Application of Virtual Manufacturing Technology
in Multimedia Network Environment

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Keywords: Virtual manufacturing, WEB; HTTP, Network interoperability.

Abstract. Virtual manufacturing is a professional elective course in industrial engineering major. It is actually computer performance of the actual manufacturing process. The traditional teaching method is difficult to make students understand and master the course. Therefore it is very necessary to take a lively and accessible way of teaching. In recent years, with the development of ultra-media and network technology, the development of the Internet has been greatly promoted. Among various Internet services, WWW (World Wide Web, or the Web), as an interactive, widely-distributed hypermedia roaming and information dissemination system, is favored with a friendly interface, with its rich resources, accessible, interactive features and convenience and makes it the best choice for on-line teaching and course-development. Teaching Multimedia Network based teaching is the outcome of the development of webs in people's lives. The future world is a world of high-speed information and network. Wherever you are, as long as you own a computer, browser, Internet connection, you will be able get various information through the learning platform of network. The design, based on the aims mentioned above, intends to apply the Internet as medium, animation and video to demonstrate vividly and interactively virtual manufacturing and its application, to provoke the enthusiasm of the students, and to deepen their understanding.

Introduction

In the traditional CAI activities, computer technology and network constraints, CAI courseware usually only use a large amount of text information and a small amount of graphics teaching activities, human-computer interaction is very simple, there are many limitations, which influence the teaching effect. Now the development of multimedia technology and network, the computer could deal with text, sound, like a variety of media information, a large amount of information, has rich expressive force, but also through the form of WEB to achieve human-computer interaction and control is realized through the network without the limitation of time and zone of learning. Multimedia and WEB technology used in teaching, will greatly improve the quality of CAI courseware. On the one hand, the teaching content will be more vivid and diverse learners will present another method of man-machine conversation, more natural, teaching forms are more abundant, learners can easily carry out self-regulated learning, but not received good results, on the other hand, the network can be more convenient to learn independent definition of learning time and place, make learning easier. Therefore, it is necessary to study the design and development of multimedia teaching software (Multimedia WEB courseware) from theory and practice. This is exactly the meaning of this paper.

The Current Situation of the Multimedia Courseware

Analysis of the Development of Computer Aided Instruction (CAI)

At present, the computer has been widely used in the field of education in our country, and it has become an indispensable and important teaching method in the teaching process, and the influence and change the traditional teaching idea and teaching mode. Through running the teaching software to
realize the teaching process, called Assisted Instruction (Computer), referred to as the computer assisted instruction (CAI). Among them, the running of the teaching software called CAI courseware. In recent years, more and more teachers in Colleges and universities, researchers began to engage in multimedia electronic lesson plans, multimedia CD-ROM production, development and production of these courses are helpful to promote the teaching reform of the school, improve the comprehensive quality of students, to bring many convenient electronic courseware teaching. The teacher will get a lot of chalk on the blackboard handwriting, in front of the students were not spared; with "green" courseware, the font is also much, back to the students can also see crystal clear. Electronic courseware also facilitate repeat browsing, when students want to see the pages of content only with a few clicks, and writing on the blackboard can erase handwriting handwritten rewriting, electronic courseware save a lot of time, it is worth popularizing.

Defects of Traditional CAI Courseware

1 Lack of adaptability. When students use a CAI courseware for learning, usually only in accordance with the established sequence of steps, the flow of each page is fixed. Once the design is good, it can not be changed, and all students are treated equally. Can be dynamically adjusted according to the different stages of the actual situation of students and learning, and is not truly individualized. Although some courseware can advance the students into several levels of learning or through the menu to let students choose learning content, but its classification is obviously not fine, and cannot change according to the current level and students in learning to guide students to generate, suitable for their problems. Lack of adaptability is a common problem in the current CAI courseware.

2 Lack of interaction. At present, a lot of CAI courseware, poor human-computer interaction, performance in the use of CAI courseware for students to learn is passive. Students can only choose the answer or fill in the contents of the input, and not have to answer some of the problems of individual thinking, especially in the classroom teaching, teachers generally only through the control process of courseware, students simply enter an answer. Human computer interaction should be the advantage of CAI, but it is too simple at present.

3 Lack of creativity. At present, creative education has been recognized as an effective way to cultivate high-quality innovative talents. CAI as an auxiliary teaching means should also be to create education services. At present, the CAI courseware, both in terms of teaching process and teaching form, is monotonous and lack of creativity. Nothing more than knowledge introduction, operation practice, unit test, data query, etc. From the content to see its essence is still textbook moving, classroom moving. If things go on like this, will not be conducive to mobilize the enthusiasm of the students, not to mention the cultivation of students' creative ability.

4 Lack of error correction capability. Because the CAI courseware itself does not understand the teaching content of the teaching, it is determined that the student answer is correct or not. This caused the courseware itself cannot be based on the students to answer the evaluation, the same, for the causes of errors and the steps taken after the error cannot give the corresponding solution.

Development Direction of Electronic Courseware

Survey of the latest development of the Internet in China shows that 91.3% of the students' web users "often browse" or "sometimes browse" teaching websites, only 2.4% of people never read". Compared with the past, more students began to contact the network teaching. Among the users who have visited the teaching web site, 57.6% of the students think that browsing the teaching web site is not very beneficial. This figure shows that although the Chinese students continue to increase the number of Internet users, but the understanding of the network teaching is relatively low, the effective utilization rate is not high, which requires the analysis of students' needs of users of teaching website producers to better. What are the main reasons for their online learning? One of the most important reasons is that "content update" and "interactive". Other such as "cost savings" (33.4%), "out of curiosity, fun" (32.6%) is also the reason for the user to refer to the teaching web site. The reason of network learning from the user can be seen, compared with the traditional way of teaching, the
network teaching is more and more convenient, affordable and fun, especially some of the more professional and personalized website, such as online, New Oriental horn and so on, has been more and more students netizens agree. Regardless of the choice of the curriculum, and teaching quality, price, through personalized design special, especially during the SARS epidemic, is attracting a large number of students, the teaching website which shows rich personalized and professional service characteristics is to attract a large number of network users' attention.

Teaching website is the inevitable trend of network development in people's life. The future is the rapid development of information and network in the world, in any corner of the earth, as long as have a computer, browser, Internet connection, you can through the network platform to understand all kinds of learning information, but also to enjoy the perfect service. In North America and the European market, network teaching after years of development, has been the majority of students and eager to enrich the user's self-recognition. Hundreds of thousands of students have been through the Internet to get the information they need to learn, and the number of people is growing exponentially every year. At the same time, the network teaching also contains a lot of business opportunities, to be the major educational institutions to further develop.

**Network Collaborative Application Example**

In this design process, the application of HOOPS/MVO function to achieve the HTTP based on the form of the virtual product development.

In the HTTP protocol, complete network collaboration needed to support a CGI file to the web server, the web server as a bridge between the client and server communicate using the HTTP protocol, the benefits embodied in the use of the Internet as a collaborative platform, this is because, in the HTTP protocol, the HOOP/NET server's IP address can be very good the hidden, at the same time, can avoid the communication caused by blocking firewall.

In the development process, I used the HOOPS function to provide the extension of the original function to strengthen. Can browse three-dimensional data products in the form of Web pages.

```plaintext
function Sphere()
{
    cameraOperator = "HOpCreateSphere"
    atltest.SetOperator("HOpCreateSphere")
    UpdateImages()
}
```

Function provided by HOOPS/MVO.

**Summary**

In today's society, the wide use of computer has penetrated into all fields of society, and the new challenge to education has been put forward. WEB courseware is mainly used in distance education; it has some of its own characteristics. According to the WEB courseware, we found a reasonable method to make WEB courseware. I believe that in accordance with the above ideas to make WEB courseware, not only can be issued by the high value of the network courseware, but also can save a lot of manpower and material resources.

With the development of Internet, the bandwidth will become increasingly large, at that time in the development of courseware in multimedia files using larger format HD form, quality pictures and video animation will be further strengthened.

**References**


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