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Research on application of computer database technology in information management

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ABSTRACT

With the rapid development of computer information technology and the continuous improvement of the virtual reality technology, virtual classroom based on Web has appeared abroad, so need to discuss virtual reality technology in the network environment and the specific application in teaching. By making a virtual computer assembly is suitable for online courseware, this paper introduces virtual reality technology and VRML language, and use VRML language to achieve the online virtual computer assembly process, this paper discusses the application of virtual reality technology in teaching. If the virtual reality technology is widely applied in the network classroom, will undoubtedly have a profound effect on the remote teaching.

KEYWORDS

Virtual reality technology; VRML; Network teaching; Knowledge learning; Autonomy.

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INTRODUCTION

With the rapid development of computer technology and network technology, have sprung up constantly emerge new teaching media, the multimedia teaching appeared shortly after, education teaching came out a new kind of educational technology, the virtual reality technology. Because the network teaching focuses on learning in a real environment, but it can not always implemented, so in the case of the cannot achieve, virtual reality will become the best choice, for now, the virtual reality technology has been widely used in medical practice, entertainment, architecture design, many military training, aerospace and other areas. Abroad, virtual reality technology has been widely used in classroom teaching, as a new teaching technology, inevitably will have a very far-reaching influence on network teaching, will bring us a brand new education thought, at the same time may also bring a series of major reform of our education.

VIRTUAL REALITY TECHNOLOGY

The research object is a university academy of fine arts among 2003 grade, 2004 grade, 2005 grade, 2006 grade of 850 students. This paper mainly uses the method of mathematical statistics, the questionnaire as well as the document literature. Study the questionnaire according to the needs of research, using the method of face-to-face interviews and questionnaire issue 850 questionnaires to students. The number of returned questionnaires is 819 copies, the recovery rate is 96.35%, where 447boys and 372 girls, do data statistical processing with the recovered questionnaire[3].

Virtual Reality (VR), the word was first appeared in the 1870 s at the Massachusetts institute of technology (MIT), said human existence concept in the computer room. Virtual Reality technology is the use of 3 d graphics generation technology, multiple sensing interactive technology and high resolution display technology, generate 3 d realistic visual, hearing, touch, the integration of Virtual environment, users put on the low screen, data gloves, 3 d glasses, such as equipment, or through the keyboard, mouse and other input devices can enter into Virtual space, which can carry out real-time man-machine interaction, awareness and operation of various objects in the Virtual world, gain immersive feel.

Burdea company's Virtual Reality Techno1ogy proposed three I definition of Virtual Reality, 3 I relationship is shown in Figure 1. Virtual Reality technology is a kind of effective simulation in the natural environment CTV, listening, dynamic behavior such as advanced man-machine interaction technology; It USES computer technology to generate a realistic virtual environment, can make in the environment of people through a variety of sensing interactive devices with a virtual environment for mutual operation, to exchange each other, the degree of harmony.

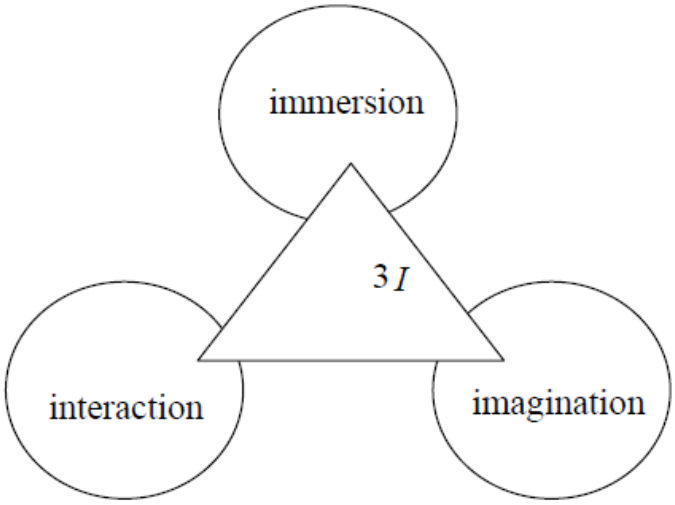

Figure 1: Three definition of virtual reality

THE CHARACTERISTICS OF VIRTUAL REALITY

Virtual reality technology has the following four key features:

(1) Multi-Sensory: More perceptual (Multi - chipmaker) more than the so-called perception is in addition to the visual perception of computer technology, force sensing and auditory perception, perception, tactile perception, motion perception, even should include taste perception and olfactory perception, etc.

(2) Presence: Presence is also called telepresence, it refers to the user feel as the true extent of leading role exists in simulation environment.

(3) Interaction: Interaction refers to the user object's operational level within the simulation environment and get feedback from the environment of natural degree (including real time).

(4) Autonomy: Autonomy refers to objects in the virtual environment based on the extent to which the laws of physics movements.

VIRTUAL REALITY SYSTEM

Users through the sensing device directly to the virtual environment, and get the real-time 3 d display and other feedback force sensing (such as touch, feedback, etc.). When the system with the outside world through a feedback loop sensing device, under the control of the user, the user interaction with virtual environment can be generated to the outside world (see Figure 2).

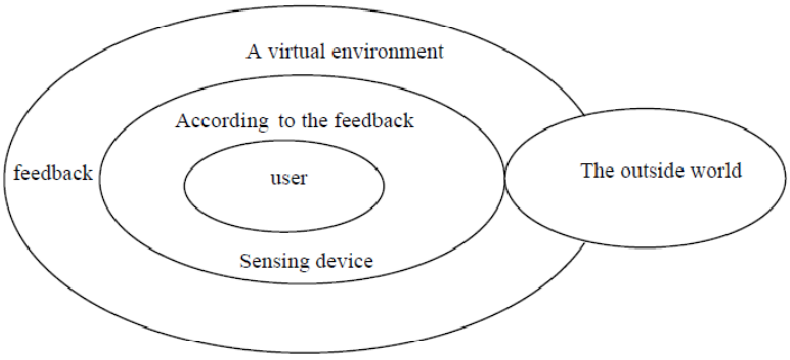

Figure 2 : Virtual reality system

VRML

Virtual Reality Modeling Language VRML (Virtual Reality Modeling Language), is to describe a standard of Virtual environment scene. It defines the virtual reality environment, almost all of the commonly used attributes, such as level transformation, light source, point of view, Geometry, movement, fog, material properties and texture mapping, etc., and provides a simple behavior characteristic description of the function. VRML is essentially an object-oriented language[1]. Objects can include anything, such as 3 d geometry, the MIDI data, such as MPEG image. Defines a series of VRML, multimedia and interactive object is used to realize 3 d scene, these objects are called "nodes" (Node). Node contains the basic elements of "domain" (Field) and "events" (Event). A domain is a node contains parameters, events used for passing parameters. A 3 d scene is composed of have more child node of the hierarchy, a collection of child nodes can constitute a complex structure, this makes designated part of the geometric objects can control the overall; Sensor (Sensor) provides the ability of human-computer interaction and routing between nodes, which makes the VR world of greatly enhanced; Can be embedded in the VRML script, Java, JavaScript, such as extended interface greatly improve the application ability to scale.

VRML (Virtual RealityModeling Language) is a kind of combined with network, describes the three dimensional interactive programming Language of the world. With the improvement of network communication speed and the expansion of bandwidth, Internet users can through the objects created by VRML, viewed in the browser and display model, etc. The development of VRML is not only to promote the popularization and application of VR technology, makes the application of the Internet into another realm, but also brought based on campus network and Internet network teaching the new teaching method, the amount of network teaching is improved effectively.

VIRTUAL REALITY TECHNOLOGY APPLIED IN THE FIELD OF EDUCATION

In today's information highway rapid development, computer network auxiliary teaching is a completely different from the traditional way of the new teaching method. It can not achieve, interactive, illustrated by time and space limit, intelligent, distributed teaching. Computer network auxiliary teaching has become an important part of education science and technology education, is the important direction of teaching innovation. Virtual reality technology applied to education is a leap in the development of education technology. Network technology and the increasing maturity of web-based virtual classroom or virtual campus, will become the future of education a new way of teaching. Develop Web online teaching resources, establish a good network that can meet the needs of teaching environment, using the Web remote teaching, has become a research focus in the current science education around the world. In terms of education theory, virtual reality technology to realize the person's face, the participants and the virtual environment is interact with each other and influence each other are an integral part of the two sides, it built the 0 / autonomous learning environment, taught by traditional/to promotion 0 instead of learning methods for learners with information and the environment interaction by itself to get the knowledge, skills, a new type of learning. Virtual experiment can shorten the time of training, and intuitive, real effect can be obtained, but also for those who are invisible structure principle and restructuring, precision equipment simulation training,

on the one hand, operation, maintenance and repair skills, on the other hand, cultivate learning self-discipline consciousness and innovation ability.

THE SYSTEM ARCHITECTURE OF VIRTUAL SCHOOLS

"Virtual" school system architecture adopts three layer module (3 TierModel), campus scene and teaching materials placed on the server side (Business Logic Tier), and the system Data are placed on the database side (Data Services Tier), learners use a browser to connect "virtual campus" system, and to access the database through the server side of learning materials. In the traditional master-slave type (Client/Server) structure, is two layers of type (2 - Tier) structure, including the Client user Presentation layer (the Presentation Tier) and server-side Data service layer (Data Services Tier). Client user presentation layer is responsible for receiving a user's data input, and display the results, such as the client application. Server-side data service layer is responsible for the Server, including the database of data processing and Web Server (Web Server), typically including business logic (business logic) : calculation, input checking, client computer management, etc. Traditional master-slave type (Client/Server) structure with the increase of function, is the chief drawback of application on the Server will be more and more complex, not only is not easy to maintain, the load on the Server computer will become more and more big. Three-tier, 3 - Tier architecture and traditional architecture the biggest difference between two layers of type, is

Separate the Business Logic (Business Logic), to alleviate the burden placed on client or server computers. Take another advantage of three modules are as follows: if learners in virtual campus too much causes the database when the load is too big, can use a balanced load on the server to create multiple database client to share the load of the system. The system structure diagram as shown in Figure 3.

Virtual campus scene for the convenience of management and teaching materials, such as materials, the server based on ASP language developed web BBS system, using the web BBS management functions to manage the layout of the learners' learning process in the virtual campus, the server structure as shown in Figure 4.

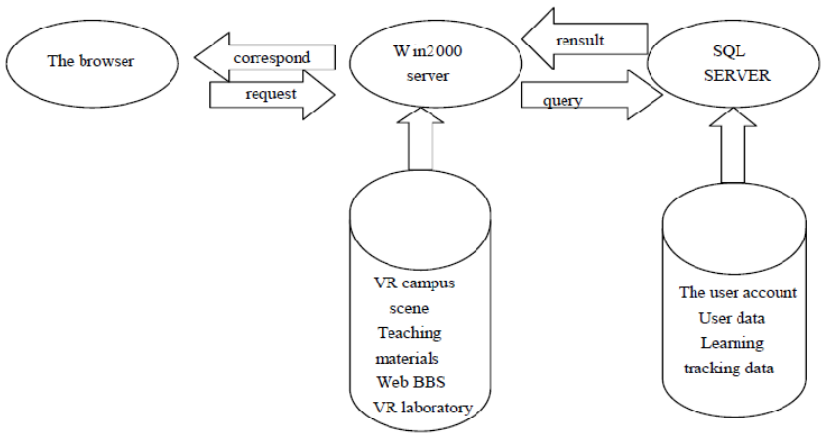

Figure 3: System structure diagram

Due to the 3 d operation need to spend a lot of system resources, in order to reduce the operation time make browsing more fluent, the whole Scene is divided into "virtual schools" campus scenario (School Scene), Building scenarios (Building Scene), Classroom Scene (Classroom Scene) three levels. Using S u p e r c a S p e company development 3 dwebmaster software (simple and powerful) build a 3 d virtual campus scene, the scene between each layer with links (the Hyperlink) link, learners, when they are walking in the campus computer simply by the server to grab the current scenario, and displays the 3 d scene, the other can't see the scene did not need to spend time to download and imaging. When learners' learning activities for a subject, first enter the campus scene, in the campus scene will have administration building, library, teaching building construction; Due to the learning activities are conducted in the teaching building, so click on the scenario teaching building into the teaching building, each floor in the teaching buildings have different subjects in the classroom, after selecting the classroom's floor in the classroom scene; Every classroom is needed for the subjects of teaching resources, for example, click on the blackboard can be designed to watch online teaching materials, click on the desks and chairs into the discussion area, click on the desktop will enter the lab experiment equipment and so on. Are available in a wide variety of teaching resources in addition to the classroom learners use, the system also provides chat and email service, let learners can discuss with each other online learning experience or ask for don't understand the question.

In the virtual scene of people activity, it is bound to exist a lot of polygon graphics, how to balance the picture under the premise of smooth and beautiful picture, achieve a balanced, will be an important research subject, USES a scene cut way to reduce the size of the scene. In addition, graphics, Level of detail model (Level of Detail), the boundary of body, such as geometry compression technology to reduce the scene complexity and increase the fluency of the picture also has a lot of help.

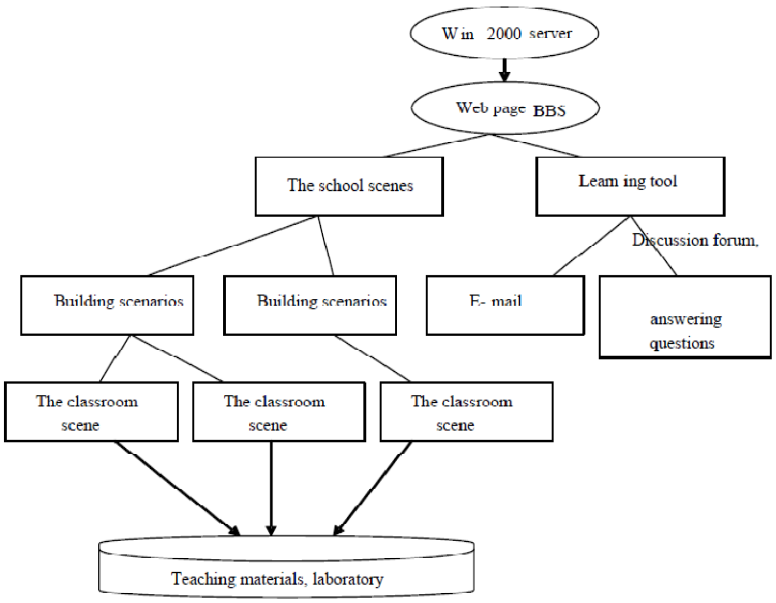

Figure 4: The server structure

Using SuperScape company developed by 3 d Webmaster software to build 3 d virtual campus scene, can cultivate learners to participate in the learning interest and increase the learning atmosphere, and because the learners to interact with the other students in the virtual scene, provide more than the previous network teaching system of learning style. Another system has provided to teach learners choose course design, implement the new teaching model of the credit system of online learning. Learners can participate to acquire knowledge not only so, the teacher can also through the brand-new teaching experience and the interaction between learners. Using online "virtual schools" form of teaching, to teach

Personnel to build a new and changeable teaching environment and teaching methods, and provides learners with a kind of can interact, intuitive, autonomous exploration learning environment and learning methods, so as to stimulate students' study enthusiasm, improve the quality of teaching and learning in many aspects. At the same time, the Web site in the field of education, virtual teachers, virtual library, virtual campus, venue and other emerging form of education will also inevitably appeared in the network, and they are close to the real and higher than the real advantages, with a seat in the field of education in the future. Therefore, we should learn the value the application of virtual reality technology as soon as possible, try to in the field of education and training to develop it, use it.

VIRTUAL REALITY TECHNOLOGY INTO THE TEACHING HAS THE FOLLOWING

The introduction of virtual reality technology can improve the teaching environment of higher education, expand the carrying capacity of the colleges and universities, to adapt to the current enrollment expansion of colleges and universities in our country. Using virtual reality technology, students don't have to actually put their design of electrical equipment, machinery parts, transmission lines or workshop built can/experience 0. This kind of virtual reality and simulation can meet the requirements of most of the teaching and training, greatly reduce the funds investment, and to the network, virtual school education. Use of multimedia technology, semi-physical simulation combined with virtual reality technology, the method of building virtual practice of modern experimental training base, the zero or more than 0 / components/equipment is/virtual 0, can/generation 0 again according to the needs of development of new equipment, also can make/device 0 and constantly updating the teaching contents in the virtual environment, make the practice training timely keep up with the development of technology, in order to cultivate high quality graduates, ensure that the knowledge of the technical personnel and managers can meet the requirements of economic development.

Ultra-high speed for the virtual reality technology, multimedia data transmission, large capacity data storage, and data processing of the distributed and parallel is undoubtedly promote the information construction of colleges and universities of the catalyst. It can provide education technology professional team with a high starting point of scientific research environment, promote the discipline construction of education technology on a new level. Is no longer limited to the physical classroom teaching in the classroom, the teaching activities of space and time to get the intangible extension, and further to the virtual classroom, virtual university development. Virtual reality technology will also be set after the enrollment expansion of colleges and universities, and distance education school provide portable electronic teaching place, make the resource by more than one school/exclusive 0 into school/Shared 0. Through interactive distance learning course catalog and website, by the local area network (LAN) tools for the campus website links, for various industries to provide open and distance from continuing education and the need of teaching, but also for the society to provide new technology and the higher vocational training opportunities, promote the improvement of the national education. The application of the

knowledge of the virtual learning system has two aspects: one is reproduced in teachers' teaching material in actual life cannot be observed natural phenomenon or things change process, provide students with vivid, lifelike, sensibility, virtual learning materials to help students to solve the difficulty of learning knowledge. 2 it is to make the abstract concept and theory of visualization, visualization, convenient for students to understand abstract concepts, such as molecular model, crystal structure, etc.

Using virtual reality technology, can build a variety of virtual laboratory. In the "lab", students are free to do all kinds of experiments. The immersion of virtual reality and interactive, very beneficial to the students' skill training, such as military combat skills, vehicle driving skills, electrical maintenance, etc. Using virtual reality technology to build a virtual training, "equipment", "parts" much is virtual, can at any time according to need to generate the teaching content, can be continuously updated, make the practice training content timely keep up with the development of technology, and virtual training system without any danger, until students master operation skills.

CONCLUSION

Data retrieval is the ultimate goal for people to develop all kinds of information system, the retrieval result provides the basis for people to analyze various problem. In this paper, a simple, innovative, practical, the user can easily and intuitively. So as to realize data retrieval. The establishment of the entire database, data entry, data retrieval is very intuitive and convenient, and cost is low, especially for enterprise product analysis, market analysis and statistical analysis. With the use of traditional relational database, this can through simple means to match space geographic data and attribute data, and cancel the concept of data layer, use a static image, greatly reducing the multiple layers of network traffic. Based on virtual reality technology in the teaching form, is advantageous to the teaching staff to build a new and diverse teaching environment and teaching methods, and provides learners with a kind of can interact, intuitive, autonomous exploration learning environment and learning methods, so as to stimulate students' learning enthusiasm.

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