INFORMATION SCIENCE PUBLISHING
701 E. Chocolate Avenue, Suite 200, Hershey PA 17033, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com
ITB9839

Chapter XIII

Toward Predictive Models for E-Learning:

What Have We Learned So Far?

Maria Alexandra Rentroia-Bonito, Technical University of Lisbon, Portugal

Joaquim Armando Pires Jorge, Technical University of Lisbon, Portugal

ABSTRACT

Currently, developing courseware for e-learning initiatives remains much of a black art. While we are mastering the process of authoring interactive media, we know little about the many factors that affect the e-learning experience. This can drastically limit return on invested efforts for organizations. Indeed, authoring multimedia content is a very expensive endeavor as compared to the traditional approach. A better understanding of the process could yield new approaches and insights to achieve a more ambitious goal: predictive models for e-learning. The reviewed literature highlights a lack of reliable results describing the interplay between e-learning context, web usability, cognitive styles, motivation, learner performance and satisfaction. Clearly, more research is needed to better understand and predict learner performance during an e-learning experience. The expected results of such an integrated approach would assist developers to design better e-learning experiences. This chapter proposes a holistic framework covering the interplay among Business-Process, People and Information-Systems issues. This could serve to guide future research.

This chapter appears in the book, E-Education Applications: Human Factors and Innovative Approaches, edited by Claude Ghaoui. Copyright © 2004, Idea Group Inc. Copying or distributing in print or electronic forms without written permission of Idea Group Inc. is prohibited.

Concern for man and his fate must always form the chief interest of all technical endeavors … Never forget this in the midst of your diagrams and equations

Albert Einstein
Quoted in "Science and Values"
London Times, Jul 1, 85"

INTRODUCTION

The increasing usage of Internet in education raises important questions concerning both its effectiveness and efficiency. Not only we need to know about how effective online training packages are as a knowledge delivery mechanism, but also we need to assess the impact they actually have on supporting new learning processes. However, there is a lack of established models to predict performance and evaluate adequacy of courseware to both the target constituencies and the stated educational or training goals. This can lead to costly investments on creating and maintaining content to develop training packages.

According to the scarce literature and anecdotal evidence, the current crop of e-learning packages, be they internet-based or not, do not seem to provide a satisfying learning experience or serve as a replacement for conventional means of knowledge delivery. Most importantly, they fail to keep learners engaged in learning. This leads to high turnover and yields little value for money for the organizations that have heavily invested in this approach. Some of the most significant barriers identified so far include: (a) a poor match of content structure to learner's cognitive styles, (b) individual perceptions on technology as a hindrance to the learning experience, and (c) a poor organization of content that is ill-suited to hypermedia.

While considerable knowledge from usability seems applicable in this context, we feel that the e-learner experience is considerably different from conventional user experience and has its own richer set of components and associated requirements. Indeed, e-learning experience transcends user experience with the requirements emerging from knowledge acquisition, learning task closure and length of interaction. In addition, there is a need for more theoretical and developmental approaches to improve our understanding of user acceptance and performance factors affecting web-based training programs (Astleitner, 2001). A better understanding of the many factors affecting e-learning performance would allow individuals and organizations to achieve e-learning's much-touted benefits. In so doing, development teams (instructors, courseware developers, web designers, Information Systems, Human Resource process owners, and other professionals) need methods, techniques and tools to evaluate, in advance, which features of web learning packages (design, layout, navigation, content structure and organization) are needed to achieve high learner outcomes, namely performance and satisfaction. To this end, we need to focus on the basis of predictive models to improve learning effectiveness.

This chapter includes four sections. The *Background* presents a proposed e-learning theoretical framework to guide our analysis based upon the reviewed literature. *Key Issues* describes relevant issues arising from proposed e-learning framework. *Potential Solutions and General Recommendations* briefly describes our vision to approach e-learning initiatives. Finally, we present a *Research Outlook*.

Copyright © 2004, Idea Group Inc. Copying or distributing in print or electronic forms without written permission of Idea Group Inc. is prohibited.

13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/toward-predictive-models-learning/8955

Related Content

Connecting K-12 Schools in Higher Education
Laura A.B. Dell (2005). *Encyclopedia of Distance Learning (pp. 374-378).*
www.irma-international.org/chapter/connecting-schools-higher-education/12134

Using a Web-Based System To Support Teaching Processes
V. Klyuev, T. Tsuchimotoand G.P. Nikishkov (2008). *International Journal of Information and Communication Technology Education (pp. 72-85).*
www.irma-international.org/article/using-web-based-system-support/2339

Educational Technology and Learning Theory
Gary A. Berg (2008). *Online and Distance Learning: Concepts, Methodologies, Tools, and Applications (pp. 595-600).*
www.irma-international.org/chapter/educational-technology-learning-theory/27416

Zone of Proximal Development and Scaffolding Online
Carol M. Lerch, Andrea R. Bilicsand Binta Colley (2009). *Encyclopedia of Distance Learning, Second Edition (pp. 2376-2381).*
www.irma-international.org/chapter/zone-proximal-development-scaffolding-online/12078

Exploring the Inescapable Suffering Among Postgraduate Researchers: Information Overload Perceptions and Implications for Future Research
Nabil Hasan Al-Kumaim, Siti Hasnah Hassan, Muhammad Salman Shabbir, Abdulwahab Ali Almazroiand Hussein Mohammed Abu Al-Rejal (2021). *International Journal of Information and Communication Technology Education (pp. 19-41).*
www.irma-international.org/article/exploring-the-inescapable-suffering-among-postgraduate-researchers/267722