



Application of Computer Virtual Simulation Technology in Experimental Teaching of Journalism—Take the First-Class Course Fusion Report as an Example

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Abstract. Computer virtual simulation is a technology that uses computer to create and simulate real activities. Virtual simulation experiment teaching is a system platform which uses computer hardware and software to create various virtual reality to simulate the real environment, so that students can operate, verify, design and run in the virtual environment. The immersion and interactivity of teaching activities can be realized through a variety of media means. Virtual simulation technology is not only a new teaching method and means, but also the basic technology of intelligent education, which can improve learning efficiency and learners' subjective initiative. Taking the first-class course Fusion Report in Hubei Province in 2021 as an example, this paper analyzes the application of computer virtual simulation technology in experimental teaching of journalism, as well as the architecture and operation of virtual simulation experimental teaching management platform.

Keywords: Computer · Virtual simulation technology · Experimental teaching · Fusion reporting

1 Computer Virtual Simulation Technology and Its Characteristics

Computer virtual simulation technology is based on computer, multimedia, virtual reality and network communication technology, which combines virtual reality technology with simulation technology. Virtual simulation technology aims to build a unified and complete virtual environment of the whole system, and to integrate and control a large number of simulators, other virtual simulation systems, as well as simple mathematical models and other entities. These entities interact with the virtual environment to present the real characteristics of the objective world [1].

Virtual simulation technology has four characteristics:

1.1 Immersion

Depending on the type of virtual simulation system, users can get visual, auditory and tactile sensations, and even taste and smell. At the same time, users put into the virtual

environment to manipulate data variables, can observe the phenomenon that is impossible to observe in real life, such as the scene of flood disaster, major fire accident report site. This observation is impressive and creates a feeling of being there and being immersed in it.

1.2 Interaction

Users can perform various operations on virtual simulated objects and receive real-time feedback. For example, when users operate virtual cameras, microphones and other interview equipment with their hands, their hands can feel the quality and movement of the interview equipment, and even the operation of each part of the equipment. In addition, through the operation of the device, the user can talk with the virtual character, change their position and action, and realize the whole process and multi-object interaction.

1.3 Imagination

Imagination has two aspects. On the one hand, virtual scenes and characters are designed through human imagination. Although the real world is used as a reference, reasonable imagination and design should be carried out on this basis to simulate virtual scenes. On the other hand, when users are immersed in the virtual environment, they are bound to interact with the virtual scenes and characters. The multidimensional experience inspires people's rich imagination and breaks the limitation of the original thinking of users.

1.4 Intelligence

It refers to the intelligence factor of VR system. Objects in the virtual environment have the abilities of cognition, reasoning and decision making. They are the combination of artificial intelligence, artificial life technology and VR, showing that people's various feelings in the virtual environment are consistent and realistic with those in the real world. In addition, the feedback and reaction of virtual environment and simulation objects to human actions and behaviors are in line with objective laws. The characteristics of virtual simulation technology to our learning, experiment, training, design, management provides a new way and approach, can effectively avoid the dangerous environment, effectively reduce the cost of experiment, training, the inaccessible, irreversible objective existence of present, so as to greatly improve the efficiency and benefit [2]. For example, on the ILAB-X.COM national virtual simulation course platform, the virtual simulation course of journalism focuses on topics such as international emergencies, public health crises, and earthquake disaster emergency reports, and uses virtual simulation technology to conduct simulation training for on-the-spot interviews and reports, achieving good teaching effects.

2 The Necessity, Practicability and Rationality of Virtual Simulation Technology in Experimental Teaching

The virtual simulation experiment project "Fusion Report" was approved as the first-class course of Hubei Province in 2021. The experimental teaching system selected the flood control and emergency report as the topic. Through the virtual designed scenes and

characters of the flood control front, with the help of analog audio and video interview equipment, it conducted on-site interviews at three virtual reporting points, including the flood control gate of Wuhan Longwang Temple, the “island village” in the flood, Yangxin County’s Lilin Village, and Jingmen’s Changhu flood control levees, and finally completed the production and release of multimedia works. In this experiment, students were allowed to master the acquisition skills, photography and audio recording techniques, and information integration ability of fusion report by answering questions, human-computer dialogue and other ways in the process of experimental operation, and to experience the difficulty, temperature and depth of fusion report during flood control and flood fighting.

2.1 Necessity

In the complex and changeable natural environment, sudden floods, rainstorms and other disasters have brought great threats to human life and living. In order to solve the problems of “irreversible event, difficult to reach the scene, high risk and high operation cost” in the reporting of natural disaster events, the experimental teaching of journalism makes full use of virtual simulation technology to simulate the reporting of emergent disaster events that cannot be realized in real situations, and train students to have the emergency reporting ability to deal with emergent disaster events and master solid communication skills of financial media. Skilled use of all-media interview equipment, as well as rooted in disaster relief reports of professionalism, professionalism and responsibility [3].

2.2 Practicality

For professional teaching, virtual simulation technology improves students’ ability of financial media reporting and new media communication literacy through immersive experience. For student experiments, the application of virtual simulation technology first requires the design of the necessary report preparation, then entering the virtual report site, and finally providing a simulation platform for the display of report results. In the whole process of the experiment, students can improve their basic ability and professional quality from being able to do and use, to thinking positively, planning actively, and then to innovative expression.

2.3 Rationality

The virtual simulation experiment of journalism takes the interview and report process of a certain topic as the context and advances it layer by layer. The first module is mainly about security and knowledge preparation, including the interview equipment, the background of the topic, and the related matters needing attention in the interview. The second module is subdivided into several reporting scenes. This link is the core of the whole experimental operation. The third module is the production and release of the report results, which is the display of the previous module. In the whole experiment process, the students were presented in the form of 3D data modeling through various ways, such as answering questions, human-computer dialogue and interaction, and the sense of immersion experience was strong, so that the students kept a greater interest and enthusiasm in the whole experiment process [4].

3 Application of Virtual Simulation Technology in Experimental Teaching Project of Fusion Report

3.1 The Construction of Experimental Scenes

Experimental scene is the necessary space environment of virtual simulation experiment. Five virtual experiment scenes were set up in the virtual simulation experiment of Fusion Report, and two or three transitions were subdivided in each scene. Virtual elements of interview equipment include interview equipment, such as microphone, voice recorder, life jacket, emergency bag, etc. The interview is equipped with a 360-degree rotating model modeled in real scale. In the three reporting scenes, virtual scenes such as the gate platform of Longwang Temple, the life and death sign for flood control, the ferry into the village of Lilin Village, the resettlement site for victims, and the embankment on the shore of the Long Lake were built. The experiment of multimedia editorial department involves virtual elements such as online news material library and simulating multiple online editing and distribution systems of new media.

3.2 Experimental Role Building

This experiment project adopts the situation simulation method and independent design method. Through the role of virtual journalist, students interact with the interview subjects and environment in the simulated situation in the whole process, and complete the multimedia report of the three scenes through the interview subjects, interview outline and observation perspective designed by themselves. In different reporting scenarios, virtual characters are designed according to the reporting environment and conditions. The virtual characters involved in the flood control report of Dragon King Temple include journalists, flood control persons, personnel on duty and citizens. The characters highlight their roles through their clothes, actions and expressions. The flood control report in Yulin Village, Yangxin County, featured virtual reporters, the village secretary and several villagers. In the opening scene, the reporter wore rain shoes and talked with the party secretary in a suit on the ferry. In the Jingmen Lake Levee scene, the virtual characters involved include journalists, officers and soldiers of the Armed police force, village branch secretaries, etc. The role design of some officers and soldiers of the armed police includes not only the individuals interviewed, but also the flood control officers and soldiers on duty at the scene.

3.3 Design of Experimental Process

The experimental teaching project of Fusion Report involves three modules, and the key module covers three scenes. There are 6 class hours in this experiment, and each class hour corresponds to the relevant module of the experiment project. The first credit hour is cognitive preparation and basic tests. The teacher arranges the experiment preview task one week in advance. After the completion of the preview task, the students enter the basic test to check the students' interview preparation. During the second to fourth class hours, students choose the three scenes in the second module successively to carry out the virtual simulation experiment of emergency multimedia report. You can return to the

menu to select another scene only after completing all operations in each scene within 1 class hour. After completing the experimental operation of the three scenes, enter the editing department. The fifth period is the production and release of reports. Students enter the editorial department to select materials, integrate, produce and publish reports, and complete the news distribution plan. The sixth lesson is to write the experiment report and organize the review meeting. After the students finish the experiment, write the experiment report. After that, teachers organized students to hold a review meeting, guided students to discuss the experimental projects, shared excellent cases, and put forward suggestions and opinions on experimental improvement.

This experiment project is a simulation experiment to simulate the real scene of flood control report by means of network technology, virtual reality technology and multimedia technology. The project uses unity3D development technology to build specific training scenes for news reports. Using Visual Studio development program to ensure the stability and fluency of the system. A comprehensive teaching system is built by combining the BS virtual simulation platform to cultivate students' comprehensive skills in planning, interviewing, producing and releasing flood control reports.

3.4 The Operation of Interactive Links

The outstanding characteristic of virtual simulation experiment is interactivity. In the whole experiment, students interact with the experiment system. [5] The interactive operation steps of "Fusion Report" experiment project are 15 steps, including selecting knowledge modules of safety and flood control, understanding and selecting equipment for on-site report, answering questions through customs, checking interview readiness, observing and interviewing scenes in Dragon King Temple, etc. Each step is set up reasonable time, goal achievement degree scoring model and step full mark allocation.

This experiment innovates task-oriented teaching, game teaching and the combination of virtual and real teaching methods. Each experimental link has a clear task goal, and each small task is an indispensable part of the completion of the final task goal. Each small task points to the completion of the final experimental task. Try the game teaching method in the experimental teaching, make sure the game task and plan before the experiment, enhance the competition and fun in the experiment, and the game reward strengthens the enthusiasm and interest of students to participate in the form of experimental results and experience sharing.

3.5 Experimental Results and Evaluation

The preliminary design and consideration of experimental results is an important basis to judge whether the experimental steps and procedures are reasonable. This experiment project takes the experiment report and experience as the experimental conclusion. Based on the knowledge points of "Fusion Report", the experimental results are evaluated from the following aspects: whether the content of safety instruction education is comprehensive and feasible; Whether to develop a complete interview report plan; Whether the emergency reporting in the three scenes on the flood fighting front reflects the basic knowledge and skills required for disaster event reporting; Whether the on-site interview captures typical scenes and typical characters, whether the questions are

appropriate, whether the report complies with the principle of authenticity, whether it is objective and whether it is contagious; Whether multimedia news production conforms to the characteristics and requirements of different information dissemination platforms, and whether the works are specific readability and attraction.

A relatively objective evaluation standard has been established for each link of the Fusion Report experiment. The “Requirements for experimental results and conclusions” and “requirements for examination” were specified in 15 experimental steps, and the implementation of each step was recorded completely. It puts forward objective criteria for testing the effect of students’ preview, verifying experimental steps and evaluating experimental results, and improves the fairness of evaluation.

This experimental project extensively uses AI, 3D, H5 and other technologies, including 3D modeling, artificial intelligence, electronic information, intelligent interaction and simulation technologies, and realizes the clever integration of virtual information and the real world. At the same time, in the process of experiment, multiple levels are set, and students complete the tasks one by one through interactive operations. The system records students’ experimental operations completely, and strengthens the examination and evaluation of students’ experimental process.

4 Architecture and Operation of Open Virtual Simulation Experimental Teaching Management Platform

The open virtual simulation experiment teaching management platform is based on computer simulation technology, multimedia technology and network technology, and adopts service-oriented software architecture development [6]. It integrates physical simulation, innovative design, intelligent guidance, automatic correction of virtual experiment results and teaching management. It is a virtual experiment teaching platform with good autonomy, interaction and expansibility. The platform supporting the operation of the project and the architecture of the project operation are divided into five layers. Each layer provides services for the upper layer until the construction of the concrete virtual experimental teaching environment is completed.

4.1 Data Layer

The virtual simulation experiment of fusion reporting involves various types of virtual experiment components and data. Here, the basic component library, experimental course library, typical experiment library, standard answer library, rule library, experimental data and user information of virtual experiment are set respectively to realize the storage and management of corresponding data.

4.2 Supporting Layer

As the core framework of virtual simulation experiment teaching and open sharing platform, the support layer is the basis of normal open operation of experimental projects, and is responsible for the operation, maintenance and management of the whole basic system. The supporting platform includes the following functional subsystems: security management, service container, data management, resource management and monitoring, domain management, interdomain information service, etc.

4.3 Common Service Layer

The universal service layer is the open virtual simulation experiment teaching management platform, which provides some general support components of virtual experiment teaching environment, so that users can quickly complete virtual simulation experiments in the virtual experiment environment. Universal services include: experimental teaching administration management, experimental teaching management, theoretical knowledge learning, experimental resource management, intelligent guidance, interactive communication, automatic correction of experimental results, experimental report management, teaching effect evaluation, project opening and sharing, etc. At the same time, corresponding integrated interface tools are provided, so that the platform can easily integrate virtual experiment software of the third party into unified management.

4.4 Simulation Layer

The simulation layer mainly carries out the corresponding equipment modeling, experimental scene construction, virtual instrument development for the project, provides the general simulator, and finally provides the formatted output of the experimental result data for the upper layer.

4.5 Application Layer

Based on the underlying service, the virtual simulation experiment project teaching and open sharing is finally realized. The application layer of the framework has good expansibility. Experimental teachers can design various typical experimental examples according to the teaching needs by using various tools provided by the service layer and corresponding equipment models provided by the simulation layer, and finally carry out experimental teaching application for schools.

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