Preface

During the past two decades, telecommunication technologies combined with Web-Enabled technologies have created a new area of learning known as “Web-Based Learning & Teaching Technologies”. This new discipline is changing the very concept of education around the world. Colleges and universities of all sizes are facing many challenges and opportunities offered by this new technology-based concept. Like any emerging field, “Web-Based Learning & Teaching Technologies” is not free of problems, controversies, and challenges. Many are questioning the viability of this technology and its suitability in educational delivery. Therefore, it is crucial for educators and trainers to constantly enhance their understanding of the issues, trends and opportunities associated with Web-Based Learning and its related technologies and their impact on educational systems, programs and the education profession itself.

WHY THE BOOK?

Web-based learning is in its infancy and is still evolving, from correspondence courses to distant learning to Web-based learning. The basic concept of learning has not changed—only the medium is different. Like e-commerce, e-education is becoming “customer” oriented. Many for-profit universities are forcing traditional universities to focus on the “customer”, i.e., the student. The mode of delivery is changing in that institutions are taking education to the customer instead of the customer coming to campus to learn. Education is becoming time, place, language, distance and status independent. More and more students are looking for convenience and taking control of the learning process. This creates a completely new learning environment. Expectations and interaction among students, faculty and administration are changing.

The main objective of this book is to address the trends, opportunities, and problems facing colleges and universities in effective utilization and management of Web-based learning & teaching technologies. This book is a compilation of chapters contributed by several experts in this new area of learning. Each of them shares their unique experiences, knowledge and research findings in the field of Web-based learning and associated technologies utilization and management.

BOOK AUDIENCE

This book is intended for anyone interested in WBL. It discusses the issues and the technology, and how this technology can be used in developing courses. The biggest asset is the authors’ descriptions of their experiences in developing Web-based courses and providing guidance to those interested in developing Web courses. This book is also meant for researchers who are looking for research ideas in WBL. Each chapter subject provides direction for further study in its area.
BOOK STRUCTURE

Any emerging technology must be defined, the issues discussed and emerging theories tested and validated. I have used the same concept in dividing this book into four sections:

* Web-Based Learning
* Web-Based Enhancing Technologies & Course Development
* Web-Based Learning Environment
* Web-Based Learning Case Studies

The first section defines WBL, the second identifies the technology and how the technology can be used in course development, the third discusses issues related to the mapping of traditional learning to WBL and the final section presents ongoing developments in WBL. Though I have grouped the book in four sections, it should be kept in mind that there is always an overlap of ideas and techniques.

The Web-based learning section defines and examines the current status of WBL. Several chapters in this section discuss the issues, trends and environment needed for a successful WBL experience. Aggarwal et al., discuss different learning environments and different Web-teaching models. They argue that for Web-based education to be successful, traditional methods must be adjusted in the areas of student evaluation, faculty and student training and expectations. Tetiwat, et al., discuss requirements like sufficient funding, strong technical infrastructure, good design and interfaces, operations and maintenance for a successful Web-based education. Hoole and Hoole discuss Web-based education issues in Third World countries, recognizing the lack of resources and telecommunications infrastructure as two main barriers to Web-based education. They suggest that academicians must find new ways of using the Web, such as producing Web-based lessons on the CD and using the Web for enhancement purposes. In addition, they recommend that academicians in third world countries help to create an argument for outside funding for needed computer resources and infrastructure.

The WBL enhancing section discusses Web-enabling technologies and how they can be used to develop Web-based lectures. This module discusses Web-enabling hardware and software technologies, and provides guidance to their selection in a specific teaching environment. Several of the chapters provide resources on Web-enabling technologies and the authors’ experiences with them. Klobas and Renzi discuss a model that can guide academicians in the software selection process for collaborative learning. The model describes the teaching and learning activities, provides a step-by-step guide and illustrates the selection process using a case study. Novitzki discusses the asynchronous teaching environment and provides a theoretical framework from an educational perspective. He surveys current asynchronous learning tools and discusses their implementation in several on-line courses. In addition, he also provides pointers for universities planning to venture into Web-based education. Esnault and Zeiliger discuss the importance of the human-computer interface in Web-based courses. They argue that navigation alone is not sufficient in a Web-based course and that new navigation aids must be incorporated in the browser itself. They discuss NESTOR, a Web browser developed by authors that provides an interactive learning environment where learner’s expertise is deployed in navigation. They argue that NESTOR incorporates a
constructivist approach to Web navigation. It allows students to create a compound document which is more meaningful to them. Bento discusses the process of creating class sessions using audio streaming, audio and graphics and audio and video streaming. He also discusses set up of a streaming media server. Norman discusses desktop hosting of Web-based course materials. He argues that desktop hosting provides more control of the course and more flexibility in designing the course. He also discusses pros and cons of institutional versus personal hosting. He discusses a case study to illustrate his point. Rea et al also discuss technology implementation in course delivery in traditional university setting. Lam et al propose a model Calculus of communicating system (CCS) for a courseware based on navigational structure, semantics and dynamic components. They demonstrate CCS by providing a hypothetical example.

WBL environment section discusses pedagogical changes that are needed to translate traditional face-to-face education to Web-based education. Web-based education is changing the very nature of education. Cooperative learning, where students initiate and to some extent control learning is becoming a more effective way of teaching on the Web. This requires changes in traditional teaching environment. Student assessment is probably the single most important issue in teaching. Traditional exams and classroom monitoring are not feasible or even desirable in WBL. New methods need to be incorporated to test student learning and assessment. In addition, faculty need to be trained to provide on-line lectures. Simply transferring class notes to Web is not the answer. Cucchiarelli et al, Darbyshire and Alagumalai et al provide insights into Web-based student assessment. Cucchiarelli et al. and Sivakumar et al discuss different approaches to perform Web-based assessment of student learning. They also provide information on currently available commercial tools for Web-based testing and also discuss how using Common Gateway Interface (CGI) and JavaScript technology instructors can develop their own Web-based testing tools. Many issues like the security of Web-based teaching, student identification and plagiarism and data manipulation and analysis are also discussed. Darbyshire discusses the structure and functioning of assignment management system. This involves collection, authentication, grading, and distribution of assignments. He suggests a creation of an ‘assignment box’ with authorized access through a standard Web browser. Robinson and Brokowski discuss instruction delivery on the Web. They describe faculty development process in relation to a comprehensive Web-based course management tool. They describe three basic areas: training structure, pedagogical support and faculty support, to prepare faculty to use on-line resources successfully. They argue that training focus should not only be on training faculty with skills to use a tool but also the pedagogical underpinning for the effective use of the tool. Kemery describes collaborative learning on the Web. He proposes a model describing collaborative group development, instructor behavior, and student readiness for on-line collaborative learning.

WBL case studies section provides insights into experiments being done in many areas across disciplines. Like any other emerging discipline, there are no established theories and many concepts are emerging through field experiments and classroom studies. Burd describes how Web enabling technologies can be used in a programming course. He describes how technology can be used effectively in a
programming class, namely C++. He concludes that successful implementation of a Web-based support requires attention to details like creating and maintaining Web contents, administering server resources and specific Web standards and software. Piotrow et al describe their experiences with technology usage in an internet based class in the Health Communication Program (HCP). They describe issues related to preparation, implementation and evaluation and identify major lessons learned in the process. Hill et al report a field study in the use of a Web-based learning tool. Their results showed that repeated use of the Web-based supplement was correlated with better overall performance in the class. Malaga reports results of an experiment that studied usage of a Web site and student performance. He reported lack of Web site usage in certain section and concluded that using Web in class and making Web assignment part of student’s grade may impact use of a course Web site. Cecez-Kacmanovic et al. proposes a communicative model of collaborative learning which aims to enhance understanding of communicative practices in Web-mediated collaborative learning. Her field study illustrates how proposed model can be applied to analyze linguistic interaction among students in a Web-mediated collaborative learning environment. Chan et al. describe the results of a case study involving use of the Internet video-conferencing for one-to-one distance education. Their results show that subjects with fewer technical difficulties, subjects who could convey complex ideas clearly, could feel the psychological presence of or exchange personal messages were more effective in one-to-one Internet video conferencing. Kangas et al. describe two experiments involving seminars. One experiment was done without Web technology and the other involved state-of-the-art technology. They discuss issues related to each case.

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