. Conclusion

The main purpose of the production of film is to present an exquisite film and television work to the audience, so that the audience's demand for film and television work is fully satisfied. The application of VR virtual reality in film and television post-production has made the film and television industry to diversify the creation of works, further promote the development of film and television post-production, and improve the overall level of post-production. Although the bottleneck of VR virtual reality in film and television post-production still exists, its advantages are also quite obvious. It improves the efficiency of film and television production, saves the setting cost, and avoids waste of resources. As long as the reasonable integration of art and technology, and according to the needs of the film itself, VR virtual reality technology can get better development and progress in the film and television industry.

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