Curriculum Development in Web–Based Education

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INTRODUCTION

A paradigm shift has taken place in the last decade, with a move from traditional to Web-based education at different educational levels (Harasim, 2000; Karuppan, 2001; Kilby, 2001). Web-based education (WBE) has moved on from the delivery of educational content to Web-based sites with interactive functions (Carty & Philip, 2001). Concurrently, new innovative kinds of pedagogical experiments have shifted the paradigm from teaching to learning (Pahl, 2003). As summarised by Armstrong (2001), what educators have in fact realised is that a good Web-based education theory and good education theory are one and the same; the only difference is that WBE transcends the barriers of space and time. The paradigmatic shift has occurred as part of planned educational policy, while at the same time good international or national experiences have also supported the growth of WBE. In addition, there have been attempts to have more coherent and cohesive educational systems and degrees especially in the European context (The Bologna Declaration, 1999.)

The aim of this article is to pursue the discussion of some essential issues and promoting factors facing Web-based curriculum development (Figure 1). At the beginning, the main concerns in curriculum development are quite often related to students, new technology and pedagogical issues. However, the curriculum development is a process due to constantly evolving information technology and changes in course contents. The second part of this article focuses on this. Additionally, curriculum development does not happen in a vacuum. Therefore, quality, ethics and management are briefly summarized as important contextual concerns in WBE curriculum development.

BACKGROUND

Curriculum Development in Web-Based Education

Basic questions at the first phase of the WBE curriculum development have been summarized in this review into

Figure 1. Curriculum development as a continuous process
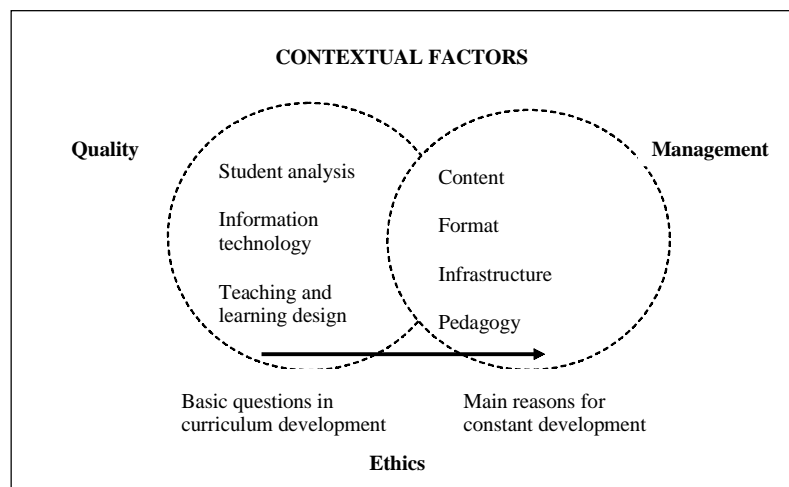
three overall themes: 1) student analysis; 2) information technology; and 3) teaching and learning design (adapted from Alexander, 2001).

Student Analysis

One crucial component in curriculum development is the identification of potential users, and analysis of their needs (Karuppan, 2001; Lammintakanen & Rissanen, 2003). Variables such as age, gender, being employed or unemployed are premised as having an effect on computer use (Karuppan, 2001; compare to Lu, Yu, & Liu, 2003). Furthermore, learning materials should support the student's particular learning style in order to facilitate learning (Karuppan, 2001). At best, Web-based education encourages the student to take control over his or her own learning. In turn, curriculum development should support this by promoting a completely new way of thinking in students: from what they hope to acquire from the course to what they themselves contribute to the creation of knowledge (McFadzean & McKenzie, 2001).

Although Web-based learning is said to be a flexible way of learning in terms of availability (anywhere and anytime), it is crucial to take into consideration the place from where the students participate, for example, the home or work place, and also the kind of skills that they have.

The following reasons have been recognized as major obstacles in students' use of information and communication technology (ICT): 1) a lack of student workstations; 2) students' lack of time; 3) students' ICT skills; 4) course overlap; 5) insufficient course hours; and 6) teachers' lack of time (Sinko & Lehtinen, 1999). Careful consideration of these aspects provides an idea of what kinds of learner support systems are needed from the educational institution (e.g., tutoring, technical support; Lammintakanen & Rissanen, 2003). In sum, support from the educational organization and other students, as well as the individual's experience of technology have a major influence on the student's learning experiences (Alexander, 2001).

Information Technology

Similarly, fundamental questions exist concerning the technology used in education. One of the problems concerns the interaction between the equipment used, for example, is technology available to students, and is it accessible especially if interactive text, video and voice are combined? What does the technology cost learner? This is something that should especially be taken into consideration in those countries where tuition fees are not implemented (e.g., Lammintakanen & Rissanen, 2003).

Web-based education is supposed to be cost-effective from the organizational side (e.g., Karuppan, 2001), although hardware, software and labour costs are somewhat expensive. Similarly, it would be imperative that the equipment be available for both the students and educators "just on time" because of the rapid development of information technology (IT).

Teaching and Learning Design

Although the choices made during the planning process determine whether the Web-based education is based on constructivism or other learning theories, constructivism is usually closely related to WBE (Jefferies & Hussain, 1998). Web-based education is believed to promote a constructivist approach by allowing all-round interaction, transferring the responsibility of learning to the student, and enhancing the construction of knowledge by interaction. During the curriculum development stage, a careful evaluation is needed on whether or not the chosen technology supports teaching strategies that encourage active involvement, critical thinking, and fosters relationships between learners (Armstrong, 2001). It has, however, been shown that although teachers have adopted the model of constructivist epistemology in principle, they have not always implemented it in the ways they organize the learning situations (Sinko & Lehtinen, 1999).

The changing roles of teachers are obvious in WBE. Previous research has shown that the role of the teacher is not diminished, however, traditional teacher duties, such as instructing the learners and information communication, are. The teacher's new role can be described as a learning catalyst and knowledge navigator, or as tutor acting as a facilitator for learning and group processes (see Volery & Lord, 2000). Moreover, the tutor's duty is to maintain a safe environment for learning, and encourage novel problem solving processes (McFadzean & McKenzie, 2001). Web-based learning forces teachers to become course designers who make decisions based on their understanding of the probable needs, expectations and behaviors of students on their own campuses (Blythe, 2001).

To briefly summarize, previous studies have shown that the technology affects learning in many ways (e.g., McFadzean & McKenzie, 2001; Sinko & Lehtinen, 1999). Curriculum development is a time-intensive requiring adequate financial resources in order to develop tightly organised courses. In addition, it is to be expected that the faculty workload would increase (Armstrong, 2001; Carty & Philip, 2001). Unfortunately, too many WBE applications are still mere tutorials or online books (Kilby, 2001).

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