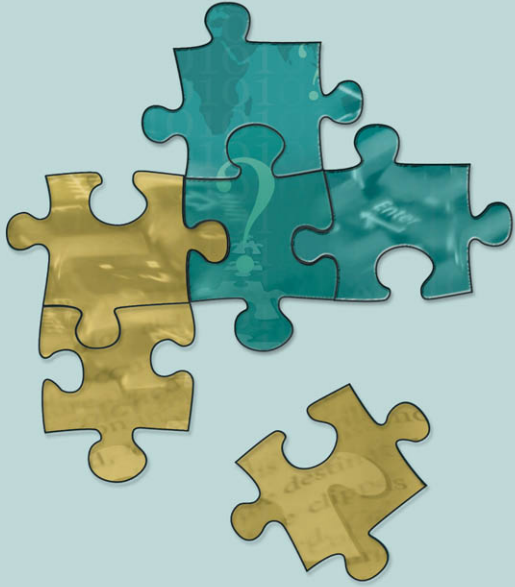


The Theory and Practice of Online Learning

Second Edition



Edited by Terry Anderson



THE THEORY AND PRACTICE OF ONLINE LEARNING

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THE THEORY AND PRACTICE OF ONLINE LEARNING

Second Edition

edited by
TERRY ANDERSON



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Fifth printing 2011

First edition published 2004

Published by AU Press, Athabasca University
1200, 10011 – 109 Street
Edmonton, AB T5J 3S8

Library and Archives Canada Cataloguing in Publication
Theory and practice of online learning / edited by Terry Anderson. –
2nd ed.

Includes bibliographical references and index.
Issued also in electronic format.
ISBN 978-1-897425-08-4

1. Computer-assisted instruction. 2. Internet in education.
3. Distance education. I. Anderson, Terry, 1950-

LB1044.87.T54 2008 371.33'4 C2008-902587-3

Printed and bound in Canada by Marquis Book Printing

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Today, online learning is the most accessible pathway to the new knowledge economy and related jobs for the majority of working people. To be effective for the next generation, online learning has to include mobile learning, e-gaming, online communities, and learning management systems that engage each user. Athabasca University is a leading institution in the design, testing, and application of new e-learning environments. The contributors to this second edition of The Theory and Practice of Online Learning exemplify that leadership. With this book, Athabasca University, its faculty, and staff share their expertise, knowledge, and enthusiasm for the learning tools and techniques that promise to extend access, while retaining high-quality learning opportunities.

Frits Pannekoek
President, Athabasca University

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FOREWORD TO THE SECOND EDITION

The revised version of the *Theory and Practice of Online Learning*, edited by Terry Anderson, brings together recent developments in both the practice and our understanding of online learning.

Five years have since passed between this new edition and the first version. Five years is certainly a long time in this business as this second edition illustrates. The improvement in versatility and sophistication of the technologies that have been coming into common use has been so significant that a revisit of our knowledge of learning technologies and their application was becoming increasingly necessary. Anderson and the other authors of this text have responded to the need and have done the higher education community a great service by bringing it out in the electronic open access format under a Creative Commons License. Those of us from the other world are beneficiaries of this generosity and intellectual benevolence.

Online learning has begun to embed itself as a part of our educational environment, especially in the higher education and training

sectors. The practice is not widespread yet but the growing number of institutions and individuals resorting to this innovation seems to be increasing exponentially. This increase is not limited to the developed world; colleagues in the developing world are equally enthusiastic about mediated learning for any number of reasons, including expanding access and providing flexibility to populations hungry for learning and training.

This revised publication with new knowledge and additional chapters is a great help for many of us who are still very much on the learning curve in our understanding of online learning.

Raj Dhanarajan
Vice Chancellor
Wawasan Open University
Penang, Malaysia
4 April 2008



INTRODUCTION

TERRY ANDERSON

This second edition of the *Theory and Practice of Online Learning* is an updated version of the highly successful 2004 first edition. Each of the chapters has been revised to reflect current theory and practice, and four new chapters have been added.

The first edition was a landmark experiment: it was both produced in paper copy and made available for free download under a Creative Commons license. The 400 paper copies sold rapidly and over 80,000 copies of the full text have been downloaded, in addition to thousands of copies of individual chapters. A number of the chapters have also been translated into five languages and reprinted regionally. The text and individual chapters have also been widely cited by other scholars. A December 2007 search of *Google Scholar* shows that the full text has been cited 65 times and the individual chapters a further 243 times. Finally, each of the authors has received positive feedback, both for the quality of the work and for its availability.

As with the first edition, this is a collection of works by practitioners and scholars actively working in the field of distance education. The text has been written at a time when the field is undergoing fundamental change. Although not an old discipline by academic standards, distance education practice and theory has evolved through five generations in its 150 years of existence (Taylor, 2001).

For most of this time, distance education was an individual pursuit defined by infrequent postal communication between student and teacher. The last half of the twentieth century has witnessed rapid developments and the emergence of three additional generations, one supported by the mass media of television and radio, another by the synchronous tools of video and audio teleconferencing, and yet another based on computer conferencing.

The early twenty-first century has produced the first visions of a fifth generation – based on autonomous agents and intelligent, database-assisted learning – that has been referred to as the educational Semantic Web (Anderson, 2004) and Web 2.0. Note that each of these generations has followed more quickly upon its predecessor than the previous ones. Moreover, none of these generations has completely displaced previous ones, so that we are left with diverse yet viable systems of distance education that use all five generations in combination. Thus, the field can accurately be described as complex, diverse, and rapidly evolving.

Acknowledging complexity does not excuse inaction. Distance educators, students, administrators, and parents are daily forced to make choices regarding the pedagogical, economic, systemic, and political characteristics of the distance education systems within which they participate. To provide information, knowledge, and, we hope, a measure of wisdom, the authors of this text have shared their expertise, their vision, their concerns, and their solutions to distance education practice in these disruptive times.

Each chapter is written as a jumping-off point for further reflection, for discussion, and, most importantly, for action. Never in the history of life on our planet has the need for informed and wisdom-filled action been greater than it is today. We are convinced that education – in its many forms – is the most hopeful antidote to the errors of greed, of ignorance, and of life-threatening aggression that menace our civilization and our planet.

Distance education (of which online learning is a major subset) is a discipline that subsumes the knowledge and practice of pedagogy, of psychology and sociology, of economics and business, of production

and technology. We attempt to address each of these perspectives through the words of those trained to view their work through a particular disciplinary lens. Thus, each of the chapters represents the specialized expertise of individual authors who address that component piece of the whole with which they have a unique familiarity. This expertise is defined by a disciplinary background, a set of formal training skills, and a practice within one component of the distance education system. It is hardly surprising, then, that some of the chapters are more academic, reflecting their authors' primary role as scholar, while others are grounded in the more practical application focus of their authors.

In sum, the book is neither an academic tome nor a prescriptive "how to" guide. Like the university itself, the book represents a blending of scholarship and of research; practical attention to the details of teaching and of provision for learning opportunity; dissemination of research results; and mindful attention to the economics of the business of education.

In many ways, the chapters represent the best of what makes for a university community. According to the Allwords English Dictionary (2008), the word *university* comes from the Latin *universitas* (totality or wholeness), which itself contains two simpler roots, *unus* (one or singular) and *versere* (to turn). Thus, a university reflects a singleness or sense of all-encompassing wholeness, implying a study of all that is relevant and an acceptance of all types of pursuit of knowledge. The word also retains the sense of evolution and growth implied by the action embedded in the verb to turn. In our progress through the first part of the twenty-first century, the world is in the midst of a great turning as we adopt and adapt to the technological capabilities that allow information and communication to be distributed anywhere, anytime.

The ubiquity and multiplicity of human and agent communication, coupled with tremendous increases in information production and retrieval, are the most compelling characteristics of the Net-based culture and economy in which we now function. The famous quote from Oracle Corporation, "The Net changes everything," applies directly to the formal provision of education. Institutions that formerly relied on students gathering in campus-based classrooms are suddenly able (and many seem eager) to offer their programming on the Internet. Similarly, institutions accustomed to large-scale distance delivery via print or television are now being asked to provide more flexible, interactive, and responsive Net-based alternatives. Each of the chapters in the book reflects the often disruptive effect of the Net on particular components of a distance education system.

This book is written in large part by authors from a single university – Athabasca University – which has branded itself “Canada’s Open University.” As an open university, we are pleased to be the first such institution to provide a text like this one as an open and free gift to others. The book is published by Athabasca University’s AU Press, one of the world’s first open-access presses. It is published under a Creative Commons license (see <http://creativecommons.org>) to allow for free use by all, yet the copyright is retained by the university (see the copyright page for license details).

This open-access license format was chosen for a number of reasons. First, it is true to the original spirit of a university, and especially of an open university. We believe that knowledge is meant to be shared, and further, that such sharing does not diminish its value to its creator. Thomas Jefferson eloquently expressed these ideas in 1813 when he wrote,

He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. (1854, pp. 180–181)

As you will see from the quotations and references that augment the text in most chapters, we have learned much from the works of others, and thus feel bound to return this gift of knowledge to the wider community.

Second, we believe that education is one of the few sustainable means to equip humans around the globe with the skills and resources to confront the challenges of ignorance, poverty, war, and environmental degradation. Distance education is perhaps the most powerful means of extending this resource and making it accessible to all. Thus, we contribute to the elimination of human suffering by making as freely available as we can the knowledge that we have gained from developing distance education alternatives.

Third, the Creative Commons license provides our book as a form of “gift culture.” Gift giving has been a component of many cultures;

witness, for example, the famed Potlatch ceremonies of Canadian West Coast First Nations peoples. More recently, gift giving has been a major motivation of hackers developing many of the most widely used open-source products on the Internet (Raymond, 2001). Distributing this text as an open-access gift serves many of the same functions that gift giving has done through millennia. The gift weaves bonds within our community and empowers those who benefit from it to create new knowledge that they can then share with others and with us. Interestingly, research on neuro-economics is showing that freely giving and sharing is a behaviour that has had important survival functions for humans groups since earliest times (Grimes 2003). David Bollier (2002) argues that gift cultures are surprisingly resilient and effective at creating and distributing goods, while protecting both long-term capacity for sustained production and growing cultural assets. Bollier also decries the private plunder of our common wealth, and discusses the obligation of those employed in the public sector to ensure that the results of publicly-funded efforts are not exploited for personal gain.

Open-access gifts also provide those from wealthy countries with some small way to redress many economic inequalities and to share more equitably the gifts we receive from our planet home. We hope especially that this text will be incorporated as an open educational resource into the syllabi of the growing number of programs of distance education study that are being offered by both campus and distance education universities throughout the world. In the words of Sir John Daniel, President and CEO of the Commonwealth of Learning, sharing offers a viable means to “increase the quality and quantity of electronic courseware as materials are refined, versioned and adapted by academics around the world and made freely available in these new formats” (Daniel, 2001, p. viii). We believe that the free sharing of course content is a powerful tool to encourage the growth of public education institutions. We also think that such sharing will not result in a net value loss for the delivering institution. Rather, its reputation will be enhanced and its saleable services will increase in value.

Fourth, providing this book as open access frees us from potentially acrimonious debates over ownership, return for value, and distribution of any profit. Educational books rarely make large profits for their authors, and most of us have personally witnessed the old aphorism that “acrimony in academic arguments runs so high because the stakes are so low.” Open-access licensing allows us to go beyond financial arguments that are likely to have little consequence in any case.

Finally, our experience with the first edition has proven that open access allows the work to be more widely distributed and read. Through this dissemination, the ideas proposed are exposed to critical dialogue and reflection. We hope that much of this commentary will make its way back to the authors or flow into the discussion forums associated with the text's web site. Through review within the community of practice, ideas are honed, developed, and sometimes even refuted. Such discourse not only improves the field as a whole, but also directly benefits our work at Athabasca University, and thus handsomely repays our efforts.

In summary, we license the use of this book to all – not so much with a sense of naïve idealism, but with a realism that has been developed through our life work – to increase access to and opportunity for all to quality learning opportunities.

BOOK ORGANIZATION AND INTRODUCTION TO THE CHAPTERS

In the following pages, we briefly review the main themes covered in this book and its chapters. Part I serves as a foundational and theoretical base for the full book. In Part II, we describe the essential infrastructure with particular focus on media and technology – critical carriers of distance education programming. In Part III, we examine issues related to course development and instructional design. In Part IV, the structures, tools, and resource centres necessary to support students are reviewed.

Part I: Role and Function of Theory in Online Education Development and Delivery

The opening section provides the theoretical foundations for this volume. Chapter 1 presents the foundation of education theory for online learning. It opens the debate by discussing the contributions of behaviorist, cognitivist, constructivist, and connectivist theories to the design of online materials, noting that behaviorist strategies can be used to teach the facts (what), cognitivist strategies the principles and processes (how), and constructivist strategies the real-life and personal applications that contextualize learning. This edition of the chapter introduces connectivism, with its capacity to exploit the connections to knowledge and to people afforded by the now ubiquitous Internet and its applications. The chapter notes a shift toward constructive learning, in which learners are given the opportunity to construct their own meaning from the information

presented during online sessions. Learning objects will be used to promote flexibility and the reuse of online materials to meet the needs of individual learners. And online learning materials will be created in such a way that they can be redesigned for different learners and different contexts. Finally, online learning will become increasingly diverse to allow it to respond to diverse learning cultures, styles, and motivations.

Chapter 2 presents a general assessment of how people learn, including the unique characteristics of the Web to enhance these generalized learning contexts, and discusses the six forms of interaction and their critical role in engaging and supporting both learners and teachers. The author presents a model of online learning, a first step toward a theory in which the two predominant forms of online learning – collaborative and independent study – are considered, along with a brief discussion of the advantages and disadvantages of each. Finally, the chapter discusses the emerging tools of the Semantic Web and the way they will affect future developments of the theory and practice of online learning.

In this first new chapter in the second edition, Chapter 3 details the important role of Prior Learning Assessment and Recognition (PLAR) in open education. Recognizing, in a formal structure, the knowledge that learners have garnered, both within and outside of formal education, is a challenge for educational institutions. We need to control the quality of the credential awarded but at the same time we need to value learners' time and ensure that they are not needlessly completing courses with knowledge they already own, solely to earn credits. The means by which Athabasca University has developed and implemented systems and tools that effectively measure an individual's knowledge, cost, and time are outlined in the chapter. In particular, the role of portfolios, composed by learners and assessed by faculty, is highlighted.

Chapter 4 is also new to this edition and adds a philosophical dimension to the text. It focuses first on the importance of understanding our philosophy of practice-in-practice. It then overviews commonly held philosophies of technology and of teaching. This chapter helps us, as individuals and as institutional decision makers, to make sound pedagogical and technological decisions that will then be reflected in the nature, quality, cost, and effectiveness of our distance education programming.

Part II: Infrastructure and Support for Content Development

This section covers the necessary infrastructure to produce and delivery quality distance online learning. Chapter 5 discusses the various factors

that must be considered in developing the infrastructure for online learning, including planning, structural and organizational issues, the components of a system and the interfaces among them, and various related issues, such as human resources, decision-making, and training. The authors explain why any designed online learning infrastructure must also be able to evolve and work in a context of constant and accelerating change to accommodate changing student needs, technologies, and curricula.

Chapter 6 examines some available and potential technologies and features used in online instruction. Rather than continue to focus on how technology has helped or can help the instructor, teacher, or tutor, this chapter concludes with a look at how technologies – existing and emerging – can aid this first generation of online learners. This chapter has been updated to explore some of the technologies, including blogs and wikis, that have become prominent in online learning since the date of the first edition.

Chapter 7 discusses attributes of media, and of the modes of teaching presentation and learning performance they support, in relation to some influential learning models. It also clarifies some of the implications in the choice of any specific delivery or presentation medium. The author notes that the decision to adopt online technology is always complex and can be risky, especially if the adopting organization lacks structural, cultural, or financial prerequisites, and concludes that, while education has a responsibility to keep pace with technological change, educational institutions can reduce the costs and uncertainties of invention by following the technological lead of the corporate sector.

Chapter 8 is another new chapter for this edition that focuses on the use of mobile technologies to support teaching, learning, and research. The drastic reduction in the cost of portable electronic devices, coupled with increasing access to mobile connectivity, allows online learning to begin to situate online education anywhere. This chapter overviews the affordances and restrictions of this technology and provides examples of products developed at Athabasca University.

Chapter 9 was added as a suggestion from an anonymous learner who suggested (quite correctly) that new social software and Web 2.0 tools are being used very extensively, and that a discussion on the opportunities and challenges they afford for online learning was missing from the first draft. While still in the future for mainstream use, this chapter documents the development of a social software suite (<http://me2u.athabascau.ca>) and explains why we believe this type of student and community tool

will provide new opportunity for creating learning communities and student-support groups. The chapter argues that distance education students may soon be able to avail themselves of similar social and collaborative support enjoyed by on-campus students.

Part III: Design and Development of Online Courses

This section is concerned with operations, design, and production of quality online courses. Five chapters are organized to shed light on these processes. Chapter 10 presents the role of instructional media developers in the course development process. These professionals are involved from the beginning, to consult with and advise course team members on development-related topics as they arise. The author presents pedagogical standards designed to help all those involved in online instructional development, to ensure that their efforts are rewarded, ultimately, with satisfied learners.

Chapter 11 describes the role of instructional design, multimedia development, and editing in the design and development process by describing a professional role that has been developed to accommodate all these functions – the Multimedia Instructional Design Editor (MIDE). Mainly, this role is concerned with facilitating communication between the author and the learner, and between the author and the technical staff who create the multi-media tools and instructional technology used in course delivery. The MIDE brings together elements and participants in the value chain, and adds value to the course development process by enhancing the ability of other participants to produce effective online learning experiences. One of the MIDE's most important contributions to course design and development is quality control. The quality control function has become more critical as courses have come to contain multimedia components and other learning objects from many diverse sources.

Chapter 12 provides a detailed look at the costs of online learning. The chapter will appeal to the inner accountant in each of us as it digs deeply into fixed, variable, recurring and other ways to understand (and thus be in a position to control) the important cost and revenue implications of online learning.

Chapter 13 provides a discussion of the contexts of quality assurance activities in higher education in general, and of the competing paradigms highlighted by online learning. The author notes that the greatest challenge for trying to define quality is that it remains a relative experience, realized in large part through an individual's level of

expectation. On the basis of this insight, the chapter goes on to examine quality standards that have been proposed for the delivery of online instruction in four jurisdictions: Australia, the United Kingdom, Canada, and the United States.

Part IV: Delivery, Quality Control, and Student Support of Online Courses

The final section is concerned with the last two parts of the organization's online learning value chain: delivery and service. Chapter 14 focuses on the role of the teacher or tutor in an online learning context. It uses a theoretical model that views the creation of an effective online educational community as involving three critical components: cognitive presence, social presence, and teaching presence. The chapter provides suggestions and guidelines for maximizing the effectiveness of the teaching function in online learning.

Chapter 15 presents the call centre concept for course delivery and student support in online courses. In distance education in particular, the call centre can be an effective communication tool, enabling the institution to provide and improve service to students in many areas, including instruction. This chapter describes how the call centre concept is used at Athabasca University and how it has proven to be effective in three areas: increasing student service and retention, allowing for direct marketing, and enhancing management information and learner feedback.

Chapter 16 discusses the library support needed by online learners. It examines how libraries are responding to the challenges and opportunities of delivering core services to online learners. This chapter portrays some of the library practices and technologies now being applied in the construction of virtual libraries. The authors stress the importance of providing support within a collaborative environment, which considers human factors, such as communication and interaction.

Chapter 17 continues this discussion by stressing the importance of setting up a supportive learning environment for online learners, and provides some practical advice. Underlying this advice is a philosophy that encourages an environment which aims to develop the learner's independence, while ensuring that supports are readily available when needed. Student supports that are flexible, clear, and continually available are described, and best practices outlined.

Chapter 18 describes several experiences in developing knowledge of team dynamics and communications and accomplishing team project

work in an online environment. In describing aspects of teaching and applying team dynamics online, the authors highlight the unique values and capabilities of an online learning environment.

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