Discussion on the Application of Virtual Reality Technology in Dance Teaching

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Abstract: *This paper advancing dances the purpose of education informatization from the promotion of education reform which introduces the domestic and international dance and related areas of the development of virtual reality teaching system. Now, dance teaching of virtual reality system development in its infancy field for us to provide the reference and examples. On this basis, the paper discusses the use requirements, function requirements and composition requirements of the virtual reality system for dance teaching, and prospects the future development of the virtual reality system for dance teaching.*

Keywords: *Virtual reality; Dance teaching; Motor skills*

1. Introduction

Virtual reality technology refers to a multi-source information fusion, interactive three-dimensional dynamic vision and entity behavior system, it can simulate the scene of the real world in the computer, users immersed in the environment. Although the virtual reality technology has not been widely promoted and applied in China at present, as a means to assist the dance, the virtual reality technology is not a novel thing in foreign countries. [1]Dance itself is a highly comprehensive and practical art, which can depict the image of dance by using music, props, lighting, choreography and other aspects. The intervention of virtual reality technology has assisted the art of dance very well.

2. The advantages of virtual reality technology applied in dance teaching

Virtual reality technology can also be used for dance teaching. Dance in the teaching is a practical stronger operation discipline, in teaching of traditional dance dance educators more or in the use of "oral" approach to teaching, though multimedia teaching because of its can the text, pictures, music, video, animation, etc together, but now still dominated by the teacher of dance teaching "oral teaching". Virtual reality technology is to break the form, let learners to be able to play to the subjective initiative in class, let the student is no longer simply to imitate the teacher action during the dance class, but at the same time of learning, imitation action can absorb and digest the dance movements convey the message, signal, and learn to use in the learning and performance in the future and innovation. The author believes that in the next generation of dance teaching, the most important auxiliary teaching means is likely to be virtual reality technology, because virtual reality technology has the following advantages:

Firstly, virtual reality technology allows learners to accept new knowledge essentials in the classroom. Virtual reality technology can use a very realistic effect to confuse our visual nerve, so that we are immersed in a self-centered virtual reality environment, it is difficult to distinguish the true and false, this is the immersion of virtual reality technology (sense of presence). It allows learners to immerse themselves in the virtual environment when they are learning a dance drama or drama, immerse themselves wholeheartedly in it, and truly feel the tiny and subtle changes in the virtual reality world. More easily so that students in learning to dance movements play to their initiative and enthusiasm, also greatly shorten the time to study, at the same time, it also can make the learners to understand better the dance, a comprehensive understanding of this dance or play, on the stage can be better and more correctly expresses the artistic conception and objective of the dance. [2]

Secondly, virtual reality technology can make learners find their own shortcomings in a more comprehensive way. In dance teaching, through the application of virtual reality technology, can display in virtual reality technology will be a professional dancer and learners, both the virtual image of

the different perspectives of the dance movements of multi-faceted free switch, and the action to the overlap, it is easier to let teachers and learners to find existing problems, Correct mistakes and shortcomings more quickly. Virtual reality technology can train dancers' creative ability. A good dance is inseparable from the choreography of dance movements. The choreography of dance movements requires imagination, inspiration and practice. It is very difficult to complete these three at the same time, but virtual reality technology can make these three at the same time. The impromptu dance in dance teaching can be used to virtual any scene with virtual reality technology, so that learners can start to feel the things in the virtual scene after being immersed in it and express the artistic conception of the virtual world with the dance movements they have learned. Virtual reality technology can also use music, design, animation, constantly to stimulate the learners' senses, such as the learner's brain is in a state of euphoria, this situation not only arouse their interest in learning, thinking flexibility, expand thought of the play, for cultivating the creative ability to dance laid a good foundation.

3. Virtual reality applied dance teaching status quo

Virtual reality system can give feedback to participants' actions, so that participants can have an immersive feeling in the virtual world, so it has been applied to the simulation practice in the field of action training for a long time. There is a great similarity between movement training and dance teaching. The development of virtual reality system in the field of movement training started earlier, which lays a foundation for the development of virtual reality system used in dance teaching. Therefore, the author firstly briefly combs the virtual reality practice in the field of movement training.

R. Sidharta and C. Cruz-Neira have designed virtual systems that allow participants to box virtual opponents; Zhenyu Yang and others at the University of Illinois presented their virtual ballroom dancing system at the Acm International Conference on Multimedia. When motion capture technology is introduced into virtual reality application design, the level of human-computer interaction has been greatly improved, because some game elements can be introduced into virtual reality system, and participants can get more fun in human-computer action interaction. Some virtual reality applications aim to replace the traditional teacher-student teaching method with new movement training methods.[3]With the application of motion capture technology, the computer system can track the movement trajectory of learners and supervise and correct it.

CAI Pingtao et al. designed a virtual reality system for tai chi movement training. The system will generate virtual images of tai chi coaches and learners, and learners can observe the images of the coaches and imitate the movements until their virtual images in the system are consistent with the movements of the coaches. Masahiko Komura and others have designed military training systems based on motion capture technology, in which users wear helmets and engage in offensive and defensive drills with virtual instructors. The system will alert users to ineffective defenses, evaluate their defensive actions and measures taken before they are attacked. The research group's experiment shows that some recruits after the virtual reality system training, in the attack and defense training has obvious progress. This suggests that the feedback information of virtual system can play a facilitating role in motor learning. The above virtual reality practice in the field of movement training has made early attempts in the aspects of teaching methods, human-computer interaction methods and technical implementation methods, which has laid a certain foundation for the development and design of virtual reality system applied to dance teaching both in concept and technology.

At present, the practice of using virtual reality system in dance teaching in China has just started, and the development of the system is not specifically aimed at dance teaching, but has multiple functions such as choreography and dance production. In addition, the development practice of virtual reality system for a particular style of dance has become the characteristics of this field of research in China. Garrel virtual dance of the visual simulation through Laban dance spectrum analysis of the dance moves get movement to the corresponding two-dimensional data, and then through the computer to edit, dance moves to build a 3 d virtual human body model and the movement to the virtual library, and in the Open GL as a platform to realize the dance scene and role model design. Virtual dance simulation visual system has a variety of functions, which can be used in the field of dance choreography and dance production. Users can play the choreographed dance in the way of 3D animation. The computer aided teaching of dance specialty can also be carried out on the basis of virtual dance simulation visual system. On the basis of Laban force effect analysis and space analysis, xu Yi's 3D dance virtual visualization system collects information about dance movements and forms virtual dance images. Users can use the system to choreograph or learn dance movements according to

their own needs. Users can also set the number and costumes of the virtual dance image, the music and scene selected for the dance, and even the expression of the dance image according to their needs.

The 3D dance virtualization and visualization system mainly focuses on the application design of dance choreography. Although it has the function of computer-aided dance teaching, its function is relatively simple. Guo Jin et al. used dance virtual reality technology in the research process of realizing robot dance. The research group first analyzed the rules and methods of robot dance movements in the computer system, and established the key frame database of dance movements. Based on this, the simulation model of 3D virtual human skeleton dance was constructed, and the robot dance movements were simulated. Then the transition function of dance key frame is used to experiment the transition and smoothness of robot dance. In this experiment, NOBODY robot dance video is used to realize the dance animation of 3D virtual human skeleton model. Chen Qixiang et al. 's research on dance movement virtual simulation for chime music and dance focused on the development and research of the virtual system of chime music and dance movement based on the analysis of movement style of chime music and dance, in order to provide a basis for the development of choreography system of chime music and dance movement database.

4. The application strategy of virtual reality technology in dance teaching

4.1 Interactive strategies of virtual reality technology in dance teaching

Since dance teaching is very practical and requires high initiative in teaching, the slight changes of teachers' expressions and movements will have a great impact on students when they practice dance movements. Through the application of virtual reality technology, not only can make these students who have the foundation of dance can conduct dance training without being affected by the outside world, but also help to improve the attention of students in the learning and training of dance movements, so that students can master dance movements faster.

For dance classes, one of the most important is to stimulate students interest in dance, enable students to love dance, and virtual reality technology, on the other can provide real-time and convenient interaction experience for students, so that the students can motivate to learn dancing in the interaction experience of interest, and help the student to the basic dance movements with repeated practice. At the same time, students can use virtual reality technology to feed back their dance movement information to the system, which will correct the dance movements, find out the problems of students' dance movements, and display them, so that students can adjust their movements according to the standard dance movements. Of course, the virtual reality technology to meet the requirements of the above student's interaction, must have its own real-time interactive function, and the need to use computer equipment to produce large amounts of data in the process of teaching information processing, so as to avoid the happening of the delay in dance teaching, otherwise will inevitably because of the delay that dance class student learning is affected, And reduce the students' interest in learning dance, so that the effect of dance teaching is greatly reduced.

4.2 Dance teaching to virtual reality technology function strategy

The function of virtual reality technology is to improve the quality of dance teaching. Only by ensuring the perfect and diversified functions of virtual reality technology can it be better applied in dance teaching. Generally speaking, the application of virtual reality technology in dance teaching should have the following functions. One is the demonstration function. When students are learning dance, they need to demonstrate dance movements through virtual reality technology, which is undoubtedly one of the most basic functions of virtual reality technology. Teachers can input the dance to be taught into the system through Opell GI in virtual reality technology, and then make 3D animation of dance movements through the dance movement database in the system, so that students can observe the dance to be learned through virtual reality technology. At the same time, it can also demonstrate the dance that needs to be learned from different angles and speeds. Secondly, motion capture function, the function to the student in the dance practice action to capture, then find out the shortcomings and defects that exist in the students dance moves, the virtual reality technology by motion capture function to the student's dance moves compared with standard dance moves, and find out the difference, then feedback to the student, So that students' learning effect has been significantly improved. The third is the feedback function. Virtual reality technology can feedback students' learning behavior through a variety of ways and put forward guidance programs. Virtual reality

technology can observe students' dance movements, find out the differences and mark them in red, and then carry out statistics and calculation, and objectively and accurately evaluate students' dance practice.

4.3 Dance teaching to virtual reality technology composition strategy

In the application of virtual reality technology in dance teaching, in order to achieve the above interactive and functional requirements, it is necessary to clarify the four components of virtual reality system, which are motion matching system, motion capture system, THREE-DIMENSIONAL mapping system and dance movement database. The movement matching system will match and compare the students' dance movements with the standard movements in the dance movement database. The motion capture system can capture students' dance movements quickly and in real time. The 3D mapping system can construct the 3D model of the dance movement information that needs to be learned, so as to form the dance animation that can be demonstrated, repeated, adjustable and visualized. In the dance movement database, there are a lot of standard dance movements.

5. Conclusion

In a word, the application degree of virtual reality technology in dance teaching in China is still low at the present stage, and the research and development of virtual reality technology still need to be further improved. In contrast, foreign countries attach great importance to the research of virtual reality technology, and have achieved very ideal results in some fields. There is still a big gap between China and foreign countries in the application of virtual reality technology. Therefore, China must be highly attention to the virtual reality technology, through the continuous research and development and application of virtual reality technology, virtual reality technology to enrich the function in the dance teaching, enhance the students' learning experience dance, in the near future, the application of virtual reality technology in the dance teaching advantages will gradually emerge.

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