Important Design Considerations for Online Web Courses

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INTRODUCTION

The progress of computer and communication technology as well as multimedia equipment and network infrastructures have greatly enhanced the quality of distance learning in recent years (Chee, 2001). Distance learning consists of the conducting of education and training at a long distance by using modern telecommunication technology. On developing cost-effective applications and services that allow people to learn what, where, when, and how they want distance learning becomes more and more important in many fast-growing sectors such as: continuing education, tele-education, home learning, on-the-job training, professional training, vocational training, and so forth.

One of the most important tasks to make distance learning effective is the designing of online Web courses, which has significant influence both on the course performance and education effects. The construction of Web courses should take into consideration the particularity of distance learning, satisfy the condition of operating in the Internet, and profit from the advantage of a network environment. Though a large number of Web courses have been constructed, most of them are based on some ad hoc criteria and oriented for particular application areas. In this article, a systematic study of designing considerations for online Web courses of distance learning will be conducted.

In the next section, a historical overview of educational development with emphasis on major factors influencing the progress of distance learning is provided as the background. The requirements and properties expected for Web courses and some general (common) as well as particular criteria for course design and construction are discussed in the main focus of the article. Also discussed is a particular realization of a Web course developed with the help of these considerations. Finally, some concluding remarks are given in the last section.

BACKGROUND

In the history of the field, several major revolutions of education can be enumerated.

Mass Education

The real launch of mass education should only be counted as around 1800 AD, though the birth of education can be retracted back to circa 400 BC. Someone believed that the generalization and compulsory essence of mass education became popular merely since the 19th century (Richonnier, 1997). Since then, for a long period of time, the system of education is mainly based on the classrooms in schools or universities and the brain-to-brain transfer of knowledge with the most basic education technologies (for example, using the piece of chalk and the blackboard). There is very low interactivity between students and teachers, and the learning materials are mass-produced.

Computers in Education

The invention of modern computers in1946 just followed the end of World War II, and computers started to be used for educational purpose only since the early 1960s. In that time, computers in education was rather bounded due to the fact that the computers were used with very limited interaction. In parallel, there was a need for mass distribution of learning materials, which were to be met by the second industrial revolution of communication in which radio

and television play an important role. However, all these educational technologies were not able to offer customized and interactive learning.

Technical Revolution in Education

With the invention of the microprocessor in the beginning of 1970s, the world entered the so-called micro-electronic revolution. The rapid reduction in the size and cost of electronic components induced by this technical revolution has allowed the wide spread of information technology throughout all industrial activities, as well as service activities like education and training. The integration of technology has a positive impact on education (Thomas, 2002). The utilization of new technology in education (for example, software test and evaluation systems) makes customized learning possible to support different pedagogical approaches, but the interactivity is still limited by the lack of a user-friendly interface.

Off-Line Education

Since the middle of the 1990s, off-line educational multimedia greatly helps the interaction between human beings and machines, and is becoming a widespread commercial activity. This market was mainly started with the use of CD-ROMs and mostly oriented towards the family market for education of children at home. This rapid penetration of multimedia in the home is naturally linked to the fast increase in the number of family PCs. In many countries, more than half of all families have PCs at home. These percentages continue to increase every year. With the improvements both in customized learning and interactive learning, the system of education seems to make a good compromise of two challenges: mass delivery of education and personalized distance learning.

Life-Long Education

In the new century, the citizens of the information society will have to learn throughout their lifetimes, since they will no longer be able to rely on what they learned in schools and universities. Traditional delivery systems do not permit our societies to cope efficiently with the huge cost arising from such a life-long learning requirement. With the development of broadband Internet in education, online Web course—whether in school, in the workplace, or at home—is becoming widespread (Tiffin, 2002). The modern distance learning based on technological progresses will allow the virtual classroom to become a reality and allow all citizens, whenever they want and wherever they are, to access high-quality knowledge and know-how, in an interactive and custom-made manner.

MAIN FOCUS OF THE ARTICLE

Requirements and Properties Expected for Web Courses

The history of education evolution indicates that the interactivity between learning and teaching as well as the customized learning for students are improved with the progress of technologies. However, both of them are still very critical factors affecting the effectiveness and efficiency of distance learning. Note that "whilst electronic communication is providing a new medium, communities have always shared knowledge through interaction" (Lewis, 2002, p. 1).

In life-long education, the Web course plays an important role. As a new means of education, the Web course has some of its own properties and features. On the other side, the design of a Web course has significant influence on the course performance and education effects.

To fulfill the requirements of highly customized and interactive learning, some expected properties of Web courses should be pointed out (Zhang, 2001; Zhu, Zhang & Liu, 2001):

1. From the point of view of customization, the Web course should reflect the current trend in the development of discipline under question so to provide suitable information for advanced learners. In addition, the Web course should have open structure so that the content of the course could be easily extended, adjusted, and replaced when necessary.
2. From the point of view of interactivity, the Web course should naturally provide easy interaction between human-machine, teacher-student, and